



Mn/DOT Name: 1 RMC

NGS Name: 1 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	25	53 N	19 W	470244.00	924115.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 1 RMC 1958 1295

3.4 MILES NORTH AND 3.4 MILES WEST OF THE PROSIT POST OFFICE, 83.0 FEET SOUTHEAST AND 57.0 FEET SOUTH OF COUNTY ROAD 47 AT A FENCE NORTHEAST, 50.0 FEET NORTH OF A RAILROAD, AT THE TOP OF SMALL A CUT.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1295.243	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -96.529 12B = -96.519 09 = -96.420 03 = -96.247

* No Horizontal Positions in the Database *



Mn/DOT Name: 19 MHD 1948

NGS Name: 19

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0718](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	29	52 N	20 W	465757.60	925419.56	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1960)

Stamping:

IN THE SOUTHEAST END OF THE NORTHEAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT, 2.7 MILES NORTH
ALONG TRUNK HIGHWAY 73 FROM THE FLOODWOOD HIGH SCHOOL, AT TRUNK HIGHWAY 73 MILEPOINT 46.25, 43.0 FEET
NORTHEAST OF TRUNK HIGHWAY 73.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1240.247	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	
1240.152	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025	

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1239.505	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD	
1239.505	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN	

Geoid Separations(ft): GEOID18 = -95.731 12B = -95.712 09 = -95.649 03 = -95.508

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/19-RN0718-3NE-10JUL2017.jpg	NE	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/19-RN0718-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/19-RN0718-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 2 RMC

NGS Name: 2 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	6	52 N	18 W	470142.00	923941.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 2 RMC 1958 1297

2.0 MILES NORTH AND 2.0 MILES WEST OF THE PROSIT POST OFFICE, 11.0 FEET SOUTH AND 43.0 FEET WEST OF A GRADE CROSSING, NEAR THE JUNCTION OF COUNTY ROAD 47 (EAST AND NORTH WEST) AND A ROAD (WEST).

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1296.802	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -96.345 12B = -96.332 09 = -96.230 03 = -96.060

* No Horizontal Positions in the Database *



Mn/DOT Name: 3 JKR

NGS Name: 3 JKR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	28	51 N	19 W	465221.00	924550.00			1952	2017	GOOD	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	USGS

Description: (1952) Stamping: 3 JKR 1952

7.6 MILES SOUTHEAST OF FLOODWOOD, 9.1 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, THEN 1.3 MILES NORTH ON NYGAARD ROAD, 172.0 FEET SOUTH OF A RAILROAD STATION, 44.0 FEET SOUTH OF A RAILROAD CROSSING, 49.0 FEET EAST OF NYGAARD ROAD, 2.0 FEET NORTH OF A FENCE.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
1239.587	.033	3				VERTICAL CONTROL SURVEY			1968	USGS-VERT		
<u>Geoid Separations(ft):</u> GEOID18 = -94.865 12B = -94.852 09 = -94.770 03 = -94.649												
* No Horizontal Positions in the Database *												



Mn/DOT Name: 3 RMC

NGS Name: 3 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	9	52 N	18 W	470022.00	923740.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1997	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 3 RMC 1958 1340

0.6 MILE NORTHWEST OF THE PROSIT POST OFFICE ON A RAILROAD, 0.4 MILE SOUTH OF THE AEERIE LAKE CROSSING, AT THE END OF A ROAD TO A RAILROAD ON THE SOUTH SIDE OF MAPLE LAKE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1339.594	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -96.102 12B = -96.092 09 = -95.977 03 = -95.810

* No Horizontal Positions in the Database *



Mn/DOT Name: 30 WR

NGS Name: 30 WR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092313/
USGS Quad: CASCO

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	55 N	19 W	471557.00	924411.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	1950	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1950)

Stamping: 30 WR 1950

2.0 MILES SOUTH AND 3.5 MILES EAST OF A COOP STORE AT LITTLE SWAN, 0.6 MILE SOUTH OF THE JUNCTION OF COUNTY ROAD 434 AND A RAILROAD, 50.0 FEET EAST OF A ROAD AT A DIM LOGGING ROAD EAST, AT THE NORTHWEST CORNER OF A SMALL CLEARING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1295.421	.033	3				VERTICAL CONTROL SURVEY	1957 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.916 12B = -97.913 09 = -97.844 03 = -97.713

* No Horizontal Positions in the Database *



Mn/DOT Name: 31 WR

NGS Name: 31 WR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	55 N	19 W	471450.00	924449.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	1950	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1950)

Stamping: 31 WR 1950

3.5 MILES SOUTH AND 3.0 MILES EAST OF THE LITTLE SWAN COOP STORE, 55.0 FEET NORTHEAST OF A ROAD AT A RIGHT ANGLE TURN, 18.0 FEET NORTH AND 23.0 FEET EAST OF A ROAD AT THE JUNCTION OF A DIM ROAD EAST, 2.0 FEET WEST OF A GATE POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1293.718	.033	3				VERTICAL CONTROL SURVEY		1967	USGS-VERT

Geoid Separations(ft): GEOID18 = -97.854 12B = -97.854 09 = -97.785 03 = -97.641

* No Horizontal Positions in the Database *



Mn/DOT Name: 32 WR

NGS Name: 32 WR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	55 N	19 W	471449.00	924712.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	1950	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1950) Stamping: 32 WR 1950

3.5 MILES SOUTH AND 1.0 MILE EAST OF THE LITTLE SWAN COOP STORE, 600.0 FEET EAST OF COUNTY ROAD 230 AT A DIM
ROAD EAST, 20.0 FEET WEST OF A GATE POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1289.046	.033	3				VERTICAL CONTROL SURVEY	1958 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.798 12B = -97.802 09 = -97.729 03 = -97.588

* No Horizontal Positions in the Database *



Mn/DOT Name: 4 JKR

NGS Name: 4 JKR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	25	51 N	19 W	465235.00	924120.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=NO	YES			STEEL SPIKE ADJ TO MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1952)

Stamping: 4 JKR 1952

3.7 MILES EAST OF PAUPORES ON A RAILROAD, 40.0 FEET NORTH AND 38.0 FEET EAST OF A FIELD ROAD CROSSING, 1.0 FOOT NORTH OF A WIRE FENCE.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1235.473	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.885 12B = -94.875 09 = -94.783 03 = -94.652

* No Horizontal Positions in the Database *



Mn/DOT Name: 49 SEM

NGS Name: 49 SEM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	51 N	21 W	465439.00	930022.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	1967	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1967) Stamping: 49 SEM 1967

1.0 MILE SOUTH AND 4.5 MILES WEST OF FLOODWOOD, 39.0 FEET SOUTH AND 27.0 FEET EAST OF AN EAST-WEST ROAD AT A TEE-ROAD NORTH, 4.0 FEET SOUTH OF A TELEPHONE POLE, 1.3 FEET NORTH OF A STEEL FENCE POST WITH A WITNESS TAG.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1250.099	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.144 12B = -95.131 09 = -95.046 03 = -94.944

* No Horizontal Positions in the Database *



Mn/DOT Name: 6 JKR

NGS Name: 6 JKR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0749](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
SW 28 51 N 19 W	465222.00	924551.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	CGS

Description: Stamping: 3 JKR 1952 1239

STATION 6 JKR IS LOCATED NEAR THE RAILROAD CROSSING AT PAUPORES. IT IS 46.6 FEET SOUTH OF THE SOUTH RAIL OF THE MAIN LINE TRACK OF THE BURLINGTON NORTHERN RAILROAD, 21.0 FEET SOUTH OF THE SOUTH RAIL OF THE SPUR SIDING TRACKS, 44.0 EAST OF THE CENTER OF NYGAARD ROAD, 36.0 FEET NORTHEAST OF A RAILROAD CROSSING POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.869 12B = -94.855 09 = -94.773 03 = -94.652



Mn/DOT Name: 6906 A

NGS Name: 6906 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0646](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	6	51 N	20 W	465547.00	925517.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1978	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (1978) Stamping: 6906 A 1974

18.4 MILES NORTH OF CROMWELL, 17.6 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, THEN 0.8 MILE NORTH ALONG TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1240.034	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1239.482	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.380 12B = -95.361 09 = -95.285 03 = -95.170

* No Horizontal Positions in the Database *



Mn/DOT Name: 6906 A RESET

NGS Name: 6906 A RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1743](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	6	51 N	20 W	465546.91	925518.09	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (1978)

Stamping: 6906 A 1974 RESET 1978

IN FLOODWOOD, IN THE NORTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT AT A SMALL CREEK, 0.5 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 220.25, 56.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1239.932	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1239.233	.016	2						VERTICAL CONTROL SURVEY	1978	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1239.774	.262			1144.410	.197	2011		GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.380 12B = -95.361 09 = -95.285 03 = -95.170

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 55 46.91429	92 55 18.08764	382139.818	202372.579	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>MN State Plane - North Zone</u> <u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
2669219.058	484866.864	1659974.667	17051654.787	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_A_RESET-RN1743-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_A_RESET-RN1743-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_A_RESET-RN1743-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 B

NGS Name: 6906 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0644](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	1	51 N	21 W	465622.56	925600.35	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2002)

Stamping: 6906 B 1974

IN THE SOUTHEAST HEADWALL OF A TRUNK HIGHWAY 2 BOX CULVERT AT A DRAINAGE DITCH, 1.4 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 219.4, 29.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.645	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1247.622	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1247.622	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND
1247.622	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.078	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.740	.262		1152.294	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.466 12B = -95.446 09 = -95.374 03 = -95.252

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 56 22.55530	92 56 00.35090	379228.732	206001.510	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2666277.970	488471.321	1657039.540	17055261.552	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_B-RN0644-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_B-RN0644-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_B-RN0644-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 C

NGS Name: 6906 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0639](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1077
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>				
NE	35	52 N	21 W	465708.64	925710.91	2	3				
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>				
1974	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON				

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6906 C 1974

2.1 MILES NORTHWEST OF FLOODWOOD, 2.55 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 218.25, 0.25 MILE NORTH OF A RAILROAD CROSSING, 33.0 FEET WEST OF A TOWNSHIP ROAD, 106.0 FEET SOUTHWEST OF THE SOUTHWEST RAILROAD TRACKS, 86.8 FEET SOUTHWEST OF STATION HALDEN MNDT, 124.0 FEET WEST OF HALDEN MNDT RM 1, 72.0 FEET SOUTHWEST OF A RAILROAD CROSSING POST, 77.0 FEET SOUTHWEST OF A WITNESS POST AND 0.9 FOOT EAST OF ANOTHER WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1264.046	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1263.518	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1264.039	.262			1168.639	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.567 12B = -95.551 09 = -95.479 03 = -95.357

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>		
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 08.63740	92 57 10.91305	374362.112	210701.246	.131	3	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>		
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 08.63048	92 57 10.91374	374362.060	210700.545	.131	3	ADJUSTMENT	1986	17289	
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 57 08.83763	92 57 10.18511			.100	3	CLASSICAL SURVEY	1977	15924	

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
									<u>Reference</u>
2661372.597	493130.237	1652142.315	17059924.893	.131	3	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
									<u>Reference</u>
2661372.551	493129.536	1652142.268	17059924.192	.131	3	ADJUSTMENT	1986	17289	
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Reference</u>
<u>X</u>	<u>Y</u>								
2036757.525	165066.514			.100	3	CLASSICAL SURVEY	1977	15924	



Mn/DOT Name: 6906 D

NGS Name: 6906 D

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	52 N	21 W	465715.00	925801.00	2	

NGS ACRN: RN0637	Get Map
NGS Quad / Sta Num : 46092444/	
USGS Quad: FLOODWOOD	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6906 D 1974

3.25 MILES NORTHWEST OF FLOODWOOD, 3.25 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 217.58, 375.0 FEET WEST OF TRUNK HIGHWAY 2, 20.0 FEET SOUTH OF A TOWNSHIP ROAD, 187.3 FEET EAST-NORTHEAST OF A HOUSE, 1.5 FEET NORTHWEST OF A CORNER FENCE POST, 1.0 FOOT NORTH OF A WITNESS POST, THE GEODETIC UNIT FOUND THE ROD TIPPED AND THE DISK WAS GONE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.162	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.637	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.574 12B = -95.558 09 = -95.489 03 = -95.364

* No Horizontal Positions in the Database *



Mn/DOT Name: 6906 E

NGS Name: 6906 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0635](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	52 N	21 W	465754.00	925913.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6906 E 1974

4.5 MILES NORTHWEST OF FLOODWOOD, 4.5 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 216.3, 130.0 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 10.0 FEET NORTHWEST OF AN ENTRANCE, 63.7 FEET SOUTHWEST OF THE NORTHEAST END OF A CULVERT, 1.5 FEET EAST OF A WITNESS POST, FOUND THE ROD AND THE DISK TIPPED OVER, THE ROD WAS STRAIGHTENED, SEE STATION 6906 E RESET.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1265.112	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1264.604	.016	2						VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.656 12B = -95.643 09 = -95.574 03 = -95.446

* No Horizontal Positions in the Database *



Mn/DOT Name: 6906 E 1

NGS Name: 6906 E 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0633](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	52 N	21 W	465835.00	925953.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	VERTICAL CONTROL DISK	MNDT

Description: (1978)

Stamping: 6906 E 1 1974

5.4 MILES NORTHWEST OF FLOODWOOD, 5.4 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.988	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.492	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.751 12B = -95.741 09 = -95.672 03 = -95.538

* No Horizontal Positions in the Database *



Mn/DOT Name: 6906 E 1 RESET

NGS Name: 6906 E 1 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1740](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	21	52 N	21 W	465834.26	925951.71	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type

CULVERT - ANY SIZE, ANY TYPE

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (2002)

Stamping: 6906 E 1 1974 RESET 1978

5.5 MILES NORTHWEST OF FLOODWOOD, IN THE NORTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT, 5.4 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 215.35, 45.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1264.646	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1264.643	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1264.643	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1264.062	.016	2				VERTICAL CONTROL SURVEY	1978	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1264.541	.262		1168.800	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.751 12B = -95.741 09 = -95.672 03 = -95.538

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 58 34.26498	92 59 51.70678	363267.318	219451.583	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2650205.899	501787.674	1640991.521	17068593.199	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_1_RESET-RN1740-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_1_RESET-RN1740-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_1_RESET-RN1740-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 E RESET

NGS Name: 6906 E RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	52 N	21 W	465753.26	925913.55	2	C

NGS ACRN: [DG4253](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 4 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 24 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2003)

Stamping: 6906 E RESET 1974 2001

4.45 MILES NORTHWEST OF FLOODWOOD, 4.75 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 216.30, 130.0 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 16.0 FEET NORTHWEST OF AN ENTRANCE TO MAT INCORPORATED, 2.3 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.378	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1265.352	.016	2/1				VERTICAL ADJUSTMENT	2011 00000675
1265.355	.016	2/1				VERTICAL CONTROL SURVEY	2003 VGRAND

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.306	.262		1169.663	.197	2011	GPS - RTRN	2017 RTRN2017
			1169.709	.011	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1169.804	.011	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1265.352	.131		1169.896	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1265.352	.131		1169.896	.066	1996	GPS - STATIC	2003 HGRAND

Geoid Separations(ft): GEOID18 = -95.653 12B = -95.643 09 = -95.571 03 = -95.443

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 53.26312	92 59 13.55389	365884.618	215279.060	.131	3	GPS - RTRN	2017	RTRN2017
46 57 53.26129	92 59 13.55061	365884.844	215278.873	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 53.26140	92 59 13.55148	365884.784	215278.885	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 53.26117	92 59 13.55096	365884.819	215278.861	.033	C	ADJUSTMENT	2004	GPS1957
46 57 53.26117	92 59 13.55096	365884.819	215278.861	.033	C	GPS - STATIC	2003	HGRAND



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2652857.671	497637.226	1643636.814	17064441.047	.131	3	GPS - RTRN	2017	RTRN2017
2652857.898	497637.040	1643637.042	17064440.861	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2652857.838	497637.052	1643636.982	17064440.872	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2652857.874	497637.028	1643637.018	17064440.849	.033	C	ADJUSTMENT	2004	GPS1957
2652857.874	497637.028	1643637.018	17064440.849	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_RESET-DG4253-3NW-24JUL2017.jpg	NW	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_RESET-DG4253-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_E_RESET-DG4253-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 F

NGS Name: 6906 F

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN0866 NGS Quad / Sta Num : 46093111/ USGS Quad: ISLAND	Get Map
SW	16	52 N	21 W	465910.00	930047.00	2			

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6206 F

6.4 MILES NORTHWEST OF FLOODWOOD, 3.15 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 200, AT TRUNK HIGHWAY 2 MILEPOINT 214.35, 104.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 40.0 FEET SOUTHEAST OF A FARM ENTRANCE, 58.3 FEET EAST-NORTHEAST OF THE SOUTHEAST END OF A CULVERT UNDER A FARM ENTRANCE, 67.4 FEET EAST OF A POWER POLE, 1.0 FOOT SOUTHWEST OF A WITNESS POST, FOUND CONCRETE CULVERT REINFORCED WITH THE DISK MISSING, SEE STATION 6906 F RESET.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1266.349	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.867	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.827 12B = -95.817 09 = -95.748 03 = -95.610

* No Horizontal Positions in the Database *



Mn/DOT Name: 6906 F RESET

NGS Name: 6906 F RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4240](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	16	52 N	21 W	465910.39	930047.68	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 24 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2003)

Stamping: 6906 F RESET 2001

6.5 MILES NORTHWEST OF FLOODWOOD, 6.7 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 214.35, 104.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 40.0 FEET SOUTHEAST OF AN ENTRANCE, 67.5 EAST OF A POWER POLE, 1.0 FOOT SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1266.346	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1266.307	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1266.307	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1266.267	.262		1170.450	.197	2011	GPS - RTRN	2017	RTRN2017
			1170.503	.018	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1170.601	.019	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1266.303	.131		1170.693	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1266.303	.131		1170.693	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -95.827 12B = -95.817 09 = -95.748 03 = -95.613

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 59 10.39149	93 00 47.67603	359412.362	223139.340	.131	3	GPS - RTRN	2017	RTRN2017
46 59 10.39219	93 00 47.67620	359412.351	223139.411	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 59 10.39233	93 00 47.67712	359412.287	223139.425	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 59 10.39217	93 00 47.67675	359412.313	223139.409	.033	C	ADJUSTMENT	2004	GPS1957
46 59 10.39217	93 00 47.67675	359412.313	223139.409	.033	C	GPS - STATIC	2003	HGRAND



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2646320.615	505443.109	1637112.567	17072252.141	.131	3	GPS - RTRN	2017	RTRN2017
2646320.603	505443.179	1637112.555	17072252.212	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2646320.539	505443.194	1637112.492	17072252.226	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2646320.565	505443.177	1637112.517	17072252.210	.033	C	ADJUSTMENT	2004	GPS1957
2646320.565	505443.177	1637112.517	17072252.210	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_F_RESET-DG4240-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_F_RESET-DG4240-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_F_RESET-DG4240-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 G

NGS Name: 6906 G

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN0869	Get Map
NW	17	52 N	21 W	465948.03	930206.39	2	3	NGS Quad / Sta Num : 46093111/ USGS Quad: ISLAND	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2002)

Stamping: 6906 G 1974

7.4 MILES NORTHWEST OF FLOODWOOD, IN THE NORTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT, 1.8 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 200 (THE JUNCTION IS 10.0 MILES NORTHWEST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 213.05, 27.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 35.0 FEET NORTHWEST OF A FIELD ROAD NORTHEAST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1269.269	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1269.243	.016	2/1				VERTICAL ADJUSTMENT	2011 00000675
1269.243	.016	2/1				VERTICAL CONTROL SURVEY	2003 VGRAND
1269.243	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1268.774	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1269.217	.262		1173.334	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -95.895 12B = -95.882 09 = -95.813 03 = -95.679

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 59 48.03033	93 02 06.39142	353983.242	226992.793	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2640859.944	509251.157	1631659.050	17076065.661	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_G-RN0869-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_G-RN0869-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_G-RN0869-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 H

NGS Name: 6906 H

County: ST. LOUIS, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: DF9084	Get Map
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>	NGS Quad / Sta Num : 46092444/	
NW	36	52 N	21 W	465708.59	925709.90	2	C	USGS Quad: FLOODWOOD	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: 6906 H 2001

2.5 MILES NORTHWEST OF FLOODWOOD, 2.8 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD TO TRUNK HIGHWAY 2 MILEPOINT 218.25, THEN 0.25 MILE NORTH ON COUNTY ROAD 186, 37.0 FEET EAST OF COUNTY ROAD 186, 68.0 FEET SOUTHWEST OF THE SOUTHWEST RAIL, 2.2 FEET EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1263.994	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1263.994	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1168.380	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1168.475	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1264.007	.131		1168.554	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1263.974	.131		1168.554	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1264.007	.131		1168.554	.066	1996	GPS - STATIC	2003	HGRAND
1263.974	.131		1168.554	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -95.567 12B = -95.551 09 = -95.479 03 = -95.357

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 08.58555	92 57 09.90400	374432.084	210695.544	.007		ADJUSTMENT	2012	GPS2800
NAD83(2007)		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 08.58565	92 57 09.90488	374432.023	210695.554	.010		ADJUSTMENT	2007	GPS2300
NAD83(1996)		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 08.58540	92 57 09.90464	374432.039	210695.529	.033	C	ADJUSTMENT	2004	GPS1957
46 57 08.58540	92 57 09.90464	374432.039	210695.529	.033	C	ADJUSTMENT	2003	GPS1931
46 57 08.58540	92 57 09.90464	374432.039	210695.529	.033	C	GPS - STATIC	2003	HGRAND
46 57 08.58540	92 57 09.90464	374432.039	210695.529	.033	C	GPS - STATIC	2003	HSTLO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2661442.611	493125.117	1652212.292	17059919.684	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2661442.550	493125.127	1652212.231	17059919.694	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2661442.567	493125.102	1652212.248	17059919.668	.033	C	ADJUSTMENT	2004	GPS1957
2661442.567	493125.102	1652212.248	17059919.668	.033	C	ADJUSTMENT	2003	GPS1931
2661442.567	493125.102	1652212.248	17059919.668	.033	C	GPS - STATIC	2003	HGRAND
2661442.567	493125.102	1652212.248	17059919.668	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_H-DF9084-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 H RESET

NGS Name: 6906 H RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9923](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	36	52 N	21 W	465708.59	925709.90	2	3	2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 H RESET 2017

2.5 MILES NORTHWEST OF FLOODWOOD, 2.8 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD TO TRUNK HIGHWAY 2 MILEPOINT 218.25, THEN 0.25 MILE NORTH ON COUNTY ROAD 186, 37.0 FEET EAST OF COUNTY ROAD 186 (SAVANNA ROAD), 68.0 FEET SOUTHWEST OF THE SOUTHWEST RAIL, 2.2 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1263.938	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1263.859	.262		1168.308	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.567 12B = -95.551 09 = -95.479 03 = -95.357

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 57 08.58550	92 57 09.90308	374432.147	210695.539	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2661442.674	493125.112	1652212.356	17059919.679	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_H_RESET-DQ9923-3E-24JUL2017.jpg	E	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_H_RESET-DQ9923-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_H_RESET-DQ9923-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 J

NGS Name: 6906 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9921](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	6	51 N	20 W	465604.86	925539.46	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 36 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 J 2017

0.5 MILE NORTHWEST OF FLOODWOOD, 1.0 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 219.20, 38.3 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1246.713	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1246.776	.262		1151.353	.197	2011	GPS - OPUS	2020	GPSBM	
1246.687	.262		1151.264	.197	2011	GPS - OPUS	2020	GPSBM	
1246.641	.262		1151.238	.197	2011	GPS - RTRN	2020	RTRN2020	
1246.723	.262		1151.320	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.423 12B = -95.403 09 = -95.328 03 = -95.213

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 56 04.86146	92 55 39.45878	380667.596	204199.924	.131	3	GPS - OPUS	2020	GPSBM
46 56 04.86179	92 55 39.45914	380667.571	204199.958	.131	3	GPS - OPUS	2020	GPSBM
46 56 04.86239	92 55 39.45857	380667.611	204200.018	.131	3	GPS - RTRN	2020	RTRN2020
46 56 04.86220	92 55 39.45845	380667.619	204199.999	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2667731.727	486681.833	1658490.342	17053470.927	.131	3	GPS - OPUS	2020	GPSBM
2667731.701	486681.867	1658490.317	17053470.960	.131	3	GPS - OPUS	2020	GPSBM
2667731.741	486681.928	1658490.356	17053471.021	.131	3	GPS - RTRN	2020	RTRN2020
2667731.749	486681.909	1658490.365	17053471.002	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_J-DQ9921-3NE-07JUL2020.jpg	NE	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_J-DQ9921-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_J-DQ9921-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 K

NGS Name: 6906 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9922](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	36	52 N	21 W	465643.21	925637.82	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 46 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 K 2017

1.6 MILES NORTHWEST OF FLOODWOOD, 2.0 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 218.75, 36.3 FEET NORTHEAST OF TRUNK HIGHWAY 2, 125.0 FEET SOUTHEAST OF AN ENTRANCE, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1258.925	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1258.892	.262		1163.400	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.508 12B = -95.492 09 = -95.420 03 = -95.298

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 56 43.20907	92 56 37.81843	376641.897	208110.307	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2663673.771	490558.448	1654439.167	17057351.192	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_K-DQ9922-3NE-02AUG2017.jpg	NE	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_K-DQ9922-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_K-DQ9922-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 L

NGS Name: 6906 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9924](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	52 N	21 W	465703.58	925725.52	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 31 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 L 2017

2.5 MILES NORTHWEST OF FLOODWOOD, 2.7 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 218.0, 42.2 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.873	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.916	.262		1170.365	.197	2011	GPS - OPUS	2021	GPSBM
1265.831	.262		1170.277	.197	2011	GPS - RTRN	2021	RTRN2021
1265.818	.262		1170.286	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.551 12B = -95.535 09 = -95.462 03 = -95.341

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 57 03.57678	92 57 25.52378	373345.144	210195.046	.131	3	GPS - OPUS
46 57 03.57747	92 57 25.52313	373345.189	210195.116	.131	3	GPS - RTRN
46 57 03.57743	92 57 25.52290	373345.205	210195.112	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2660359.912	492615.616	1651129.387	17059411.806	.131	3	GPS - OPUS
2660359.957	492615.686	1651129.432	17059411.876	.131	3	GPS - RTRN
2660359.973	492615.682	1651129.448	17059411.872	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_L-DQ9924-3NE-25JUL2021.jpg	NE	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_L-DQ9924-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_L-DQ9924-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 M

NGS Name: 6906 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9927](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	22	52 N	21 W	465802.80	925919.87	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 52 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 M 2017

4.5 MILES NORTHWEST OF FLOODWOOD, 4.65 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 216.05, 55.9 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1263.472	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1263.570	.262		1167.891	.197	2011	GPS - OPUS	2021	GPSBM
1263.521	.262		1167.842	.197	2011	GPS - RTRN	2021	RTRN2021
1263.446	.262		1167.780	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.676 12B = -95.666 09 = -95.597 03 = -95.466

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 58 02.79865	92 59 19.87040	365453.139	216248.184	.131	3	GPS - OPUS	2021	GPSBM	
46 58 02.79906	92 59 19.86956	365453.197	216248.226	.131	3	GPS - RTRN	2021	RTRN2021	
46 58 02.79959	92 59 19.87100	365453.098	216248.280	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2652418.170	498602.690	1643198.748	17065406.677	.131	3	GPS - OPUS	2021	GPSBM	
2652418.229	498602.731	1643198.806	17065406.718	.131	3	GPS - RTRN	2021	RTRN2021	
2652418.129	498602.785	1643198.707	17065406.772	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_M-DQ9927-3NE-25JUL2021.jpg	NE	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_M-DQ9927-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_M-DQ9927-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 N

NGS Name: 6906 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9930](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	17	52 N	21 W	465921.30	930111.57	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 N 2017

6.8 MILES NORTHWEST OF FLOODWOOD, 6.75 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 213.95, 38.3 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference	
1268.741	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference	
1268.711	.262		1172.865	.197	2011	GPS - OPUS	2020	GPSBM	
1268.718	.262		1172.872	.197	2011	GPS - OPUS	2020	GPSBM	
1268.731	.262		1172.895	.197	2011	GPS - RTRN	2020	RTRN2020	
1268.688	.262		1172.849	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.846 12B = -95.836 09 = -95.768 03 = -95.633

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 59 21.30407	93 01 11.57452	357763.442	224256.953	.131	3	GPS - OPUS	2020	GPSBM
46 59 21.30414	93 01 11.57423	357763.462	224256.960	.131	3	GPS - OPUS	2020	GPSBM
46 59 21.30415	93 01 11.57353	357763.511	224256.961	.131	3	GPS - RTRN	2020	RTRN2020
46 59 21.30424	93 01 11.57444	357763.448	224256.970	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2644662.547	506546.935	1635456.607	17073357.651	.131	3	GPS - OPUS	2020	GPSBM
2644662.567	506546.942	1635456.627	17073357.658	.131	3	GPS - OPUS	2020	GPSBM
2644662.615	506546.943	1635456.676	17073357.659	.131	3	GPS - RTRN	2020	RTRN2020
2644662.552	506546.952	1635456.612	17073357.669	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_N-DQ9930-3NE-07JUL2020.jpg	NE	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_N-DQ9930-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_N-DQ9930-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 P

NGS Name: 6906 P

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DQ9931 Get Map NGS Quad / Sta Num : 46093111/ USGS Quad: ISLAND
NW	17	52 N	21 W	465947.27	930204.61	2	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 43 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 P 2017

7.4 MILES NORTHWEST OF FLOODWOOD, 7.6 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 213.10, 36.4 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.767	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.770	.262		1172.891	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.892 12B = -95.879 09 = -95.813 03 = -95.676

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 59 47.27039	93 02 04.60912	354106.217	226914.876	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2640983.555	509174.267	1631782.511	17075988.644	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_P-DQ9931-3NE-07AUG2017.jpg	NE	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_P-DQ9931-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_P-DQ9931-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6906 Q

NGS Name: 6906 Q

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9932](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	7	52 N	21 W	470005.87	930246.69	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 42 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6906 Q 2017

8.2 MILES NORTHWEST OF FLOODWOOD, 8.3 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 212.45, 35.2 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 100.4 FEET NORTHWEST OF AN ENTRANCE, 1.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1271.136	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1271.093	.262			1175.181	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.922 12B = -95.909 09 = -95.843 03 = -95.708

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 00 05.87386	93 02 46.68684	351203.736	228821.707	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2638065.491	511056.841	1628868.063	17077874.201	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_Q-DQ9932-3SW-14AUG2017.jpg	SW	Aug 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_Q-DQ9932-2-14AUG2017.jpg		Aug 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6906_Q-DQ9932-1-14AUG2017.jpg		Aug 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 A

NGS Name: 6907 A

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	3	50 N	17 W	465048.00	922900.00	2	

NGS ACRN: [RN0048](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	YES			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	MNDT

Description: (2019) Stamping: 6907 A 1974

2.1 MILES SOUTHEAST OF SAGINAW, 1.2 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 2 MILEPOINT 243.75, 39.0 FEET SOUTH OF TRUNK HIGHWAY 2, 50.0 FEET EAST OF A FIELD ROAD SOUTH, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT.

Station Notes

NEW BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1276.316	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1276.037	.016	2						VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.386 12B = -94.370 09 = -94.278 03 = -94.098

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_A-RN0048-3N-26JUL2017.jpg	N	Jul 26, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AA

NGS Name: 6907 AA

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465056.85	923419.35	2	3

NGS ACRN: DQ9898	Get Map
NGS Quad / Sta Num : 46092412/	
USGS Quad: BROOKSTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6907 AA 2017

11.0 MILES NORTH-NORTHWEST OF CLOQUET, 5.4 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 239.4, 79.3 FEET NORTH-NORTHEAST OF TRUNK HIGHWAY 2, 123.6 FEET EAST-SOUTHEAST OF AN ENTRANCE, 1.5 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.209	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1259.473	.262			1164.912	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.563 12B = -94.560 09 = -94.458 03 = -94.291

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		St Louis County - South Zone						Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 50 56.85185	92 34 19.34673	469460.077	172653.003	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2756782.694	455878.520	1747461.411	17022561.413	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AA-DQ9898-3N-09AUG2017.jpg	N	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AA-DQ9898-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AA-DQ9898-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AB

NGS Name: 6907 AB

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1052](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	2	50 N	17 W	465042.00	922813.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2008	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 32 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1979) **Stamping:** 6907 AB 1979

1.6 MILES SOUTHWEST OF SAGINAW, 0.6 MILE SOUTHWEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 96.0 FEET SOUTH OF TRUNK HIGHWAY 2, 18.1 FEET EAST OF A CORNER FENCE POST, 84.7 FEET EAST OF A POWER POLE, 39.5 FEET NORTHEAST OF A 10.0 INCH DIAMETER PINE TREE, 28.1 FEET SOUTH OF STATION SAG MNDT, 78.5 FEET EAST-SOUTHEAST OF SAG MNDT RM 1, 0.7 FOOT NORTH OF A WITNESS A POST, AT TRUNK HIGHWAY 2 MILEPOINT 244.25. IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION AND SAG MNDT RM 1, TRUNK HIGHWAY 2 HAD BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1330.007	.016	2/2						VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1329.738	.016	2						VERTICAL CONTROL SURVEY	1979	L23566	

Geoid Separations(ft): GEOID18 = -94.340 12B = -94.327 09 = -94.235 03 = -94.048

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 AC

NGS Name: 6907 AC

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	3	50 N	17 W	465047.61	922859.97	2	3

NGS ACRN: [RN1053](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 34 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2007)

Stamping: 6907 AC 1979

9.3 MILES NORTH-NORTHWEST OF CLOQUET, 1.25 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.5 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 243.60, 104.5 FEET NORTH OF TRUNK HIGHWAY 2, 16.5 FEET EAST OF DRIVEWAY NUMBER 7625, 0.7 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1284.141	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1284.144	.016	2/1					VERTICAL ADJUSTMENT	2013	00000797
1284.144	.016	2/1					VERTICAL CONTROL SURVEY	2009	VBUSC
1284.128	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1283.849	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1284.154	.262			1189.784	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.386 12B = -94.370 09 = -94.278 03 = -94.094

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 47.61381	92 28 59.96666			491660.462	171695.023	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2778990.104	455106.948			1769658.090	17021759.325	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AC-RN1053-3E-26JUL2017.jpg	E	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AC-RN1053-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AC-RN1053-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AD

NGS Name: 6907 AD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1054](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	4	50 N	17 W	465050.47	922929.81	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 40 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6907 AD 1979

9.5 MILES NORTH-NORTHWEST OF CLOQUET, 1.65 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.5 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 243.20, 96.7 FEET NORTH OF TRUNK HIGHWAY 2, 46.6 FEET NORTHEAST OF STATION ANDY RESET, 42.1 FEET EAST OF STATION ANDY RM 1, 0.8 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1320.585	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1320.588	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1320.591	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1320.581	.016	2/2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1320.293	.016	2				VERTICAL CONTROL SURVEY	1979	L23566

Geoid Separations(ft): GEOID18 = -94.409 12B = -94.396 09 = -94.304 03 = -94.121

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AD-RN1054-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AD-RN1054-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AD-RN1054-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AE

NGS Name: 6907 AE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1056](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	6	50 N	17 W	465049.20	923229.18	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

Monument Type

COPPER CLAD ROD (NO SLEEVE) (DEPTH 26 FT)

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (2001)

Stamping: 6907 AE 1979

3.3 MILES EAST OF BROOKSTON, 3.05 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON) AT TRUNK HIGHWAY 2 MILEPOINT 240.9, 99.0 FEET NORTH OF TRUNK HIGHWAY 2, 20.0 FEET EAST OF A DRIVEWAY, 4.7 FEET NORTH-NORTHWEST OF A TELEPHONE CABLE MARKER NUMBER 731, 56.9 FEET EAST OF A RIGHT-OF-WAY MONUMENT, 7.3 FEET EAST-SOUTHEAST OF A POWER POLE NUMBER GL221, 7.2 FEET EAST-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1317.048	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1317.061	.016	2/2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1316.631	.016	2				VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1317.127	.262		1222.639	.197	2011	GPS - RTRN	2017	RTRN2017
			1222.586	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1222.675	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1317.058	.131		1222.790	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1317.058	.131		1222.790	.066	1996	GPS - STATIC	2003	HGRAND
1317.061	.131		1222.803	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1733
1317.058	.131		1222.790	.066	1996	GPS - STATIC	1999	HBROO

Geoid Separations(ft): GEOID18 = -94.491 12B = -94.485 09 = -94.393 03 = -94.491

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 49.20132	92 32 29.18249	477116.919	171867.440	.131	3	GPS - RTRN	2017	RTRN2017
46 50 49.20159	92 32 29.18281	477116.897	171867.467	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 49.20172	92 32 29.18369	477116.835	171867.480	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 49.20136	92 32 29.18365	477116.838	171867.444	.033	C	ADJUSTMENT	2004	GPS1957
46 50 49.20136	92 32 29.18365	477116.838	171867.444	.033	C	GPS - STATIC	2003	HGRAND
46 50 49.20136	92 32 29.18365	477116.838	171867.444	.033	1	ADJUSTMENT	2002	GPS1733
46 50 49.20136	92 32 29.18365	477116.838	171867.445	.033	C	GPS - STATIC	1999	HBROO
46 50 48.65195	92 32 29.55166	477091.191	171811.809	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 48.64626	92 32 29.55375	477091.045	171811.232	.066	2	ADJUSTMENT	1986	17289

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2764445.775	455157.228	1755120.147	17021829.836	.131	3	GPS - RTRN	2017	RTRN2017
2764445.753	455157.256	1755120.125	17021829.863	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2764445.692	455157.268	1755120.064	17021829.876	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2764445.695	455157.232	1755120.067	17021829.840	.033	C	ADJUSTMENT	2004	GPS1957
2764445.695	455157.232	1755120.067	17021829.840	.033	C	GPS - STATIC	2003	HGRAND
2764445.695	455157.232	1755120.067	17021829.840	.033	1	ADJUSTMENT	2002	GPS1733
2764445.695	455157.232	1755120.067	17021829.840	.033	C	GPS - STATIC	1999	HBROO
2764420.515	455101.384	1755094.821	17021774.051	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2764420.374	455100.806	1755094.679	17021773.474	.066	2	ADJUSTMENT	1986	17289

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AE-RN1056-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AE-RN1056-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AE-RN1056-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AF

NGS Name: 6907 AF

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1058](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1053
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	1	50 N	18 W	465054.42	923418.12	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 28 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1999) Stamping: 6907 AF 1979

2.0 MILES SOUTHEAST OF BROOKSTON, 1.55 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31(THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 237.40, 104.4 FEET SOUTH OF TRUNK HIGHWAY 2, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1259.587	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1268.252	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1267.793	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1263.580	.262			1169.027	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.554 12B = -94.554 09 = -94.452 03 = -94.285

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 54.42152	92 34 18.11911	469545.029	172406.635	.131	3	GPS - RTRN	2017	RTRN2017

NAD27					Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 54.61580	92 34 17.41540			.100		CLASSICAL SURVEY	1950	UNK

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2756869.708	455632.875	1747548.048	17022315.755	.131	3	GPS - RTRN	2017	RTRN2017

NAD27					Project Info			
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2132255.886	127568.966			.100		CLASSICAL SURVEY	1950	UNK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AF-RN1058-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AF-RN1058-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AF-RN1058-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AG

NGS Name: 6907 AG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1060](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	33	51 N	18 W	465117.23	923709.76	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2020	GOOD	Horz=YES Vert=YES	YES		PROJECTS 3 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 48 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2019) Stamping: 6907 AG 1979

1.0 MILE SOUTHWEST OF BROOKSTON, 0.8 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 237.1, 100.0 FEET NORTH OF TRUNK HIGHWAY 2, 16.3 FEET WEST-NORTHWEST OF CABLE MARKER POST NUMBER 12, 34.0 FEET WEST OF DRIVEWAY NUMBERS 8917 AND 8919, 1.0 FOOT EAST-SOUTHEAST OF A RIGHT-OF-WAY POST AND A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1254.584	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1254.597	.016	2/1					VERTICAL ADJUSTMENT	2011	00000672
1254.620	.016	2/1					VERTICAL CONTROL SURVEY	2007	VBROO
1254.597	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025
NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1253.984	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1254.597	.262			1159.942	.197	2011	GPS - OPUS	2020	GPSBM
1254.538	.262			1159.886	.197	2011	GPS - RTRN	2020	RTRN2020
1254.623	.262			1159.968	.197	2011	GPS - RTRN	2017	RTRN2017
				1159.922	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1160.027	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1254.591	.131			1160.162	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1254.591	.131			1160.162	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.655 12B = -94.655 09 = -94.557 03 = -94.399

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 17.22578	92 37 09.76483	457618.430	174739.267	.131	3	GPS - OPUS	2020	GPSBM	
46 51 17.22643	92 37 09.76340	457618.529	174739.332	.131	3	GPS - RTRN	2020	RTRN2020	
46 51 17.22604	92 37 09.76413	457618.478	174739.293	.131	3	GPS - RTRN	2017	RTRN2017	
46 51 17.22616	92 37 09.76415	457618.477	174739.305	.013		ADJUSTMENT	2012	GPS2800	
NAD83(2007)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 17.22628	92 37 09.76503	457618.416	174739.317	.013		ADJUSTMENT	2007	GPS2300	
NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 17.22604	92 37 09.76490	457618.425	174739.293	.033	C	ADJUSTMENT	2004	GPS1957	
46 51 17.22604	92 37 09.76490	457618.425	174739.293	.033	C	GPS - STATIC	2003	HGRAND	

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2744924.112	457865.425	1735610.755	17024563.755	.131	3	GPS - OPUS	2020	GPSBM
2744924.211	457865.491	1735610.854	17024563.821	.131	3	GPS - RTRN	2020	RTRN2020
2744924.161	457865.452	1735610.804	17024563.782	.131	3	GPS - RTRN	2017	RTRN2017
2744924.159	457865.464	1735610.802	17024563.794	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2744924.098	457865.476	1735610.741	17024563.805	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2744924.107	457865.451	1735610.750	17024563.781	.033	C	ADJUSTMENT	2004	GPS1957
2744924.107	457865.451	1735610.750	17024563.781	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AG-RN1060-3N-06JUL2020.jpg	N	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AG-RN1060-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AG-RN1060-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AH

NGS Name: 6907 AH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1062](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	36	51 N	19 W	465120.95	924050.27	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 19 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001) **Stamping:** 6907 AH 1979

4.3 MILES WEST-SOUTHWEST OF BROOKSTON, 3.9 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 234.2, NORTHEAST OF THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 848, 107.0 FEET NORTH OF TRUNK HIGHWAY 2, 25.0 FEET WEST OF COUNTY ROAD 848, 2.6 FEET WEST OF A STEVENS STREET SIGN POST, 3.3 FEET EAST OF A POWER POLE NUMBER GL122, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1333.406	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1333.423	.016	2/1					VERTICAL ADJUSTMENT	2011	00000672
1333.439	.016	2/1					VERTICAL CONTROL SURVEY	2007	VBROO
1333.423	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.796	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1333.610	.262			1238.935	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.672 09 = -94.590 03 = -94.449

Lat/Lon and County Coordinates (Feet)

NAD83(2011)			St Louis County - South Zone				Project Info		
Latitude	Longitude		X	Y	Acc	Order	Determination Method	Year	Reference
46 51 20.94904	92 40 50.27157		442293.305	175155.600	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)			UTM - Zone 15				Project Info		
MN State Plane - North Zone									
X	Y		X	Y	Acc	Order	Determination Method	Year	Reference
2729596.231	458153.429		1720290.010	17024872.537	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AH-RN1062-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AH-RN1062-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AH-RN1062-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AJ

NGS Name: 6907 AJ

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG5877](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	7	51 N	20 W	465516.54	925443.03	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2017	GOOD	Horz=NO Vert=NO	YES	69103	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (2002)

Stamping: 6907 AJ 1979

IN FLOODWOOD, IN THE ABUTMENT IN THE NORTHEAST CORNER OF TRUNK HIGHWAY 2 BRIDGE NUMBER 69103 OVER THE SAVANNA RIVER, 300.0 FEET NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 221.0, 25.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1250.805	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1250.765	.016	2/1					VERTICAL ADJUSTMENT	2004	00000464
1250.765	.016	2/1					VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1250.919	.262			1155.634	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.305 12B = -95.289 09 = -95.210 03 = -95.098

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 55 16.54103	92 54 43.02859			384555.021	199280.743	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2671659.838	481795.336			1662410.382	17048581.380	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AJ-DG5877-3NW-27JUL2017.jpg	NW	Jul 27, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AJ-DG5877-2-27JUL2017.jpg		Jul 27, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AJ-DG5877-1-27JUL2017.jpg		Jul 27, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AK

NGS Name: 6907 AK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ7554](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	2	50 N	17 W	465039.23	922752.02	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2007) Stamping: 6907 AK 2007

2.0 MILES SOUTHWEST OF SAGINAW, 0.3 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 2 MILEPOINT 244.55, 159.7 FEET SOUTH OF EASTBOUND TRUNK HIGHWAY 2, 28.4 FEET EAST OF AN ENTRANCE TO A WEIGH STATION, 8.6 FEET NORTH OF LIGHT POLE NUMBER 2241, 7.6 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1321.969	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1321.972	.016	2/1					VERTICAL ADJUSTMENT	2013	00000797
1321.976	.016	2/1					VERTICAL CONTROL SURVEY	2009	VBUSC

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1322.179	.262			1227.875	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.321 12B = -94.304 09 = -94.212 03 = -94.025

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 50 39.23365	92 27 52.02275	496383.458	170844.522	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2783720.034	454296.179	1774384.842	17020942.282	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AK-DO7554-3S-26JUL2017.jpg	S	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AK-DO7554-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AK-DO7554-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AL

NGS Name: 6907 AL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9899](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	2	50 N	18 W	465100.33	923449.80	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6907 AL 2017

16.7 MILES SOUTHEAST OF FLOODWOOD, 17.9 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 239.0, 41.5 FEET SOUTH OF TRUNK HIGHWAY 2, 128.1 FEET SOUTH-SOUTHWEST OF TRUNK HIGHWAY 2 MILEPOST 239, 92.5 FEET NORTHWEST OF A POWER POLE, 1.5 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1244.040	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1244.062	.262			1149.483	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.580 12B = -94.580 09 = -94.478 03 = -94.311

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 00.33049	92 34 49.80372			467343.536	173008.862	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2754663.266	456216.613			1745343.377	17022902.282	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AL-DQ9899-3S-09AUG2017.jpg	S	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AL-DQ9899-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AL-DQ9899-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AM

NGS Name: 6907 AM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9900](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	3	50 N	18 W	465114.54	923600.86	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6907 AM 2017

11.8 MILES NORTHWEST OF CLOQUET, 6.8 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 238.0, 83.1 FEET NORTH-NORTHEAST OF TRUNK HIGHWAY 2, 33.2 FEET SOUTHEAST OF SHINOB MNDT RM 1, 1.5 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1291.284	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1291.093	.262			1196.458	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.636 12B = -94.636 09 = -94.537 03 = -94.373

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		St Louis County - South Zone						Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 51 14.53821	92 36 00.86008	462407.111	174457.204	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2749714.930	457623.504	1740399.143	17024315.367	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AM-DQ9900-3SE-09AUG2017.jpg	SE	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AM-DQ9900-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AM-DQ9900-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AN

NGS Name: 6907 AN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9902](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	31	51 N	18 W	465120.74	924031.04	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 51 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6907 AN 2017

12.4 MILES EAST-SOUTHEAST OF FLOODWOOD, 13.35 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 234.45, 94.6 FEET NORTH OF TRUNK HIGHWAY 2, 79.9 FEET WEST-SOUTHWEST OF A POWER POLE, 5.0 FEET SOUTH OF A RIGHT-OF-WAY POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1330.092	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1330.073	.262		1235.401	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.672 09 = -94.586 03 = -94.445

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 20.73967	92 40 31.03648	443630.145	175130.500	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2730933.217	458139.516	1721626.387	17024856.814	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AN-DQ9902-3N-10AUG2017.jpg	N	Aug 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AN-DQ9902-2-10AUG2017.jpg		Aug 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AN-DQ9902-1-10AUG2017.jpg		Aug 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AP

NGS Name: 6907 AP

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9906](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	33	51 N	19 W	465112.46	924505.01	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6907 AP 2017

9.0 MILES SOUTHEAST OF FLOODWOOD, 9.75 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 238.85, 80.0 FEET NORTH OF TRUNK HIGHWAY 2, 23.7 FEET EAST OF AN ENTRANCE, 19.0 FEET SOUTH OF A FENCE LINE, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1328.885	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1328.642	.262			1233.977	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.665 09 = -94.583 03 = -94.458

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 12.45935	92 45 05.00912	424584.950	174355.523	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2711895.402	457205.338	1702595.743	17023948.772	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AP-DQ9906-3N-07AUG2017.jpg	N	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AP-DQ9906-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AP-DQ9906-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AQ

NGS Name: 6907 AQ

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9909](#)

[Get Map](#)

NGS Quad / Sta Num : 46092442/

USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	51 N	20 W	465109.41	924901.91	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6907 AQ 2017

6.9 MILES SOUTHEAST OF FLOODWOOD, 6.65 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 227.7, 86.9 FEET NORTH OF TRUNK HIGHWAY 2, 124.6 FEET WEST OF AN EXTENDED ENTRANCE, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1288.833	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1288.882	.262		1194.197	.197	2011	GPS - OPUS	2021	GPSBM
1288.839	.262		1194.154	.197	2011	GPS - RTRN	2021	RTRN2021
1288.820	.262		1194.148	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.685 12B = -94.672 09 = -94.586 03 = -94.472

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 09.41263	92 49 01.90679	408117.716	174117.052	.131	3	GPS - OPUS
46 51 09.41219	92 49 01.90550	408117.805	174117.007	.131	3	GPS - RTRN
46 51 09.41244	92 49 01.90568	408117.793	174117.033	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>			
2695430.929	456829.407	1686138.110	17023595.018	.131	3	GPS - OPUS
2695431.019	456829.362	1686138.200	17023594.973	.131	3	GPS - RTRN
2695431.006	456829.388	1686138.187	17023594.999	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AQ-DQ9909-3N-25JUL2021.jpg	N	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AQ-DQ9909-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AQ-DQ9909-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AR

NGS Name: 6907 AR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9910](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	35	51 N	20 W	465123.76	925007.77	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6907 AR 2017

6.2 MILES SOUTHEAST OF FLOODWOOD, 5.65 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 226.75, 38.8 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1265.729	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1265.644	.262			1170.920	.197	2011	GPS - RTRN	2021	RTRN2021
1265.680	.262			1170.969	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.724 12B = -94.711 09 = -94.623 03 = -94.511

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 51 23.76130	92 50 07.76594			403547.203	175592.793	.131	3	GPS - RTRN	2021	RTRN2021
46 51 23.76136	92 50 07.76479			403547.283	175592.798	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2690848.323	458266.956			1681559.460	17025038.012	.131	3	GPS - RTRN	2021	RTRN2021
2690848.403	458266.963			1681559.540	17025038.018	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AR-DQ9910-3NE-25JUL2021.jpg	NE	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AR-DQ9910-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AR-DQ9910-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AS

NGS Name: 6907 AS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9913](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	21	51 N	20 W	465254.82	925209.28	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 28 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6907 AS 2017

3.8 MILES SOUTHEAST OF FLOODWOOD, 3.3 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 224.35, 37.1 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1248.059	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1247.963	.262			1153.000	.197	2011	GPS - RTRN	2021	RTRN2021
1248.036	.262			1153.088	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.964 12B = -94.944 09 = -94.859 03 = -94.747

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 52 54.82252	92 52 09.28144	395151.025	184862.191	.131	3	GPS - RTRN	2021	RTRN2021	
46 52 54.82256	92 52 09.28114	395151.046	184862.195	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2682375.304	467465.893	1673102.360	17034244.080	.131	3	GPS - RTRN	2021	RTRN2021	
2682375.325	467465.897	1673102.381	17034244.084	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AS-DQ9913-3NE-25JUL2021.jpg	NE	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AS-DQ9913-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AS-DQ9913-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AT

NGS Name: 6907 AT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9914](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	21	51 N	20 W	465325.16	925237.89	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 32 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6907 AT 2017

3.0 MILES SOUTHEAST OF FLOODWOOD, 2.6 MILES ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 223.65, 41.1 FEET NORTHEAST OF TRUNK HIGHWAY 2, 92.5 FEET SOUTHEAST OF AN ENTRANCE, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1252.921	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1252.858	.262		1157.839	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.036 12B = -95.019 09 = -94.934 03 = -94.823

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 53 25.15671	92 52 37.89029	393180.350	187946.296	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2680379.041	470533.408	1671111.016	17037312.880	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AT-DQ9914-3NE-14AUG2017.jpg	NE	Aug 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AT-DQ9914-2-14AUG2017.jpg		Aug 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AT-DQ9914-1-14AUG2017.jpg		Aug 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 AU

NGS Name: 6907 AU

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9915](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	16	51 N	20 W	465357.49	925311.72	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 43 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6907 AU 2017

2.2 MILES SOUTHEAST OF FLOODWOOD, 1.85 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 222.9, 67.3 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 51.9 FEET SOUTHEAST OF AN ENTRANCE, 1.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1270.575	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1270.522	.262		1175.424	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.115 12B = -95.098 09 = -95.013 03 = -94.905

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 53 57.49484	92 53 11.72391	390848.587	191235.655	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2678020.010	473803.152	1668757.317	17040584.303	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AU-DQ9915-3SW-14AUG2017.jpg	SW	Aug 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AU-DQ9915-2-14AUG2017.jpg		Aug 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_AU-DQ9915-1-14AUG2017.jpg		Aug 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 B

NGS Name: 6907 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0780](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1050
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: KNG756 Get Map NGS Quad / Sta Num : 46092412/1050 USGS Quad: BROOKSTON			
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>				
NE	5	50 N	17 W	465048.23	923048.11	2	3				
<u>Year Set</u>			<u>Last Recovery</u>		<u>Condition</u>	<u>Geodetic Usability</u>		<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974			2017		GOOD	Horz=NO Vert=YES		YES		FLUSH	MARKER IS STEEL ROD
<u>Monument Type</u>							<u>Disk Type</u>		<u>Mon. Agency</u>		
COPPER CLAD ROD (NO SLEEVE) (DEPTH 24 FT)							VERTICAL CONTROL DISK		MNDT		

Description: (2001)

Stamping: 6907 B 1974

9.6 MILES NORTH-NORTHWEST OF CLOQUET, 2.7 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS NORTH-NORTHWEST OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 242.2, 102.0 FEET SOUTH OF TRUNK HIGHWAY 2, 97.50 FEET WEST-NORTHWEST OF INDU MNDT RM 3, 95.0 FEET WEST OF A RIGHT-OF-WAY POST, 53.0 FEET WEST OF AN ENTRANCE, 38.6 FEET EAST OF A POWER POLE, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1333.655	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1334.597	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1334.292	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1334.610	.262			1240.342	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.445 12B = -94.432 09 = -94.340 03 = -94.163

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 48.23033	92 30 48.10707			484143.083	171762.124	.131	3	ADJUSTMENT	17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 48.22459	92 30 48.10936			484142.923	171761.542	.131	3	ADJUSTMENT	17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 50 48.43201	92 30 47.40857					.100	3	CLASSICAL SURVEY	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2771472.504	455110.900			1762143.753	17021773.764	.131	3	ADJUSTMENT	17648
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2771472.349	455110.317			1762143.597	17021773.182	.131	3	ADJUSTMENT	17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Reference</u>
<u>X</u>	<u>Y</u>								
2146858.747	127047.778					.100	3	CLASSICAL SURVEY	15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_B-RN0780-3SW-25JUL2017.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_B-RN0780-2-25JUL2017.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_B-RN0780-1-25JUL2017.jpg

<u>Dir</u>	<u>Date</u>
SW	Jul 25, 2017
	Jul 25, 2017
	Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 C

NGS Name: 6907 C

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	50 N	17 W	465048.00	923159.00	2	

NGS ACRN: [RN0779](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	NOT FOUND	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type

COPPER CLAD ROD (NO SLEEVE) (DEPTH 24 FT)

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (1974)

Stamping: 6907 C 1974

3.7 MILES EAST-SOUTHEAST OF BROOKSTON, 2.0 MILES EAST OF THE EAST END OF TRUNK HIGHWAY 2 BRIDGE NUMBER 5190 OVER A RAILROAD AND THE ST. LOUIS RIVER, AT TRUNK HIGHWAY 2 MILEPOINT 241.25, 101.5 FEET SOUTH OF TRUNK HIGHWAY 2, 12.0 FEET EAST OF AN ENTRANCE SOUTH, 100.5 FEET NORTH OF THE NORTHEAST CORNER OF A GARAGE, 0.3 FOOT NORTH OF AN EAST-WEST FENCE LINE AND A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1319.361	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1318.938	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Geoid Separations(ft): GEOID18 = -94.488 12B = -94.481 09 = -94.390 03 = -94.212

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 D

NGS Name: 6907 D

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465057.00	923429.00	2	

NGS ACRN: RN0772	Get Map
NGS Quad / Sta Num : 46092412/	
USGS Quad: BROOKSTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1977	DESTROYED	Horz=NO Vert=NO	NO	5190		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6907 D 1974

1.1 MILES EAST OF CLOQUET, 1.1 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2
AND TRUNK HIGHWAY 31 IN CLOQUET.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1256.129	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1255.660	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.567 12B = -94.567 09 = -94.462 03 = -94.294

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 D RESET 1977

NGS Name: 6907 D RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1064](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465054.00	923430.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2006	DESTROYED	Horz=NO Vert=NO	NO	5190		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL - LIGHT RETAINING	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6907 D 1974 RESET 1977

1.8 MILES SOUTHEAST OF BROOKSTON, 1.4 MILES EAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 239.25, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 2 BRIDGE NUMBER 5190 OVER A RAILROAD AND THE ST. LOUIS RIVER, 18.5 FEET SOUTH OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1255.841	.016	3				VERTICAL CONTROL SURVEY	1977 CS6907
1255.680	.033	3				VERTICAL CONTROL SURVEY	1977 CS6907

Geoid Separations(ft): GEOID18 = -94.557 12B = -94.557 09 = -94.455 03 = -94.288

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 E

NGS Name: 6907 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0771](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	18 W	465059.00	923439.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1977	DESTROYED	Horz=NO Vert=NO	NO	5190		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6907 E 1974

0.9 MILE EAST OF CLOQUET, 0.9 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 31 IN CLOQUET.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1256.231	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1255.759	.016	2				VERTICAL CONTROL SURVEY		1974	L23566

Geoid Separations(ft): GEOID18 = -94.573 12B = -94.573 09 = -94.472 03 = -94.304

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 E RESET 1977

NGS Name: 6907 E RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1065](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	18 W	465100.00	923442.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2005	DESTROYED	Horz=NO Vert=NO	NO	5190		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6907 E 1974 RESET 1977

1.7 MILES SOUTHEAST OF BROOKSTON, 1.25 MILES EAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, IN THE NORTHWEST CORNER OF TRUNK HIGHWAY 2 BRIDGE NUMBER 5190, AT TRUNK HIGHWAY 2 MILEPOINT 239.1, 18.5 FEET NORTH OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1255.755	.016	3				VERTICAL CONTROL SURVEY		1977	CS6907

Geoid Separations(ft): GEOID18 = -94.577 12B = -94.577 09 = -94.475 03 = -94.308

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 F

NGS Name: 6907 F

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	51 N	18 W	465142.00	923618.00	2	

NGS ACRN: [RN0685](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	YES	7698		NO MAG MATERIAL

Monument Type
BRIDGE CURB

Disk Type
VERTICAL CONTROL DISK

Mon. Agency
MNDT

Description: (1974)

Stamping: 6907 F 1974

AT THE SOUTH EDGE OF BROOKSTON, 0.5 MILE NORTH ON COUNTY ROAD 31 FROM THE JUNCTION OF COUNTY ROAD 31 AND TRUNK HIGHWAY 2, IN THE NORTHEAST CURB OF COUNTY ROAD 31 BRIDGE NUMBER 7698 OVER STONEY BROOK, 12.4 FEET EAST OF COUNTY ROAD 31, 3.2 FEET SOUTH OF THE NORTH END OF A CURB, 3.0 FEET SOUTH OF A CHISELED SQUARE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1229.712	.016	2/1				VERTICAL ADJUSTMENT	2011 00000672
1229.742	.016	2/1				VERTICAL CONTROL SURVEY	2007 VBROO
1229.742	.016	2				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1229.135	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Geoid Separations(ft): GEOID18 = -94.714 12B = -94.711 09 = -94.616 03 = -94.452

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_F-RN0685-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_F-RN0685-2-01NOV2006.jpg		Nov 1, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_F-RN0685-1-01NOV2006.jpg		Nov 1, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 F 1

NGS Name: 6907 F 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0687](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	27	51 N	18 W	465209.00	923610.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1984	DESTROYED	Horz=NO Vert=NO	NO			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	SURVEY DISK	MNDT

Description: (1984)

Stamping: 6907 F1 1974

IN BROOKSTON, IN THE SOUTHEAST CORNER OF A COUNTY ROAD 31 BRIDGE OVER THE ST. LOUIS RIVER, 1.05 MILES NORTH ALONG COUNTY ROAD 31 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, 11.8 FEET EAST OF COUNTY ROAD 31.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1230.959	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1230.355	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Geoid Separations(ft): GEOID18 = -94.790 12B = -94.787 09 = -94.691 03 = -94.527

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 G

NGS Name: 6907 G

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0767](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	3	50 N	18 W	465115.00	923624.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	NO	5192		NO MAG MATERIAL

Monument Type

CONCRETE FOOTING - LARGE

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1974)

Stamping: 6907 G 1974

0.5 MILE SOUTH OF BROOKSTON, 0.15 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 237.75, 16.9 FEET SOUTH OF TRUNK HIGHWAY 2, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 2 BRIDGE NUMBER 5192 OVER STONEY BROOK.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1241.622	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1241.011	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.632 12B = -94.632 09 = -94.537 03 = -94.373

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 G 1

NGS Name: 6907 G 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM4176](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	35	51 N	18 W	465128.00	923518.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2006	2017	NOT FOUND	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SURVEY DISK	MNDT

Description: (2006)

Stamping: 6907 G 1 2006

1.0 MILES SOUTHEAST OF BROOKSTON, 1.40 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 NORTH (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON) TO TRUNK HIGHWAY 2 MILEPOINT 238.60, THEN 0.75 MILE NORTHERLY ON A ROAD TO THE BROOKSTON TRANSFER STATION FIRE NUMBER 8609, 50.5 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A BUILDING, 10.0 FEET NORTHEAST OF THE NORTHWEST CORNER OF A WEIGHT STATION BUILDING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1283.665	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1283.698	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO

Geoid Separations(ft): GEOID18 = -94.665 12B = -94.665 09 = -94.563 03 = -94.399

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_G_1-DM4176-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_G_1-DM4176-2-16AUG2007.jpg		Aug 16, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_G_1-DM4176-1-16AUG2007.jpg		Aug 16, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 H

NGS Name: 6907 H

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0766](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	33	51 N	18 W	465118.00	923707.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	YES			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - MEDIUM	SURVEY DISK	MNDT

Description: (1979)

Stamping: 6907 H 1974

0.8 MILE SOUTHWEST OF BROOKSTON, 0.7 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 237.2, 29.7 FEET NORTH OF A TRUNK HIGHWAY 2, IN THE NORTHWEST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.356	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1250.742	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.655 12B = -94.655 09 = -94.560 03 = -94.403

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_H-RN0766-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 J

NGS Name: 6907 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0758](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	6	50 N	18 W	465118.00	924007.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2007	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	SURVEY DISK	MNDT

Description: (2001)

Stamping: 6907 J 1974

3.2 MILES WEST-SOUTHWEST OF BROOKSTON, 3.1 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 234.75, 26.7 FEET SOUTH OF A TRUNK HIGHWAY 2, 85.0 FEET EAST OF A TOWNSHIP ROAD SOUTH, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT.

Station Notes

THE GEODETIC UNIT COULD NOT FIND ON 8-29-01, NO BOX CULVERTS IN THE AREA.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1318.459	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1317.802	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.665 09 = -94.577 03 = -94.436

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 K

NGS Name: 6907 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0753](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1060
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	36	51 N	19 W	465119.09	924155.81	2	3	1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 16 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 K 1974

4.4 MILES WEST-SOUTHWEST OF BROOKSTON, 0.85 MILE WEST ON TRUNK HIGHWAY 2 FROM COUNTY ROAD 848, 0.15 MILE WEST ON TRUNK HIGHWAY 2 FROM COUNTY ROAD 847, 103.5 FEET NORTH OF TRUNK HIGHWAY 2, 21.0 FEET SOUTH-SOUTHWEST OF A POWER POLE, 3.2 FEET EAST OF THE SOUTHEAST CORNER OF A TOWN HALL BUILDING, 175.1 FEET NORTHWEST OF STATION ENG MNDT, 162.4 FEET WEST-NORTHWEST OF ENG MNDT RM 1.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1367.189	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1367.182	.016	2/1					VERTICAL ADJUSTMENT	2011	00000672
1367.202	.016	2/1					VERTICAL CONTROL SURVEY	2007	VBROO
1367.107	.016	2					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1366.470	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1367.307	.262			1272.639	.197	2011	GPS - RTRN	2017	RTRN2017
1367.123	.262			1272.589	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.586 03 = -94.452

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 19.09034	92 41 55.80499			437737.927	174981.209	.131	3	GPS - RTRN	2017 RTRN2017
<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 19.09184	92 41 55.80707			437737.783	174981.362	.131	3	ADJUSTMENT	1999 17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 19.08507	92 41 55.80880			437737.660	174980.676	.131	3	ADJUSTMENT	1986 17289
<u>NAD27</u>								<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 19.28256	92 41 55.10607					.100	3	CLASSICAL SURVEY	1977 15924



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725042.528	457940.940	1715738.030	17024666.315	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725042.383	457941.091	1715737.885	17024666.467	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725042.266	457940.404	1715737.768	17024665.781	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2100427.422	129876.721			.100	3	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_K-RN0753-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_K-RN0753-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_K-RN0753-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 L

NGS Name: 6907 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0750](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	34	51 N	19 W	465114.14	924425.99	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 6 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 8 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 L 1974

1.7 MILES SOUTHEAST OF PAUPORES, 6.5 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 231.38, 110.0 FEET NORTH OF TRUNK HIGHWAY 2, 71.0 FEET WEST-NORTHWEST OF A POWER POLE, 9.5 FEET NORTH OF A BARBED WIRE FENCE, 0.5 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1341.579	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1341.562	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1341.569	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1341.529	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1340.893	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1341.805	.262		1247.140	.197	2011	GPS - RTRN	2017	RTRN2017
			1246.874	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1246.963	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1341.533	.131		1247.094	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1341.533	.131		1247.094	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.665 09 = -94.583 03 = -94.458

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 51 14.13949	92 44 25.98857	427297.745	174515.511	.131	3	GPS - RTRN	2017	RTRN2017
46 51 14.13937	92 44 25.98847	427297.752	174515.499	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 51 14.13949	92 44 25.98932	427297.693	174515.512	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 51 14.13912	92 44 25.98890	427297.722	174515.474	.033	C	ADJUSTMENT	2004	GPS1957
46 51 14.13912	92 44 25.98890	427297.722	174515.474	.033	C	GPS - STATIC	2003	HGRAND



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714606.734	457387.985	1705306.115	17024127.692	.131	3	GPS - RTRN	2017	RTRN2017
2714606.740	457387.973	1705306.122	17024127.680	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714606.681	457387.985	1705306.063	17024127.692	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714606.711	457387.947	1705306.092	17024127.654	.033	C	ADJUSTMENT	2004	GPS1957
2714606.711	457387.947	1705306.092	17024127.654	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_L-RN0750-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_L-RN0750-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_L-RN0750-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 M

NGS Name: 6907 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0748](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	50 N	19 W	465110.00	924549.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	SURVEY DISK	MNDT

Description: (1978)

Stamping: 6907 M 1974

1.9 MILES WEST OF BROOKSTON, 1.9 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 845 IN BROOKSTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.474	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.851	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.665 09 = -94.580 03 = -94.455

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 M RESET

NGS Name: 6907 M RESET

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	4	50 N	19 W	465109.67	924549.88	2	3

NGS ACRN: [RN1820](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 M 1974 RESET 1978

1.4 MILES SOUTH OF PAUPORES, IN THE SOUTHWEST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT AT A SMALL CREEK, 4.4 MILES SOUTHEAST AND EAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN, AT TRUNK HIGHWAY 2 MILEPOINT 230.3, 42.0 FEET SOUTH OF TRUNK HIGHWAY 2, 200.0 FEET EAST OF NYGAARD ROAD NORTH.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1292.383	.016	2/1					VERTICAL ADJUSTMENT		2021	00000963
1292.376	.016	2/1					VERTICAL ADJUSTMENT		2011	00000672
1292.376	.016	2/1					VERTICAL CONTROL SURVEY		2007	VBROO

NGVD29				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1291.808	.016	2					VERTICAL CONTROL SURVEY		1978	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference
1292.635	.262			1197.970	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.665 09 = -94.580 03 = -94.455

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Determination Method		Project Info	
Geodetic Position				X	Y	Acc	Order			Year	Reference
Latitude	Longitude										
46 51 09.67180	92 45 49.87647			421465.269	174085.333	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Determination Method		Project Info	
MN State Plane - North Zone				X	Y	Acc	Order			Year	Reference
2708778.124	456909.102			1699479.455	17023656.852	.131	3	GPS - RTRN		2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_M_RESET-RN1820-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_M_RESET-RN1820-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_M_RESET-RN1820-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 N

NGS Name: 6907 N

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	50 N	19 W	465108.00	924702.64	2	3

NGS ACRN: RN0745	Get Map
NGS Quad / Sta Num : 46092442/1064	
USGS Quad: GOWAN	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 8 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 10 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 N 1974

7.7 MILES SOUTHWEST OF FLOODWOOD, 8.3 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 229.3, 118.3 FEET SOUTH OF TRUNK HIGHWAY 2, 50.8 FEET SOUTH OF STATION PAUP MNDT, 85.0 FEET SOUTHWEST OF A POWER POLE NUMBER 11514, 30.0 FEET SOUTHWEST OF A RIGHT-OF-WAY POST, 26.0 FEET SOUTH OF AN EAST-WEST POWER LINE CROSSING, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1342.048	.016	2/1					VERTICAL ADJUSTMENT	2021 00000963
1342.048	.016	2/1					VERTICAL ADJUSTMENT	2011 00000672
1342.048	.016	2/1					VERTICAL CONTROL SURVEY	2007 VBROO
1342.048	.016	2/1					VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1341.421	.016	2					VERTICAL CONTROL SURVEY	1974 L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1342.556	.262			1247.894	.197	2011	GPS - RTRN	2017 RTRN2017
1342.058	.262			1247.543	.197	1996	HORIZONTAL ADJUSTMENT	1999 17648

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.662 09 = -94.577 03 = -94.458

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u> <u>Order</u> <u>Determination Method</u>		
46 51 07.99967	92 47 02.64296			416406.770	173936.818	.131 3 GPS - RTRN	2017	RTRN2017
<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u> <u>Order</u> <u>Determination Method</u>		
46 51 08.00018	92 47 02.64232			416406.815	173936.870	.131 3 ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u> <u>Order</u> <u>Determination Method</u>		
46 51 07.99302	92 47 02.64392			416406.701	173936.145	.131 3 ADJUSTMENT	1986	17289
<u>NAD27</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>		<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u> <u>Order</u> <u>Determination Method</u>		
46 51 08.19192	92 47 01.93258					.100 3 CLASSICAL SURVEY	1977	15924



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2703721.101	456718.355	1694424.431	17023472.961	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2703721.146	456718.407	1694424.476	17023473.013	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2703721.037	456717.681	1694424.367	17023472.287	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2079106.161	128654.091			.100	3	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_N-RN0745-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_N-RN0745-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_N-RN0745-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 P

NGS Name: 6907 P

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0743](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	31	51 N	19 W	465110.15	924738.90	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 16 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6907 P 1974

7.2 MILES SOUTHEAST OF FLOODWOOD, 8.0 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 SOUTH IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 228.8, 135.8 FEET NORTH OF TRUNK HIGHWAY 2, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1328.882	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1328.879	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1328.879	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1328.879	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1328.252	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1329.125	.262		1234.453	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.672 09 = -94.583 03 = -94.465

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Reference
46 51 10.14653	92 47 38.90044	413887.558	174165.233	.131	3	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Project Info		
X	Y	X	Y	Acc	Order	Reference
2701200.100	456925.731	1691904.832	17023683.612	.131	3	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_P-RN0743-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_P-RN0743-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_P-RN0743-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 Q

NGS Name: 6907 Q

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0678](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	36	51 N	20 W	465109.00	924919.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

WALL

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (2001)

Stamping: 6907 Q 1974

1.5 MILES SOUTHEAST OF GOWAN, 1.6 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 227.45, 23.5 FEET NORTH OF TRUNK HIGHWAY 2, IN THE NORTHWEST CORNER OF A TRUNK HIGHWAY 2 DOUBLE BOX CULVERT AT THE AMIK RIVER, THE GEODETIC UNIT REPORTED ON 8-29-01 THE BOX THE CULVERT WAS GONE, AND A NEW CULVERT IS PRESENT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.378	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1264.751	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Geoid Separations(ft): GEOID18 = -94.685 12B = -94.672 09 = -94.583 03 = -94.468

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 R

NGS Name: 6907 R

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0677](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1066
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	20 W	465108.07	924944.39	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 14 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 R 1974

1.3 MILES SOUTHEAST OF GOWAN, 1.3 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN, AT TRUNK HIGHWAY 2 MILEPOINT 227.15, 27.0 FEET SOUTH OF A TOWNSHIP ROAD, 60.0 FEET SOUTH OF A STATION CARTY MNDT, 1.0 FOOT NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.573	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1297.547	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1296.920	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.799	.262		1203.131	.197	2011	GPS - RTRN	2017	RTRN2017
1297.537	.262		1203.039	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.668 09 = -94.580 03 = -94.468

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 51 08.06596	92 49 44.39267	405163.996	173994.666	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 51 08.06893	92 49 44.39155	405164.076	173994.967	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 51 08.06211	92 49 44.39305	405163.968	173994.276	.131	3	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
46 51 08.26134	92 49 43.67713			.100	3	CLASSICAL SURVEY	1977	15924



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2692478.368	456682.388	1683186.674	17023451.989	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2692478.445	456682.689	1683186.751	17023452.290	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2692478.343	456681.998	1683186.648	17023451.599	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2067863.451	128618.413			.100	3	CLASSICAL SURVEY	1977	15924

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_R-RN0677-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_R-RN0677-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_R-RN0677-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 S

NGS Name: 6907 S

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0673](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	35	51 N	20 W	465122.00	925004.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	VERTICAL CONTROL DISK	MNDT

Description: (1978)

Stamping: 6907 S 1974

5.4 MILES WEST OF BROOKSTON, 5.4 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 845 IN BROOKSTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.835	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.208	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.718 12B = -94.708 09 = -94.619 03 = -94.504

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 S RESET

NGS Name: 6907 S RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1742](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	35	51 N	20 W	465122.36	925004.91	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6907 S RESET 1974 1978

IN THE NORTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT, 0.9 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN, AT TRUNK HIGHWAY 2 MILEPOINT 226.7, 81.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1250.841	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1250.106	.016	2					VERTICAL CONTROL SURVEY	1978	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1250.726	.262			1156.018	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.721 12B = -94.708 09 = -94.619 03 = -94.508

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
46 51 22.35654	92 50 04.90949			403745.033	175449.491	.131	3	GPS - RTRN	2017
									RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
2691047.338	458125.311			1681758.199	17024896.167	.131	3	GPS - RTRN	2017
									RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_S_RESET-RN1742-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_S_RESET-RN1742-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_S_RESET-RN1742-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 T

NGS Name: 6907 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0667](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1069
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	27	51 N	20 W	465201.59	925100.92	2	3	1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 21 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6907 T 1974

4.75 MILES SOUTHEAST OF FLOODWOOD, 4.65 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 225.75, 121.4 FEET NORTHEAST OF TRUNK HIGHWAY 2, 86.5 FEET SOUTHWEST OF THE SOUTHWEST MAIN RAILROAD TRACKS, 67.6 FEET NORTH OF GOW MNDT RM 2, 1.2 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1252.537	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1252.520	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1251.914	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1252.524	.262			1157.868	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.826 12B = -94.813 09 = -94.724 03 = -94.609

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u>
46 52 01.59336	92 51 00.91764			399872.644	179444.338	.131	3	ADJUSTMENT	1999

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u>
46 52 01.58677	92 51 00.91937			399872.521	179443.671	.131	3	ADJUSTMENT	1986

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u>
46 52 01.78709	92 51 00.20338					.100	3	CLASSICAL SURVEY	1977

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Year</u>
2687141.831	462087.676			1677859.679	17028861.942	.131	3	ADJUSTMENT	1999

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Year</u>
2687141.714	462087.008			1677859.560	17028861.274	.131	3	ADJUSTMENT	1986

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Reference</u>
<u>X</u>	<u>Y</u>								<u>Year</u>
2062526.655	134023.494					.100	3	CLASSICAL SURVEY	1977



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_T-RN0667-3N-24JUL2017.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_T-RN0667-2-24JUL2017.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_T-RN0667-1-24JUL2017.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jul 24, 2017
	Jul 24, 2017
	Jul 24, 2017



Mn/DOT Name: 6907 U

NGS Name: 6907 U

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	51 N	20 W	465239.20	925152.10	2	

NGS ACRN:	RN0665	Get Map
NGS Quad / Sta Num :	46092441/	
USGS Quad:	MCCARTY RIVER	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=NO	NO	RR		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	SURVEY DISK	MNDT

Description: (2001)

Stamping: 6907 U 1974

1.3 MILES NORTHWEST OF GOWAN, IN THE SOUTHEAST CORNER OF A RAILROAD CULVERT AT A SMALL CREEK, 1.3 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 224.7, 167.8 FEET NORTHEAST OF TRUNK HIGHWAY 2, 146.2 FEET NORTH-NORTHEAST OF A RAILROAD SIGN, 15.0 FEET NORTHEAST OF THE NORTHEAST RAIL THE OF A RAILROAD TRACKS.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1240.381	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1239.791	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.921 12B = -94.908 09 = -94.819 03 = -94.708

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 V

NGS Name: 6907 V

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0662](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	51 N	20 W	465330.00	925242.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1977	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	SURVEY DISK	MNDT

Description: (1977)

Stamping: 6907 V 1974

8.6 MILES WEST OF BROOKSTON, 8.6 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 845 IN BROOKSTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1253.410	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1252.826	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Geoid Separations(ft): GEOID18 = -95.046 12B = -95.033 09 = -94.947 03 = -94.836

* No Horizontal Positions in the Database *



Mn/DOT Name: 6907 V RESET

NGS Name: 6907 V RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1741](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	51 N	20 W	465330.00	925242.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	VERTICAL CONTROL DISK	MNDT

Description: (2019)

Stamping: 6907V 1974 RESET 1977

2.4 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN, AT TRUNK HIGHWAY 2 MILEPOINT 223.55, 72.0 FEET NORTHEAST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1250.486	.016	2				VERTICAL CONTROL SURVEY	1977	L23566	

Geoid Separations(ft): GEOID18 = -95.049 12B = -95.033 09 = -94.947 03 = -94.836

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_V_RESET-RN1741-3N-24JUL2017.jpg	N	Jul 24, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 W

NGS Name: 6907 W

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0660](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1072
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	16	51 N	20 W	465354.82	925305.31	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	1999	GOOD	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
COPPER CLAD ROD (NO SLEEVE) (DEPTH 24 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2001) Stamping: 6907 W 1974

2.0 MILES SOUTHEAST OF FLOODWOOD, 1.9 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 223.05, 109.7 FEET NORTHEAST OF TRUNK HIGHWAY 2, 97.5 FEET SOUTHEAST OF APCO MNDT RM 1, 96.56 FEET EAST-SOUTHEAST OF STATION APCO MNDT, 16.6 FEET SOUTHWEST OF RAILROAD MILEPOST 73, 3.8 FEET NORTHWEST OF A TELEPHONE POLE NUMBER A115, 0.8 FOOT SOUTHWEST OF A WITNESS POST, 100.3 FEET EAST-SOUTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1263.400	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1262.822	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1263.383	.262			1168.459	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.108 12B = -95.092 09 = -95.006 03 = -94.898

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X		Y		Year	Reference
Latitude	Longitude								
46 53 54.81986	92 53 05.31221			391292.352		190962.158		1999	17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X		Y		Year	Reference
Latitude	Longitude								
46 53 54.81310	92 53 05.31463			391292.180		190961.474		1986	17289

NAD27								Project Info	
Geodetic Position				X		Y		Year	Reference
Latitude	Longitude								
46 53 55.01425	92 53 04.59707							1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X		Y		Year	Reference
2678466.028	473533.368			1669202.786		17040314.049		1999	17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X		Y		Year	Reference
2678465.861	473532.682			1669202.619		17040313.365		1986	17289

NAD27								Project Info	
MN State Plane - North Zone				X		Y		Year	Reference
2053850.626	145469.180							1977	15924



Mn/DOT Name: 6907 X

NGS Name: 6907 X

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0652](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NE	7	51 N	20 W	465517.40	925441.75	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2006	GOOD	Horz=NO Vert=NO	NO	RR		NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE ABUTMENT	VERTICAL CONTROL DISK	MNDT

Description: (1999)

Stamping: 6907 X 1974

0.05 MILE NORTH OF THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 AT FLOODWOOD, IN THE SOUTHWEST CORNER OF A RAILROAD BRIDGE OVER THE SAVANNA RIVER, AT TRUNK HIGHWAY 2 MILEPOINT 220.95, 22.0 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 13.1 FEET NORTH-NORTHEAST OF THE SOUTHWEST END OF A BRIDGE ABUTMENT, 2.5 FEET NORTHEAST OF THE SOUTHWEST EDGE OF CONCRETE.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.694	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1247.694	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO
1247.694	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.137	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
			1152.383	.013	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1152.475	.013	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1247.701	.131		1152.531	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1247.701	.131		1152.531	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.308 12B = -95.289 09 = -95.213 03 = -95.098

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 17.40172	92 54 41.74563	384644.594	199367.422	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 17.40181	92 54 41.74649	384644.535	199367.431	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 17.40164	92 54 41.74582	384644.581	199367.414	.033	C	ADJUSTMENT	2003	GPS1769
46 55 17.40164	92 54 41.74582	384644.582	199367.413	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671748.685	481882.754	1662499.305	17048668.644	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671748.625	481882.763	1662499.245	17048668.654	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671748.672	481882.746	1662499.292	17048668.636	.033	C	ADJUSTMENT	2003	GPS1769
2671748.672	481882.747	1662499.292	17048668.637	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6907 Y

NGS Name: 6907 Y

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9892](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	3	50 N	17 W	465046.71	922907.24	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) **Stamping:** 6907 Y 2017

9.2 MILES NORTH OF CLOQUET, 1.3 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 243.5, 59.1 FEET SOUTH OF TRUNK HIGHWAY 2, 22.2 FEET WEST OF DRIVEWAY NUMBER 7642, 2.1 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1303.049	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1303.072	.262		1208.698	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.386 12B = -94.373 09 = -94.281 03 = -94.098

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 50 46.70771	92 29 07.23575	491155.107	171603.440	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2778485.541	455011.123	1769153.612	17021664.246	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Y-DQ9892-3S-09AUG2017.jpg	S	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Y-DQ9892-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Y-DQ9892-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6907 Z

NGS Name: 6907 Z

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9894](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	5	50 N	17 W	465049.52	923131.04	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 33 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6907 Z 2017

8.3 MILES SOUTH OF CLOQUET, 3.3 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 240.35, 73.4 FEET NORTH OF TRUNK HIGHWAY 2, 20.7 FEET EAST OF AN ENTRANCE, 29.9 FEET SOUTHWEST OF A POWER POLE NUMBER GL232, 6.0 FEET EAST-SOUTHEAST OF A CABLE BOX, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1323.157	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1323.150	.262			1228.692	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.465 12B = -94.458 09 = -94.367 03 = -94.189

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 50 49.52444	92 31 31.04036	481158.692	171895.880	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2768487.126	455219.592	1759159.824	17021886.562	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Z-DQ9894-3N-09AUG2017.jpg	N	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Z-DQ9894-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6907_Z-DQ9894-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6908 AN

NGS Name: 6908 AN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0373](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	1	50 N	17 W	465039.14	922603.44	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (2001)

Stamping: 6908 AN 1974

1.0 MILE SOUTH-SOUTHEAST OF SAGINAW, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT AT A SMALL CREEK, 1.1 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 0.85 MILE WEST OF THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 194, 68.0 FEET SOUTH OF TRUNK HIGHWAY 2, 208.0 FEET WEST OF TRUNK HIGHWAY 2 MILEPOST 246.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1320.289	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1320.316	.016	2/1					VERTICAL ADJUSTMENT	2013	00000797
1320.316	.016	2/1					VERTICAL CONTROL SURVEY	2009	VBUSC
1320.296	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1320.043	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1320.545	.262			1226.320	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.239 12B = -94.226 09 = -94.130 03 = -93.937

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 39.14005	92 26 03.43761	503932.133	170835.100	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2791268.449	454350.232	1781930.085	17020985.701	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6908_AN-RN0373-3S-26JUL2017.jpg	S	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6908_AN-RN0373-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6908_AN-RN0373-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 A

NGS Name: 6911 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0386](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1171
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	36	50 N	17 W	464609.19	922657.85	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (<10 FT) (DEPTH 12 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1974) Stamping: 6911 A 1974

3.0 MILES NORTH OF CLOQUET, 4.1 MILES NORTH OF THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 45, THEN 200.0 FEET SOUTH ON COUNTY ROAD 696, 28.0 FEET EAST OF COUNTY ROAD 696.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1298.209	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1297.937	.016	2					VERTICAL CONTROL SURVEY	1974	L23566
1297.937	.016	2					VERTICAL CONTROL SURVEY	1974	L23563

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1298.226	.262			1204.807	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -93.602 12B = -93.586 09 = -93.500 03 = -93.317

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 09.18527	92 26 57.84713	500149.873	143483.538	.131	3	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 09.17945	92 26 57.85171	500149.554	143482.948	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 09.38710	92 26 57.15077			.100	3	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787716.355	426967.820	1778340.908	16993620.384	.131	3	ADJUSTMENT			1999	17648

<u>NAD83(1986)</u>		<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787716.042	426967.228	1778340.594	16993619.793	.131	3	ADJUSTMENT			1986	17289

<u>NAD27</u>		<u>MN State Plane - North Zone</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2163102.994	98904.886			.100	3	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: 6911 AA

NGS Name: 6911 AA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1877](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	35	51 N	17 W	465150.02	922738.06	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 62 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6911 AA 2017

10.3 MILES NORTH OF CLOQUET, 1.3 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 12.6, 40.3 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1366.910	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1366.933	.262		1272.458	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.488 12B = -94.475 09 = -94.376 03 = -94.186

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 51 50.02377	92 27 38.06393	497354.821	178016.698	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2784631.059	461476.179	1775305.542	17028117.928	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AA-DR1877-3E-15AUG2017.jpg	E	Aug 15, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AA-DR1877-2-15AUG2017.jpg		Aug 15, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AA-DR1877-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 AB

NGS Name: 6911 AB

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1876](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	22	51 N	17 W	465300.39	922811.73	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 13 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** 6911 AB 2017

11.6 MILES NORTH OF CLOQUET, 2.8 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 14.15, 47.4 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 37.1 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 314.1 FEET NORTH OF A CROSSOVER FOR COUNTY ROAD 874 (INDEPENDENCE ROAD), 12.9 FEET SOUTH OF A LEFT TURN LANE SIGN POST, 1.5 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.516	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.529	.262			1266.845	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.688 12B = -94.685 09 = -94.570 03 = -94.383

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 53 00.38595	92 28 11.73437	495016.771	185146.145	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2782233.203	468585.598	1772918.647	17035227.695	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AB-DR1876-3N-15AUG2017.jpg	N	Aug 15, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AB-DR1876-2-15AUG2017.jpg		Aug 15, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AB-DR1876-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 AC

NGS Name: 6911 AC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1873](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	51 N	17 W	465449.08	922814.55	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6911 AC 2017

13.8 MILES NORTH OF CLOQUET, 4.9 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 16.20, 72.8 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1342.442	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1342.471	.262		1247.494	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.977 12B = -94.980 09 = -94.855 03 = -94.662

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 54 49.08355	92 28 14.55483	494823.750	196159.319	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2781947.628	479596.497	1772648.556	17046234.409	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AC-DR1873-3W-16AUG2017.jpg	W	Aug 16, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AC-DR1873-2-16AUG2017.jpg		Aug 16, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AC-DR1873-1-16AUG2017.jpg		Aug 16, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 AD

NGS Name: 6911 AD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1871](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	34	52 N	17 W	465619.42	922816.62	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** 6911 AD 2017

15.5 MILES NORTH OF CLOQUET, 6.6 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 17.9, 94.6 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 29.4 FEET NORTH OF ENTRANCE NUMBER 5901, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1356.887	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1357.081	.262			1261.858	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.223 12B = -95.223 09 = -95.095 03 = -94.901

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 56 19.41930	92 28 16.62035	494682.828	205312.119	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781729.790	488747.503	1772443.546	17055381.979	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AD-DR1871-3W-16AUG2017.jpg	W	Aug 16, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AD-DR1871-2-16AUG2017.jpg		Aug 16, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_AD-DR1871-1-16AUG2017.jpg		Aug 16, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 B

NGS Name: 6911 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0385](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	25	50 N	17 W	464651.86	922643.16	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	NO		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	VERTICAL CONTROL DISK	MNDT

Description: (1974)

Stamping: 6911 B 1974

3.2 MILES NORTH OF CLOQUET, 6.65 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND INTERSTATE HIGHWAY 35 IN CLOQUET TO TRUNK HIGHWAY 33 MILEPOINT 6.65, THEN 0.2 MILE EAST ON COUNTY ROAD 56 (MORRIS THOMAS ROAD), THEN 0.1 MILE NORTH ON A GRASS TRAIL TO A TOWER, IN THE WEST EDGE OF A RADIO TOWER BASE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1293.245	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.976	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1292.976	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -93.704 12B = -93.691 09 = -93.605 03 = -93.415

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 C

NGS Name: 6911 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0383](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	26	50 N	17 W	464712.56	922659.18	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	NO		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ROCK (0 TO 1 METERS)	VERTICAL CONTROL DISK	MNDT

Description: (1974) **Stamping:** 6911 C 1974

3.6 MILES NORTH OF CLOQUET, 7.15 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND INTERSTATE HIGHWAY 35 IN CLOQUET, AT TRUNK HIGHWAY 33 MILEPOINT 7.15, 71.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 3.2 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1245.329	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1245.319	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1245.050	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -93.769 12B = -93.756 09 = -93.671 03 = -93.481

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 D

NGS Name: 6911 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0382](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
SW 24 50 N 17 W	464752.00	922658.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	VERTICAL CONTROL DISK	MNDT

Description: (2019)

Stamping: 6911 D 1974

4.2 MILES SOUTH OF SAGINAW, 3.35 MILES SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 20.5 FEET EAST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 7.9, 3.8 FEET NORTHEAST OF A SIGN POST, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 33 BOX CULVERT AT THE WHITE PINE RIVER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1198.196	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1197.927	.016	2				VERTICAL CONTROL SURVEY	1974 L23563

Geoid Separations(ft): GEOID18 = -93.871 12B = -93.855 09 = -93.773 03 = -93.579

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 E

NGS Name: 6911 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0381](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	23	50 N	17 W	464807.93	922659.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	NO		FLUSH	MARKER IS STEEL ROD

Monument Type

COPPER CLAD ROD (NO SLEEVE) (DEPTH 15 FT)

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (1974)

Stamping: 6911 E 1974

5.9 MILES NORTH OF CLOQUET, 3.05 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 8.2, 96.0 FEET WEST OF TRUNK HIGHWAY 33, 212.0 FEET NORTH OF AN ENTRANCE TO THE PINE RIVER CEMETERY, 13.3 FEET NORTH OF A HEADSTONE, 4.8 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1216.103	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1216.090	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1215.824	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -93.914 12B = -93.897 09 = -93.815 03 = -93.619

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 F

NGS Name: 6911 F

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0380](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	24	50 N	17 W	464831.29	922652.43	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1974)

Stamping: 6911 F 1974

IN THE SOUTHEAST CORNER OF A COUNTY ROAD 865 BOX CULVERT IN THE DUTCH SLOUGH, 2.6 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET) TO TRUNK HIGHWAY 33 MILEPOINT 8.65, THEN 0.05 MILE EAST ON COUNTY ROAD 6 (MAPLE GROVE ROAD), 21.0 FEET SOUTH OF COUNTY ROAD 6 (MAPLE GROVE ROAD).

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1200.191	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1200.175	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1200.175	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1200.175	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1199.909	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1200.211	.262		1106.258	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -93.970 12B = -93.950 09 = -93.868 03 = -93.671

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method
46 48 31.28589	92 26 52.43317	500526.382	157880.804	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Project Info		
X	Y	X	Y	Acc	Order	Determination Method
2787971.786	441367.815	1778616.558	17008013.578	.131	3	GPS - RTRN

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_F-RN0380-3S-18JUL2007.jpg	S	Jul 18, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_F-RN0380-2-18JUL2007.jpg		Jul 18, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_F-RN0380-1-18JUL2007.jpg		Jul 18, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 G

NGS Name: 6911 G

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0377](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	12	50 N	17 W	464952.12	922655.73	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	NO		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 23 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1974) Stamping: 6911 G 1974

7.8 MILES NORTH OF CLOQUET, 1.35 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET) TO TRUNK HIGHWAY 33 MILEPOINT 9.9, THEN 0.3 MILE NORTH ON OLD TRUNK HIGHWAY 33, 192.0 FEET EAST OF OLD TRUNK HIGHWAY 33, 162.4 FEET NORTH-NORTHWEST OF DRIVEWAY NUMBER 4368, 58.0 FEET SOUTHEAST OF AN OLD RAILROAD GRADE, 0.9 FOOT SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1260.965	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1260.975	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1260.716	.016	2				VERTICAL CONTROL SURVEY	1974 L23563

Geoid Separations(ft): GEOID18 = -94.166 12B = -94.150 09 = -94.065 03 = -93.871

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 H

NGS Name: 6911 H

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0379](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	50 N	17 W	464842.00	922654.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	NO			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	SURVEY DISK	MNDT

Description: (1974)

Stamping: 6911 H

2.35 MILES SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 IN SAGINAW, 21.0 FEET EAST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 8.9, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 33 BOX CULVERT AT THE DUTCH SLOUGH.

Station Notes

A NEW BOX CULVERT WAS PUT IN PLACE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1202.645	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1202.379	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -93.996 12B = -93.979 09 = -93.897 03 = -93.701

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 J

NGS Name: 6911 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0378](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	14	50 N	17 W	464922.87	922702.50	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ROCK (0 TO 1 METERS)	VERTICAL CONTROL DISK	MNDT

Description: (2019)

Stamping: 6911 J 1974

7.3 MILES NORTH OF CLOQUET, 1.6 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 9.65, 246.7 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 57.0 FEET SOUTH OF WITTE ROAD, 227.0 FEET WEST AND 50.0 FEET SOUTH OF THE NORTHEAST CORNER OF SECTION 14, 39.7 FEET EAST OF DRIVEWAY NUMBER 7307 EXTENDED, 6.8 FEET NORTH OF A WITNESS POST, IN A 10.0 FOOT BY 12.0 FOOT BOULDER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1228.810	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1228.813	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1228.813	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1228.813	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1228.551	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -94.101 12B = -94.084 09 = -94.002 03 = -93.806

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_J-RN0378-3S-02AUG2017.jpg	S	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_J-RN0378-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_J-RN0378-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 K

NGS Name: 6911 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0053](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	17 W	465045.00	922726.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1978) Stamping: 6911 K

1.2 MILES SOUTHWEST OF SAGINAW, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 234.0 FEET NORTH OF TRUNK HIGHWAY 2, 65.6 FEET EAST OF TRUNK HIGHWAY 33, 52.7 FEET NORTH-NORTHEAST OF SAGINAW RM 2, 0.9 FOOT WEST OF A WITNESS POST.

Station Notes

THE ROAD HAS BEEN WIDENED OUT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1336.900	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1336.648	.016	2				VERTICAL CONTROL SURVEY	1978	L24513	
1336.648	.016	2				VERTICAL CONTROL SURVEY	1974	L23563	
1336.648	.016	2				VERTICAL CONTROL SURVEY	1974	L23566	

Geoid Separations(ft): GEOID18 = -94.317 12B = -94.301 09 = -94.209 03 = -94.019

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_K-RN0053-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 L

NGS Name: 6911 L

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN1027 NGS Quad / Sta Num : 46092143/ USGS Quad: SAGINAW	Get Map
SW	35	51 N	17 W	465107.06	922741.17	2	3		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - SMALL	VERTICAL CONTROL DISK	MNDT

Description: (2007)

Stamping: 6911 L 1978

9.3 MILES NORTH OF CLOQUET, 0.7 MILE NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET) TO TRUNK HIGHWAY 33 MILEPOINT 11.95, THEN 0.3 MILE SOUTHWEST ON COUNTY ROAD 873 (SEVILLE ROAD) TO THE FIRST PARKING LOT ENTRANCE, THEN 0.01 MILE NORTHWEST TO A FLAG POLE, IN THE SOUTHEAST CORNER OF A FLAGPOLE BASE AT THE SAGINAW POWER AUTOMATION, 79.0 FEET NORTH-NORTHEAST OF THE SOUTHEAST CORNER OF AN OLD SCHOOL, 17.5 FEET EAST OF THE EAST WALL OF AN OLD SCHOOL.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1338.954	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1338.970	.016	2/1				VERTICAL ADJUSTMENT	2013 00000797
1338.970	.016	2/1				VERTICAL CONTROL SURVEY	2009 VBUSC
1338.970	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1338.715	.016	2				VERTICAL CONTROL SURVEY	1978 L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1339.007	.262		1244.640	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -94.380 12B = -94.367 09 = -94.271 03 = -94.084

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
46 51 07.05533	92 27 41.17013	497138.327	173663.239	.131	3	GPS - RTRN 2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
2784451.173	457121.112	1775119.629	17023764.973	.131	3	GPS - RTRN 2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_L-RN1027-3NW-02AUG2017.jpg	NW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_L-RN1027-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_L-RN1027-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 M

NGS Name: 6911 M

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	51 N	17 W	465154.00	922736.00	2	

NGS ACRN: [RN1028](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1987	DESTROYED	Horz=NO Vert=NO	NO	5498		SEE DESCRIPTION

Monument Type

BRIDGE ABUTMENT

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (1987)

Stamping: 6911 M 1978

0.9 MILE NORTHWEST OF SAGINAW, 1.4 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 33 BRIDGE NUMBER 5498 OVER COUNTY ROAD 894 AND A RAILROAD, 19.0 FEET EAST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 12.65.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1369.741	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1369.489	.016	2				VERTICAL CONTROL SURVEY	1978 L24513

Geoid Separations(ft): GEOID18 = -94.495 12B = -94.485 09 = -94.383 03 = -94.196

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 M 1

NGS Name: 6911 M 1

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	35	51 N	17 W	465153.76	922738.55	2	3

NGS ACRN: [DQ7550](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1987	2017	GOOD	Horz=NO Vert=NO	YES	69113	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE ABUTMENT	VERTICAL CONTROL DISK	MNDT

Description: (1987)

Stamping: 6911 M 1 1987

10.15 MILES NORTH OF CLOQUET, IN AN ABUTMENT IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 33 BRIDGE NUMBER 69113 OVER THE RAILROAD TRACKS AND COUNTY ROAD 694 (SAGINAW ROAD), 1.4 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 12.70, 20.0 FEET EAST OF TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1371.444	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1371.474	.016	2/1				VERTICAL ADJUSTMENT	2013 00000797
1371.477	.016	2/1				VERTICAL CONTROL SURVEY	2009 VBUSC
NGVD29			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1371.260	.033	3				VERTICAL CONTROL SURVEY	1987 CS6911

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1371.474	.262		1276.986	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -94.498 12B = -94.485 09 = -94.386 03 = -94.196

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method
46 51 53.76322	92 27 38.55154	497320.987	178395.577	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method
2784594.042	461854.755	1775269.071	17028496.395	.131	3	GPS - RTRN

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_1-DO7550-3N-02AUG2017.jpg	N	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_1-DO7550-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_1-DO7550-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 M RESET

NGS Name: 6911 M RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	51 N	17 W	465153.50	922737.31	2	3

NGS ACRN: [DO7551](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1987	2017	GOOD	Horz=NO Vert=NO	YES	69114	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	VERTICAL CONTROL DISK	MNDT

Description: (1987)

Stamping: 6911 M RESET 1987

10.15 MILES NORTH OF CLOQUET, IN AN ABUTMENT IN THE SOUTHEAST CORNER OF NORTHBOUND TRUNK HIGHWAY 33 BRIDGE NUMBER 69114 OVER THE RAILROAD TRACKS AND COUNTY ROAD 694 (SAGINAW ROAD), 1.4 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 12.70, 26.0 FEET RIGHT OF TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1371.670	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1371.697	.016	2/1				VERTICAL ADJUSTMENT	2013 00000797
1371.700	.016	2/1				VERTICAL CONTROL SURVEY	2009 VBUSC

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1371.480	.016	2				VERTICAL CONTROL SURVEY	1987 L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1371.684	.262		1277.202	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -94.495 12B = -94.485 09 = -94.383 03 = -94.196

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 53.49602	92 27 37.30620	497407.525	178368.493	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2784680.803	461828.400	1775355.758	17028469.930	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_RESET-DO7551-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_RESET-DO7551-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_M_RESET-DO7551-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 N

NGS Name: 6911 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1029](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	26	51 N	17 W	465233.00	922745.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	VERTICAL CONTROL DISK	MNDT

Description: (1978) Stamping: 6911 N 1978

0.9 MILE NORTHWEST OF SAGINAW, 2.2 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, IN THE SOUTHEAST HEADWALL OF A TRUNK HIGHWAY 33 BOX CULVERT AT BEAR TRAP CREEK, AT TRUNK HIGHWAY 33 MILEPOINT 13.45, 19.4 FEET NORTHEAST OF TRUNK HIGHWAY 33.

Station Notes

THE BOX CULVERT WAS REPLACED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.787	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.531	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -94.600 12B = -94.593 09 = -94.485 03 = -94.294

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 P

NGS Name: 6911 P

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1034](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	51 N	17 W	465341.27	922814.05	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 12 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (2007) Stamping: 6911 P 1978

12.0 MILES NORTH OF CLOQUET, 3.6 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), 58.7 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 14.85, 48.2 FEET NORTH OF COUNTY ROAD 7, 35.0 FEET EAST OF A POWER POLE NUMBER 87, 35.3 FEET EAST OF A TELEPHONE PEDESTAL NUMBER 1250-8, 3.0 FEET NORTHWEST OF AN INDUSTRIAL ROAD SIGN POST, 1.3 FEET EAST OF A WITNESS POST.

Station Notes

IN 1978 THIS STATION REPLACED SUNSET AZ MK (CJ2861).

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.243	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1335.263	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1335.263	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1335.263	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.007	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.273	.262		1240.477	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.796 12B = -94.796 09 = -94.678 03 = -94.488

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 53 41.26856	92 28 14.04631	494857.253	189288.363	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2782038.879	472726.239	1772730.186	17039366.873	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_P-RN1034-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_P-RN1034-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_P-RN1034-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 Q

NGS Name: 6911 Q

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1035](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	15	51 N	17 W	465433.20	922814.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
COPPER CLAD ROD (NO SLEEVE) (DEPTH 14 FT)	VERTICAL CONTROL DISK	MNDT

Description: (2007) Stamping: 6911 Q 1978

13.0 MILES NORTH OF CLOQUET, 4.6 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 15.85, 120.4 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 18.0 FEET SOUTH OF COUNTY ROAD 869 (SUNSET LAKE ROAD), 50.7 FEET SOUTHWEST OF A POWER POLE NUMBER 16-1274, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1337.396	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1337.402	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1337.402	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1337.402	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1337.146	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -94.934 12B = -94.937 09 = -94.813 03 = -94.619

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Q-RN1035-3S-02AUG2017.jpg	S	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Q-RN1035-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Q-RN1035-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 R

NGS Name: 6911 R

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1040](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	52 N	17 W	465624.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (1978) Stamping: 6911 R 1978

6.5 MILES NORTH OF SAGINAW, 1.3 MILES SOUTH OF THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53,
AT TRUNK HIGHWAY 33 MILEPOINT 18.0, 98.0 FEET WEST OF TRUNK HIGHWAY 33, 68.0 FEET NORTH OF A FIELD ROAD
WEST, 137.0 FEET NORTHWEST OF MILEPOST 18, 81.8 FEET NORTHWEST OF THE NORTH END OF A METAL CULVERT, 6.9
FEET SOUTH OF A POWER POLE, 0.5 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1354.295	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1354.036	.016	2				VERTICAL CONTROL SURVEY	1978 L24513

Geoid Separations(ft): GEOID18 = -95.236 12B = -95.233 09 = -95.108 03 = -94.911

* No Horizontal Positions in the Database *



Mn/DOT Name: 6911 S

NGS Name: 6911 S

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ7553](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	2	50 N	17 W	465039.60	922728.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1987	2017	GOOD	Horz=NO Vert=NO	YES	69116	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE RAILING	BENCH MARK DISK	MNDT

Description: (1987)

Stamping: 6911 S 1987

1.5 MILES SOUTHWEST OF SAGINAW, IN THE RAIL IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 33 BRIDGE NUMBER 69116 OVER TRUNK HIGHWAY 2, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 33 MILEPOINT 11.25, 23.6 FEET EAST OF TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.962	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1355.965	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC

Geoid Separations(ft): GEOID18 = -94.304 12B = -94.288 09 = -94.199 03 = -94.009

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_S-DO7553-3E-25JUL2017.jpg	E	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_S-DO7553-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_S-DO7553-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 T

NGS Name: 6911 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ7552](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	2	50 N	17 W	465042.70	922730.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1987	2017	GOOD	Horz=NO Vert=NO	YES	69115	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE RAILING	BENCH MARK DISK	MNDT

Description: (1987)

Stamping: 6911 T 1987

1.45 MILES SOUTHWEST OF SAGINAW, IN THE RAIL IN THE NORTHWEST CORNER OF TRUNK HIGHWAY 33 BRIDGE NUMBER 69115 OVER TRUNK HIGHWAY 2, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 33 MILEPOINT 11.30, 23.8 FEET WEST OF TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1356.972	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1356.972	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC

Geoid Separations(ft): GEOID18 = -94.314 12B = -94.298 09 = -94.206 03 = -94.019

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_T-DO7552-3W-25JUL2017.jpg	W	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_T-DO7552-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_T-DO7552-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 U

NGS Name: 6911 U

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DO7549](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	26	51 N	17 W	465222.55	922734.08	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 24 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6911 U 2007

6.0 MILES SOUTH OF INDEPENDENCE, 6.2 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 13.25, 72.5 FEET EAST-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 33, 30.0 FEET NORTH OF SMITH ROAD, 30.0 FEET WEST OF A POWER POLE, 0.9 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1339.712	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1339.735	.016	2/1					VERTICAL ADJUSTMENT	2013	00000797
1339.735	.016	2/1					VERTICAL CONTROL SURVEY	2009	VBUSC

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1339.666	.262			1245.099	.197	2011	GPS - OPUS	2020	GPSBM
1339.702	.262			1245.135	.197	2011	GPS - OPUS	2020	GPSBM
1339.797	.262			1245.240	.197	2011	GPS - RTRN	2020	RTRN2020
1339.732	.262			1245.175	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.567 12B = -94.557 09 = -94.452 03 = -94.262

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 52 22.54570	92 27 34.08390	497631.803	181311.734	.131	3	GPS - OPUS	2020	GPSBM	
46 52 22.54552	92 27 34.08498	497631.728	181311.716	.131	3	GPS - OPUS	2020	GPSBM	
46 52 22.54567	92 27 34.08414	497631.787	181311.731	.131	3	GPS - RTRN	2020	RTRN2020	
46 52 22.54531	92 27 34.08466	497631.751	181311.694	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15				Project Info			
MN State Plane - North Zone				Acc	Order	Determination Method	Year	Reference	
X	Y	X	Y						
2784880.327	464773.375	1775559.322	17031413.376	.131	3	GPS - OPUS	2020	GPSBM	
2784880.252	464773.356	1775559.247	17031413.358	.131	3	GPS - OPUS	2020	GPSBM	
2784880.310	464773.372	1775559.306	17031413.373	.131	3	GPS - RTRN	2020	RTRN2020	
2784880.274	464773.335	1775559.270	17031413.337	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_U-DO7549-3E-06JUL2020.jpg	E	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_U-DO7549-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_U-DO7549-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 V

NGS Name: 6911 V

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DO7548](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	23	51 N	17 W	465257.71	922812.54	2	3	2007	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2007) Stamping: 6911 V 2007

5.5 MILES SOUTH OF INDEPENDENCE, 5.4 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 14.10, 85.0 FEET SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 33, 75.5 FEET NORTHWEST OF COUNTY ROAD 874 (INDEPENDENCE ROAD), 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1364.951	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1364.981	.016	2/1				VERTICAL ADJUSTMENT	2013 00000797
1364.984	.016	2/1				VERTICAL CONTROL SURVEY	2009 VBUSC

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1364.968	.262		1270.289	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.678 09 = -94.567 03 = -94.380

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 52 57.70771	92 28 12.54301	494960.527	184874.804	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2782179.243	468313.799	1772864.330	17034956.086	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_V-DO7548-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_V-DO7548-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_V-DO7548-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 W

NGS Name: 6911 W

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1884](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	26	50 N	17 W	464651.29	922658.79	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 24 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) Stamping: 6911 W 2017

4.3 MILES NORTH OF CLOQUET, 4.5 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 6.75, 45.1 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 81.8 FEET SOUTH OF TIGER DRIVE, 28.4 FEET SOUTHEAST OF A POWER POLE WITH A GUY WIRE, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1276.631	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1276.635	.262		1182.934	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -93.714 12B = -93.697 09 = -93.612 03 = -93.425

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 46 51.28910	92 26 58.79359	500083.966	147749.379	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2787614.580	431232.993	1778245.207	16997883.775	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_W-DR1884-3W-21AUG2017.jpg	W	Aug 21, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_W-DR1884-2-21AUG2017.jpg		Aug 21, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_W-DR1884-1-21AUG2017.jpg		Aug 21, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 X

NGS Name: 6911 X

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1881](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	13	50 N	17 W	464854.25	922657.65	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) Stamping: 6911 X 2017

6.7 MILES NORTH OF CLOQUET, 2.15 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 9.1, 33.9 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 33, 50.9 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33, 306.1 FEET NORTH OF DRIVEWAY NUMBER 4174 EXTENDED, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1208.262	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1208.275	.262			1114.263	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.029 12B = -94.012 09 = -93.927 03 = -93.733

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 48 54.25203	92 26 57.65225	500163.301	160207.673	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2787589.151	443691.546	1778237.367	17010336.826	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_X-DR1881-3S-22AUG2017.jpg	S	Aug 22, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_X-DR1881-2-22AUG2017.jpg		Aug 22, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_X-DR1881-1-22AUG2017.jpg		Aug 22, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 Y

NGS Name: 6911 Y

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1880](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	11	50 N	17 W	464934.97	922704.52	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) Stamping: 6911 Y 2017

7.4 MILES NORTH OF CLOQUET, 1.35 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 9.9, 37.5 FEET WEST-SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 33, 162.1 FEET NORTH-NORTHWEST OF COUNTY ROAD 113 EXTENDED, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1238.951	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1238.941	.262			1144.824	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.134 12B = -94.114 09 = -94.032 03 = -93.838

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>								
Geodetic Position		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 49 34.96522	92 27 04.51978	499685.688	164332.644	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>								
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787076.871	447812.341	1777731.113	17014456.540	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Y-DR1880-3SW-22AUG2017.jpg	SW	Aug 22, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Y-DR1880-2-22AUG2017.jpg		Aug 22, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Y-DR1880-1-22AUG2017.jpg		Aug 22, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6911 Z

NGS Name: 6911 Z

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1878](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	35	51 N	17 W	465117.72	922733.83	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 42 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) Stamping: 6911 Z 2017

9.5 MILES NORTH OF CLOQUET, 0.7 MILE NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 12.0, 56.1 FEET EAST-NORTHEAST OF SOUTHBOUND TRUNK HIGHWAY 33, 28.3 FEET WEST-SOUTHWEST OF NORTHBOUND TRUNK HIGHWAY 33, 94.5 FEET NORTH-NORTHWEST OF THE CROSSOVER FOR COUNTY ROAD 873 (SEVILLE ROAD), 1.5 FEET NORTH-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.016	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1337.914	.262			1243.524	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.403 12B = -94.390 09 = -94.291 03 = -94.104

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 17.72069	92 27 33.82805	497648.793	174743.766	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2784952.532	458205.880	1775622.293	17024848.573	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Z-DR1878-3SE-15AUG2017.jpg	SE	Aug 15, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Z-DR1878-2-15AUG2017.jpg		Aug 15, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6911_Z-DR1878-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6916 M

NGS Name: 6916 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1044](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	52 N	17 W	465719.00	922724.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1970	2017	DESTROYED	Horz=NO Vert=NO	NO	69029		MARKER W/BAR MAGNET

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1978)

Stamping: 6916 M 1970

8.0 MILES NORTH OF SAGINAW, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, IN THE SOUTHEAST END OF THE SOUTHWEST ABUTMENT OF NORTHBOUND TRUNK HIGHWAY 33 BRIDGE NUMBER 69029 OVER SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 33 MILEPOINT 19.35, 14.1 FEET SOUTHEAST OF NORTHBOUND TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.895	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1353.895	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1353.895	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.636	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.338 12B = -95.334 09 = -95.207 03 = -95.013

* No Horizontal Positions in the Database *



Mn/DOT Name: 6916 N

NGS Name: 6916 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6471](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	52 N	17 W	465630.00	922615.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6916 N 1992

1.3 MILES SOUTHEAST OF THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33, 69.5 FEET
NORTH-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 22.7, 23.5 FEET EAST OF
AN ENTRANCE, 1.3 FEET WEST-NORTHWEST OF A POWER POLE, 1.3 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1348.534	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1348.531	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -95.151 12B = -95.147 09 = -95.016 03 = -94.823

* No Horizontal Positions in the Database *



Mn/DOT Name: 6916 N RESET

NGS Name: 6916 N RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1894](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	36	52 N	17 W	465629.75	922615.55	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6916 N RESET 2017

1.3 MILES SOUTHEAST OF THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33, 69.5 FEET
NORTH-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 22.7, 23.5 FEET EAST OF
AN ENTRANCE, 1.3 FEET WEST-NORTHWEST OF A POWER POLE, 1.3 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1348.462	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Geoid Separations(ft): GEOID18 = -95.151 12B = -95.147 09 = -95.016 03 = -94.819

*** No Horizontal Positions in the Database ***

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_N_RESET-DR1894-3NE-02AUG2017.jpg	NE	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_N_RESET-DR1894-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_N_RESET-DR1894-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6916 V

NGS Name: 6916 V

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	36	52 N	17 W	465643.56	922635.89	2	3

NGS ACRN: DR1893	Get Map
NGS Quad / Sta Num : 46092144/	
USGS Quad: INDEPENDENCE	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** 6916 V 2017

13.5 MILES NORTHWEST OF HERMANTOWN, 11.5 MILES NORTHWEST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 194 IN THE NORTHWEST PART OF HERMANTOWN, AT TRUNK HIGHWAY 53 MILEPOINT 23.1, 48.1 FEET SOUTHWEST OF NORTHBOUND TRUNK HIGHWAY 53, 32.4 FEET NORTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53, 36.4 FEET NORTHEAST OF A DITCH BLOCK, 1.5 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1365.020	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1365.027	.262		1269.827	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.203 12B = -95.200 09 = -95.072 03 = -94.875

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Reference
46 56 43.55935	92 26 35.89387	501672.669	207757.330	.131	3	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Reference
2788698.578	491251.306	1779413.012	17057875.064	.131	3	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_V-DR1893-3NW-16AUG2017.jpg	NW	Aug 16, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_V-DR1893-2-16AUG2017.jpg		Aug 16, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_V-DR1893-1-16AUG2017.jpg		Aug 16, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6916 W

NGS Name: 6916 W

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1895](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	36	52 N	17 W	465616.16	922557.51	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** 6916 W 2017

12.9 MILES NORTHWEST OF HERMANTOWN, 10.7 MILES NORTHWEST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 194 IN THE NORTHWEST PART OF HERMANTOWN, AT TRUNK HIGHWAY 53 MILEPOINT 22.35, 76.6 FEET NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 59.9 FEET SOUTHEAST OF A DRIVEWAY, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1340.604	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1340.588	.262			1245.493	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.098 12B = -95.095 09 = -94.967 03 = -94.767

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 56 16.15734	92 25 57.50750	504336.824	204981.376	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2791385.894	488497.956	1782095.402	17055119.068	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_W-DR1895-3NE-16AUG2017.jpg	NE	Aug 16, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_W-DR1895-2-16AUG2017.jpg		Aug 16, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6916_W-DR1895-1-16AUG2017.jpg		Aug 16, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 A

NGS Name: 6917 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1049](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	26	52 N	17 W	465728.00	922734.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2001	DESTROYED	Horz=NO Vert=NO	NO	3232	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (2006)

Stamping: 6917 A 1967

5.8 MILES SOUTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 AT CANYON, 0.35 MILE NORTHWEST ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 AT INDEPENDENCE, IN THE NORTHEAST END OF THE SOUTHEAST ABUTMENT OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 3232 OVER THE CLOQUET RIVER, 21.2 FEET NORTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 24.25

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1310.037	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1310.037	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1310.037	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1309.771	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.371 12B = -95.367 09 = -95.239 03 = -95.046

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 A RESET

NGS Name: 6917 A RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	52 N	17 W	465727.74	922733.72	3	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2017	GOOD	Horz=NO Vert=YES	YES	69120	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE RAILING	REFERENCE MARK DISK	MNDT

Description: (2004)

Stamping: 6917 A RESET 2001

IN THE NORTHEAST END OF THE SOUTHEAST RAIL OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69120 OVER THE CLOQUET RIVER, 5.8 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 24.25, 21.2 FEET NORTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1311.766	.033	3					VERTICAL CONTROL SURVEY	2001	DISC RELOCATION

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1311.694	.262			1216.330	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.371 12B = -95.364 09 = -95.239 03 = -95.042

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 27.73837	92 27 33.72196	497660.646	212233.608	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2784649.213	495693.522	1775371.455	17062321.143	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_A_RESET-3NE-02AUG2017.jpg	NE	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_A_RESET-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_A_RESET-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AD

NGS Name: 6917 AD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6449](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	55 N	17 W	471616.74	922841.64	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6917 AD 1992

7.5 MILES NORTH OF COTTON, 7.2 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 46.20, 136.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 2.2 FEET WEST OF A POWER POLE, 3.3 FEET SOUTHWEST OF A WITNESS POST.

Station Notes

DUE TO THE PROXIMITY TO A POWER POLE, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1397.520	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1397.491	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1397.491	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1397.576	.262			1299.637	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.943 12B = -97.939 09 = -97.884 03 = -97.713

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - Central Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 16 16.74339	92 28 41.63659	492990.451	107777.478	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2779018.132	610036.490	1769899.306	17176630.264	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AD-DF6449-3E-13SEP2017.jpg	E	Sep 13, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AD-DF6449-2-13SEP2017.jpg		Sep 13, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AD-DF6449-1-13SEP2017.jpg		Sep 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AF

NGS Name: 6917 AF

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DF6451	Get Map
NW	22	55 N	17 W	471423.69	922901.56	2	3	NGS Quad / Sta Num : 47092234/	
								USGS Quad: COTTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6917 AF 1992

5.0 MILES NORTH OF COTTON, 5.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 44.0, 77.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 45.7 FEET SOUTHWEST OF MILEPOST NUMBER 44, 1.5 FEET EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
1344.210	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963		
1343.872	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702		
1343.872	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
1344.249	.262		1246.402	.197	2011	GPS - RTRN	2017	RTRN2017		

Geoid Separations(ft): GEOID18 = -97.851 12B = -97.848 09 = -97.779 03 = -97.592

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>								
Geodetic Position		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 14 23.69398	92 29 01.56458	491611.184	315174.771	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>State Plane and UTM Coordinates (2017)</u>								
<u>NAD83(2011)</u>								
MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2777735.288	598572.297	1768601.358	17165171.657	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AF-DF6451-3W-14SEP2017.jpg	W	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AF-DF6451-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AF-DF6451-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AG

NGS Name: 6917 AG

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	55 N	17 W	471314.00	922918.00	2	

NGS ACRN: [DF6452](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO			MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6917 AG 1992

3.5 MILES NORTH OF COTTON, 77.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 42.65, AND 1.5 FEET EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1338.787	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1338.787	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -97.762 12B = -97.759 09 = -97.687 03 = -97.493

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 AG RESET

NGS Name: 6917 AG RESET

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	27	55 N	17 W	471318.29	922918.10	2	3

NGS ACRN: [DR1844](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6917 AG RESET 2017

3.5 MILES NORTH OF COTTON, 3.3 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 42.70, 77.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1338.606	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1338.455	.262		1240.690	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.769 12B = -97.766 09 = -97.693 03 = -97.500

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 13 18.29464	92 29 18.09690	490467.095	308548.649	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order		Year	Reference
2776647.035	591937.538	1767504.473	17158540.634	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AG_RESET-DR1844-3W-14SEP2017.jpg	W	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AG_RESET-DR1844-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AG_RESET-DR1844-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AH

NGS Name: 6917 AH

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	55 N	17 W	471237.00	922918.00	2	

NGS ACRN: [DF6453](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2015	DESTROYED	Horz=NO Vert=NO	NO	6603		NO MAG MATERIAL

Monument Type
CONCRETE FOOTING - LARGE

Disk Type
BENCH MARK DISK

Mon. Agency
MNDT

Description: (1992)

Stamping: 6917 AH 1992

3.0 MILES NORTH OF COTTON, 18.0 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53
MILEPOINT 41.9, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 53 BRIDGE NUMBER 6603.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1333.498	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1333.498	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -97.703 12B = -97.700 09 = -97.621 03 = -97.428

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 AJ

NGS Name: 6917 AJ

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DF6454 NGS Quad / Sta Num : 47092234/ USGS Quad: COTTON	Get Map
NW	34	55 N	17 W	471236.28	922916.45	2	3		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	GOOD	Horz=NO Vert=NO	YES	69019	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (1992)

Stamping: 6917 AJ 1992

3.0 MILES NORTH OF COTTON, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 53 BRIDGE NUMBER 69019 OVER PALEFACE CREEK, 2.9 MILES ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 41.9, 23.5 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE. THE SURVEY MARK IS UNSUITABLE FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1332.717	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1332.701	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1332.701	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1332.737	.262		1235.037	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -97.700 12B = -97.700 09 = -97.621 03 = -97.424

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 12 36.28058	92 29 16.45272	490578.535	304291.497	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2776794.224	587681.932	1767645.830	17154286.289	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AJ-DF6454-3N-14SEP2017.jpg	N	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AJ-DF6454-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AJ-DF6454-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AK

NGS Name: 6917 AK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6463](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	27	53 N	17 W	470314.64	922822.75	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (2019)

Stamping: 6917 AK 1992

1.0 MILE NORTH OF CANYON, 1.0 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON TO TRUNK HIGHWAY 53 MILEPOINT 31.0, THEN 0.1 MILE WEST ON COUNTY ROAD 739 (BERG ROAD), 31.5 FEET SOUTH OF COUNTY ROAD 739 (BERG ROAD), 1.9 FEET NORTH OF A POWER POLE, 1.0 FOOT SOUTH OF A WITNESS POST. THE ROD DEPTH IS UNKNOWN.

Station Notes

DUE TO THE PROXIMITY TO A POWER POLE, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS. THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1346.595	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1346.641	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1346.631	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1346.821	.262		1250.493	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.322 12B = -96.329 09 = -96.181 03 = -95.991

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 03 14.63501	92 28 22.74999	494269.788	247382.159	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2780963.214	530810.493	1771735.499	17097429.607	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AK-DF6463-3S-19SEP2017.jpg	S	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AK-DF6463-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AK-DF6463-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AL

NGS Name: 6917 AL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6467](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	52 N	17 W	470043.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6917 AL 1992

2.0 MILES SOUTH OF CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 28.1, 75.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE. THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1409.180	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1409.180	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -95.909 12B = -95.909 09 = -95.774 03 = -95.584

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 AL RESET

NGS Name: 6917 AL RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1863](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	52 N	17 W	470043.64	922818.35	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 4 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6917 AL RESET 2017

2.0 MILES SOUTH OF CANYON, 1.9 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 28.1, 75.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

THE ROD DEPTH IS UNKNOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1408.964	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1409.003	.262			1313.094	.197	2011		GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.912 12B = -95.909 09 = -95.774 03 = -95.587

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - South Zone		Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
47 00 43.64150	92 28 18.34670	494570.457	232083.207	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Determination Method		Project Info	
X	Y	X	Y	Acc	Order			Year	Reference
2781392.430	515515.519	1772143.440	17082139.871	.131	3	GPS - RTRN		2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AL_RESET-DR1863-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AL_RESET-DR1863-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AL_RESET-DR1863-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AM

NGS Name: 6917 AM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6468](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	52 N	17 W	470009.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO			MARKER W/BAR MAGNET

Monument Type

ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (1992)

Stamping: 6917 AM 1992

2.6 MILES SOUTH OF CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 27.5, 99.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 17.5 FEET NORTH OF AN ENTRANCE, 1.0 FOOT EAST OF A STEEL RIGHT-OF-WAY POST, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1382.271	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1382.271	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -95.820 12B = -95.820 09 = -95.686 03 = -95.495

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 AM RESET

NGS Name: 6917 AM RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1866](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	10	52 N	17 W	470011.42	922818.48	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: 6917 AM RESET 2017

2.6 MILES SOUTH OF CANYON, 2.5 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 27.5, 99.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 17.5 FEET NORTH OF DRIVEWAY NUMBER 6795, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1382.182	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Geoid Separations(ft): GEOID18 = -95.827 12B = -95.827 09 = -95.692 03 = -95.502

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AM_RESET-DR1866-3W-20SEP2017.jpg	W	Sep 20, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AM_RESET-DR1866-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AM_RESET-DR1866-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AN

NGS Name: 6917 AN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6469](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	52 N	17 W	465942.89	922817.20	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type

CULVERT - ANY SIZE, ANY TYPE

Disk Type

VERTICAL CONTROL DISK

Mon. Agency

MNDT

Description: (1992)

Stamping: 6917 AN 1992

3.15 MILES SOUTH OF CANYON, IN THE SOUTHWEST CORNER OF A TRUNK HIGHWAY 53 BOX CULVERT, 3.05 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 26.95, 29.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 0.6 FOOT NORTH OF THE SOUTHWEST CORNER OF A CULVERT.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE. THE SURVEY MARK IS UNSUITABLE FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1326.464	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1326.490	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1326.487	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1326.408	.262		1230.654	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.754 12B = -95.751 09 = -95.620 03 = -95.426

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 59 42.88694	92 28 17.19778	494648.395	225927.487	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2781522.097	509360.989	1772264.541	17075987.552	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AN-DF6469-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AN-DF6469-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AN-DF6469-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AP

NGS Name: 6917 AP

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	26	52 N	17 W	465755.58	922750.66	2	3

NGS ACRN: [DF6470](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	VERTICAL CONTROL DISK	MNDT

Description: (1992) Stamping: 6917 AP 1992

17.0 MILES NORTH OF CLOQUET, 0.9 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 16.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 53 MILEPOINT 24.8, 100.5 FEET EAST-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 47.0 FEET SOUTH OF ENTRANCE NUMBER 6216, 15.4 FEET NORTH OF AN UNDERGROUND CABLE PEDESTAL, 1.9 FEET SOUTH-SOUTHEAST OF A POWER POLE, 1.1 FEET NORTH-NORTHWEST OF A WITNESS POST.

Station Notes

DUE TO THE PROXIMITY TO A POWER POLE AND TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1313.232	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1313.252	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1313.252	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1313.426	.262		1217.973	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.459 12B = -95.453 09 = -95.321 03 = -95.128

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 55.57701	92 27 50.65881	496486.212	215054.394	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2783451.156	498504.221	1774177.783	17065132.388	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AP-DF6470-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AP-DF6470-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AP-DF6470-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AS

NGS Name: 6917 AS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1868](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	26	52 N	17 W	465732.68	922741.36	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6917 AS 2107

IN INDEPENDENCE, 0.1 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 47 (SWAN LAKE ROAD) IN INDEPENDENCE, AT TRUNK HIGHWAY 53 MILEPOINT 24.35, 66.2 FEET SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, 33.0 FEET NORTHEAST OF A GRAVEL ROAD, 56.9 FEET SOUTHWEST OF THE SOUTH END OF A GUARD RAIL, 1.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1302.054	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1302.104	.262		1206.717	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.390 12B = -95.384 09 = -95.256 03 = -95.062

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 57 32.68296	92 27 41.36432	497130.555	212734.663	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2784114.949	496190.084	1774838.096	17062818.250	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AS-DR1868-3SW-17OCT2017.jpg	SW	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AS-DR1868-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AS-DR1868-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AT

NGS Name: 6917 AT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1869](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	52 N	17 W	465736.15	922736.37	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AT 2017

IN INDEPENDENCE, 0.3 MILE NORTHWEST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 IN INDEPENDENCE, AT TRUNK HIGHWAY 53 MILEPOINT 24.40, 35.5 FEET NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 5.0 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1305.798	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1305.844	.262		1210.454	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.397 12B = -95.390 09 = -95.262 03 = -95.069

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 57 36.14992	92 27 36.36636	497477.309	213085.888	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2784458.725	496544.197	1775182.227	17063171.744	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AT-DR1869-3NE-17OCT2017.jpg	NE	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AT-DR1869-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AT-DR1869-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AU

NGS Name: 6917 AU

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1867](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	23	52 N	17 W	465823.58	922807.59	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6917 AU 2107

4.6 MILES SOUTH OF CANYON, 1.3 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 6.0 MILES SOUTH OF CANYON), AT TRUNK HIGHWAY 53 MILEPOINT 25.40, 34.5 FEET WEST-SOUTHWEST OF NORTHBOUND TRUNK HIGHWAY 53, 49.3 FEET EAST-NORTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53, 74.7 FEET SOUTH-SOUTHEAST OF A CROSSOVER, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Orthometric Height</u>								
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1323.908	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>										
Orthometric Height			Ellipsoid (NAD83)			Project Info				
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
1324.000	.262		1228.459	.197	2011	GPS - RTRN	2017	RTRN2017		

Geoid Separations(ft): GEOID18 = -95.544 12B = -95.538 09 = -95.410 03 = -95.216

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		St Louis County - South Zone					Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 58 23.58216	92 28 07.58776	495312.669	217892.125	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15				Project Info			
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2782253.851	501331.867	1772984.879	17067960.574	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AU-DR1867-3S-17OCT2017.jpg	S	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AU-DR1867-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AU-DR1867-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AV

NGS Name: 6917 AV

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1861](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	35	53 N	17 W	470146.79	922814.97	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 36 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AV 2017

0.7 MILE SOUTH OF CANYON, 0.7 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.30, 75.0 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 45.7 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1337.097	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1337.212	.262			1241.133	.197	2011	GPS - OPUS	2021	GPSBM
1337.117	.262			1241.038	.197	2011	GPS - RTRN	2021	RTRN2021
1337.110	.262			1241.024	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.076 12B = -96.082 09 = -95.938 03 = -95.751

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 01 46.79432	92 28 14.96557			494806.474	238481.857	.131	3	GPS - OPUS	2021	GPSBM
47 01 46.79504	92 28 14.96467			494806.537	238481.930	.131	3	GPS - RTRN	2021	RTRN2021
47 01 46.79380	92 28 14.96510			494806.507	238481.804	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2781574.648	521915.566			1772334.432	17088537.208	.131	3	GPS - OPUS	2021	GPSBM
2781574.710	521915.639			1772334.494	17088537.281	.131	3	GPS - RTRN	2021	RTRN2021
2781574.681	521915.513			1772334.465	17088537.155	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AV-DR1861-3S-26JUL2021.jpg	S	Jul 26, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AV-DR1861-2-26JUL2021.jpg		Jul 26, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AV-DR1861-1-26JUL2021.jpg		Jul 26, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AW

NGS Name: 6917 AW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1859](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	26	53 N	17 W	470238.94	922813.90	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 28 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AW 2017

0.3 MILE NORTH OF CANYON, 0.3 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 30.30, 34.9 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 54.7 FEET SOUTH OF THE WEST LEG OF A ROAD SIGN, 5.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.311	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.350	.262			1242.130	.197	2011	GPS - OPUS	2021	GPSBM
1338.380	.262			1242.160	.197	2011	GPS - RTRN	2021	RTRN2021
1338.491	.262			1242.265	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.220 12B = -96.227 09 = -96.076 03 = -95.889

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 02 38.93582	92 28 13.90458	494881.362	243764.888	.131	3	GPS - OPUS	2021	GPSBM	
47 02 38.93603	92 28 13.90375	494881.419	243764.909	.131	3	GPS - RTRN	2021	RTRN2021	
47 02 38.93659	92 28 13.90353	494881.434	243764.966	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone				Acc	Order	Determination Method	Year	Reference	
X	Y	X	Y						
2781605.127	527198.720	1772372.191	17093818.311	.131	3	GPS - OPUS	2021	GPSBM	
2781605.184	527198.742	1772372.248	17093818.333	.131	3	GPS - RTRN	2021	RTRN2021	
2781605.199	527198.799	1772372.263	17093818.390	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AW-DR1859-3E-26JUL2021.jpg	E	Jul 26, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AW-DR1859-2-26JUL2021.jpg		Jul 26, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AW-DR1859-1-26JUL2021.jpg		Jul 26, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AX

NGS Name: 6917 AX

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1858](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	23	53 N	17 W	470332.01	922815.05	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AX 2017

1.3 MILES NORTH OF CANYON, 1.3 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 31.30, 35.5 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 5.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1345.129	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1345.096	.262		1248.725	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.361 12B = -96.371 09 = -96.220 03 = -96.030

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 03 32.00532	92 28 15.05230	494803.300	249142.002	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2781481.882	532574.642	1772256.403	17099192.378	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AX-DR1858-3E-17OCT2017.jpg	E	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AX-DR1858-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AX-DR1858-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AY

NGS Name: 6917 AY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1856](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	2	53 N	17 W	470551.74	922816.88	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 66 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AY 2017

4.8 MILES SOUTH OF COTTON, 4.95 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 34.0, 32.4 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 7.3 FEET SOUTH OF MILEPOST NUMBER 34, 5.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1358.524	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1358.603	.262		1261.864	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.729 12B = -96.739 09 = -96.598 03 = -96.404

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 05 51.73717	92 28 16.88283	494680.410	263299.985	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2781240.016	546730.081	1772034.098	17113342.904	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AY-DR1856-3E-18OCT2017.jpg	E	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AY-DR1856-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AY-DR1856-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 AZ

NGS Name: 6917 AZ

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	2	53 N	17 W	470633.91	922817.32	2	3

NGS ACRN: [DR1855](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 AZ 2017

4.0 MILES SOUTH OF COTTON, 4.15 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 34.8, 34.1 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 5.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1356.900	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1356.953	.262		1260.109	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.837 12B = -96.847 09 = -96.709 03 = -96.516

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Acc	Order	Reference
47 06 33.90831	92 28 17.32451	494651.020	267572.893	.131	3	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Reference
2781174.719	551002.258	1771974.689	17117613.610	.131	3	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AZ-DR1855-3E-18OCT2017.jpg	E	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AZ-DR1855-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_AZ-DR1855-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BA

NGS Name: 6917 BA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1853](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	26	54 N	17 W	470824.80	922821.30	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6917 BA 2017

2.0 MILES SOUTH OF COTTON, 2.05 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 36.90, 97.2 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 25.5 FEET NORTH OF MCKAY ROAD, 10.1 FEET WEST OF A RIGHT-OF-WAY POST, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1335.998	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1336.054	.262			1238.935	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.126 12B = -97.119 09 = -97.008 03 = -96.811

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 08 24.79993	92 28 21.29757	494379.417	278808.876	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2780808.720	562234.620	1771624.215	17128842.427	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BA-DR1853-3E-18OCT2017.jpg	E	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BA-DR1853-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BA-DR1853-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BB

NGS Name: 6917 BB

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1852](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	22	54 N	17 W	470916.57	922822.84	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 38 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6917 BB 2017

1.0 MILES SOUTH OF COTTON, 1.05 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 37.9, 46.1 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 38.6 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 42.0 FEET SOUTH OF THE CROSSOVER FOR CEMETERY ROAD, 1.5 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1332.225	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1332.278	.262		1235.030	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.250 12B = -97.247 09 = -97.142 03 = -96.942

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 09 16.56762	92 28 22.83923	494274.373	284054.207	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2780659.608	567478.414	1771482.327	17134084.559	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BB-DR1852-3S-17OCT2017.jpg	S	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BB-DR1852-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BB-DR1852-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BC

NGS Name: 6917 BC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1848](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	10	54 N	17 W	471052.46	922848.73	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6917 BC 2017

1.0 MILE NORTH OF COTTON, 0.85 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 39.85, 30.5 FEET NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 134.0 FEET NORTH-NORTHEAST OF THE END OF A GUARD RAIL, 5.0 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1318.665	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1318.731	.262		1221.244	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.490 12B = -97.487 09 = -97.388 03 = -97.191

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 10 52.45911	92 28 48.73351	492488.373	293770.955	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2778792.189	577178.885	1769628.807	17143784.167	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BC-DR1848-3NE-18OCT2017.jpg	NE	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BC-DR1848-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BC-DR1848-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BD

NGS Name: 6917 BD

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR1847 NGS Quad / Sta Num : 47092234/ USGS Quad: COTTON	Get Map
SW	3	54 N	17 W	471104.73	922910.68	2	3		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 27 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6917 BD 2017

1.2 MILES NORTH OF COTTON, 1.05 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 0.3 MILE WEST AND NORTHWEST ON COUNTY ROAD 563 (RANDALL ROAD), THEN 0.1 MILE SOUTH ON SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 40.15, 53.2 FEET WEST-SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, 22.4 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1313.613	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1313.623	.262		1216.097	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.529 12B = -97.526 09 = -97.431 03 = -97.234

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 11 04.72934	92 29 10.68139	490972.725	295014.876	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2777266.294	578409.904	1768105.122	17145016.835	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BD-DR1847-3W-17OCT2017.jpg	W	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BD-DR1847-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BD-DR1847-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BE

NGS Name: 6917 BE

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	3	54 N	17 W	471140.64	922918.94	2	3

NGS ACRN: [DR1846](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 BE 2017

1.8 MILES NORTH OF COTTON, 1.85 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 40.80, 72.3 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 82.4 FEET NORTHEAST OF A POWER POLE, 2.6 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /Class</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1326.326	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /Class</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1326.382	.262			1228.780	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.605 12B = -97.605 09 = -97.510 03 = -97.313

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		St Louis County - South Zone						Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 11 40.64390	92 29 18.93595	490404.304	298654.185	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2776667.376	582043.943	1767511.359	17148650.423	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BE-DR1846-3W-17OCT2017.jpg	W	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BE-DR1846-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BE-DR1846-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BF

NGS Name: 6917 BF

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	55 N	17 W	471239.28	922915.50	2	3

NGS ACRN: DR1845	Get Map
NGS Quad / Sta Num : 47092234/	
USGS Quad: COTTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6917 BF 2017

2.9 MILES NORTH OF COTTON, 2.95 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 41.95, 88.8 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 10.5 FEET NORTH-NORTHWEST OF A FIBER OPTIC MARKER POST, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1330.568	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1330.588	.262		1232.885	.197	2011	GPS - RTRN			2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.706 12B = -97.703 09 = -97.624 03 = -97.431

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 12 39.27915	92 29 15.49686	490644.679	304595.297	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
2776857.806	587986.244	1767709.804	17154590.410	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BF-DR1845-3E-18OCT2017.jpg	E	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BF-DR1845-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BF-DR1845-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 BG

NGS Name: 6917 BG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1841](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	55 N	17 W	471436.64	922858.76	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 54 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6917 BG 2017

5.0 MILES NORTH OF COTTON, 5.25 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 44.25, 34.6 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 5.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1347.878	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1347.861	.262			1250.004	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.864 12B = -97.861 09 = -97.795 03 = -97.608

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 14 36.64349	92 28 58.76282	491805.078	316486.813	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777918.129	599885.771	1768785.919	17166484.440	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BG-DR1841-3E-18OCT2017.jpg	E	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BG-DR1841-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_BG-DR1841-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 D

NGS Name: 6917 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1048](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	52 N	17 W	465732.96	922732.28	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1970	2018	GOOD	Horz=NO Vert=NO	YES	69030	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1978)

Stamping: 6917 D 1970

6.0 MILES SOUTH OF CANYON, 5.7 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, 0.3 MILE NORTHWEST ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 IN INDEPENDENCE, IN THE SOUTHWEST END OF THE SOUTHEAST ABUTMENT OF NORTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69030 OVER THE CLOQUET RIVER, AT TRUNK HIGHWAY 53 MILEPOINT 24.3, 19.3 FEET SOUTHWEST OF NORTHBOUND TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1313.108	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1313.104	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1313.114	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1313.114	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1312.848	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1313.075	.262		1217.694	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.384 12B = -95.377 09 = -95.249 03 = -95.056

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 57 32.96416	92 27 32.27553	497761.048	212763.073	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2784745.156	496223.791	1775468.098	17062851.067	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_D-RN1048-3S-02AUG2017.jpg	S	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_D-RN1048-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_D-RN1048-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 F

NGS Name: 6917 F

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	53 N	17 W	470143.00	922815.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2017	DESTROYED	Horz=NO Vert=NO	NO	69031		NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1978)

Stamping: 6917 F 1967

IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69031 OVER HELLWIG CREEK, 0.8 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, 0.2 MILE NORTH OF COUNTY ROAD 141, AT TRUNK HIGHWAY 53 MILEPOINT 29.2, 19.4 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1335.043	.033	3				VERTICAL CONTROL SURVEY	1970 CS6917

Geoid Separations(ft): GEOID18 = -96.066 12B = -96.073 09 = -95.928 03 = -95.741

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 F 1

NGS Name: 6917 F 1

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DF6466	Get Map
SW	35	53 N	17 W	470142.42	922813.87	2	3	NGS Quad / Sta Num : 47092233/ USGS Quad: CANYON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=NO	YES	69074	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (1978)

Stamping: 6917 F 1 1978

0.8 MILE SOUTH OF CANYON, IN THE SOUTHEAST CORNER OF NORTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69074 OVER HELLWIG CREEK, 0.8 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.2.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1339.043	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1339.036	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1339.003	.262		1242.934	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.063 12B = -96.069 09 = -95.925 03 = -95.738

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 01 42.42241	92 28 13.87103	494882.187	238038.869	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>			<u>Project Info</u>	
MN State Plane - North Zone		UTM - Zone 15						
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781654.077	521473.256	1772413.219	17088094.957	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_F_1-DF6466-3N-18SEP2017.jpg	N	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_F_1-DF6466-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_F_1-DF6466-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 F 2

NGS Name: 6917 F 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6465](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	34	53 N	17 W	470141.70	922815.75	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	GOOD	Horz=NO Vert=NO	YES	69031	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1992)

Stamping: 6917 F 2 1992

0.75 MILE SOUTH OF CANYON, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 53 BRIDGE NUMBER 69031 OVER HELLWIG CREEK, 0.80 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.2, 20.0 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.699	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1335.693	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.640	.262		1239.571	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.063 12B = -96.069 09 = -95.925 03 = -95.738

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 01 41.69626	92 28 15.74574	494752.286	237965.330	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2781524.807	521398.631	1772283.895	17088020.539	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_F_2-DF6465-3N-18SEP2017.jpg	N	Sep 18, 2017
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_F_2-DF6465-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 1

NGS Name: 6917 G 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6462](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	53 N	17 W	470407.69	922821.14	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1967	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	MNDT

Description: (1978) Stamping: 6917 G 1 1967

2.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 32.0, 219.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 35.0 FEET NORTH OF COUNTY ROAD 133, 1.0 FOOT SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order ((Class)		Height	Acc	Adj				Year	Reference			
1348.488	.016	2/1						VERTICAL ADJUSTMENT		2021	00000963			
1348.537	.016	2/1						VERTICAL ADJUSTMENT		2012	00000702			
1348.524	.016	2/1						VERTICAL CONTROL SURVEY		2009	VWITT			
1348.524	.016	2/1						VERTICAL CONTROL SURVEY		1992	VTWIG			

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order ((Class)		Height	Acc	Adj				Year	Reference			
1348.541	.262			1252.071	.197	2011		GPS - RTRN		2017	RTRN2017			

Geoid Separations(ft): GEOID18 = -96.460 12B = -96.470 09 = -96.322 03 = -96.132

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				Geodetic Position				St Louis County - South Zone				Project Info	
Latitude	Longitude			X	Y	Acc	Order	Determination Method	Year	Reference			
47 04 07.69458	92 28 21.14070			494382.773	252758.224	.131	3	GPS - RTRN	2017	RTRN2017			

State Plane and UTM Coordinates (Feet)

NAD83(2011)				MN State Plane - North Zone				UTM - Zone 15				Project Info	
X	Y			X	Y	Acc	Order	Determination Method	Year	Reference			
2781031.006	536186.958			1771810.670	17102803.964	.131	3	GPS - RTRN	2017	RTRN2017			

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1-DF6462-3N-19SEP2017.jpg	N	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1-DF6462-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1-DF6462-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 1 A

NGS Name: 6917 G 1 A

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DM5616 Get Map
NW	23	53 N	19 W	470411.00	924256.00	2		NGS Quad / Sta Num : 47092323/ USGS Quad: MEADOWLANDS

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2007	GOOD	Horz=NO Vert=YES	YES	69502	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (2007)

Stamping: 6917 G 1 A 2003

0.5 MILE EAST OF MEADOWLANDS, IN AN ABUTMENT AT THE SOUTHEAST CORNER OF COUNTY ROAD 133 BRIDGE NUMBER 69502 OVER THE WHITEFACE RIVER, 0.85 MILE EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND CENTRAL AVENUE IN MEADOWLANDS, 18.4 FEET SOUTH OF COUNTY ROAD 133. THE DISK WAS SET IN THE BRIDGE WHEN BUILT IN 1964 THEN STAMPED WHEN RECOVERED IN 2003.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1269.997	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1269.997	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Geoid Separations(ft): GEOID18 = -96.771 12B = -96.765 09 = -96.673 03 = -96.493

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1_A-DM5616-3S-23MAY2007.jpg	S	May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1_A-DM5616-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_1_A-DM5616-1-23MAY2007.jpg		May 23, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 2

NGS Name: 6917 G 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	10	53 N	17 W	470514.00	922821.00			1967	2017	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1978) Stamping: 6917 G 2 1967

3.25 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 STATION 1499+18, 94.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 293.0 FEET NORTH OF COUNTY ROAD 232, 1.2 FEET OF A WITNESS POST.

Station Notes

THE CONCRETE WAS FOUND TO BE BROKEN AND THE DISK WAS MISSING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1356.401	.033	3				VERTICAL CONTROL SURVEY	1970	CS6917

Geoid Separations(ft): GEOID18 = -96.634 12B = -96.644 09 = -96.499 03 = -96.306

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 G 2 A

NGS Name: 6917 G 2 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5617](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	19	53 N	18 W	470418.00	924051.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2021	POOR	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2019)

Stamping: 6917 G 2 A 2007

2.5 MILES EAST OF MEADOWLANDS, 2.5 MILES EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, 23.5 FEET SOUTH OF COUNTY ROAD 133, 44.0 FEET EAST OF EXTENDED COUNTY ROAD 209, 5.5 FEET NORTH OF A WITNESS POST.

Station Notes

FOUND CAP OFF OF ROD. USE WITH CAUTION.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1281.736	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1281.736	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Geoid Separations(ft): GEOID18 = -96.785 12B = -96.778 09 = -96.680 03 = -96.496

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_2_A-DM5617-3S-12JUN2007.jpg	S	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_2_A-DM5617-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_2_A-DM5617-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 3

NGS Name: 6917 G 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5618](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	17	53 N	18 W	470417.17	923858.72	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 43 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6917 G 3 2007

4.0 MILES EAST OF MEADOWLANDS, 4.0 MILES EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, 30.0 FEET NORTH OF COUNTY ROAD 133, 12.0 FEET WEST OF AN ENTRANCE, 21.8 FEET SOUTHWEST OF A TELEPHONE BOX, 3.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1287.009	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702	
1287.005	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1287.041	.262		1190.280	.197	2011	GPS - OPUS	2020	GPSBM	
1287.061	.262		1190.299	.197	2011	GPS - OPUS	2020	GPSBM	
1286.972	.262		1190.217	.197	2011	GPS - RTRN	2020	RTRN2020	

Geoid Separations(ft): GEOID18 = -96.762 12B = -96.755 09 = -96.650 03 = -96.466

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 04 17.17309	92 38 58.72247	450246.615	253781.152	.131	3	GPS - OPUS	2020	GPSBM
47 04 17.17252	92 38 58.72301	450246.578	253781.094	.131	3	GPS - OPUS	2020	GPSBM
47 04 17.17294	92 38 58.72233	450246.625	253781.136	.131	3	GPS - RTRN	2020	RTRN2020

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2736890.877	536839.561	1727688.133	17103516.451	.131	3	GPS - OPUS	2020	GPSBM
2736890.840	536839.502	1727688.096	17103516.393	.131	3	GPS - OPUS	2020	GPSBM
2736890.887	536839.545	1727688.143	17103516.436	.131	3	GPS - RTRN	2020	RTRN2020

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_3-DM5618-3N-12JUL2020.jpg	N	Jul 12, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_3-DM5618-2-12JUL2020.jpg		Jul 12, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_3-DM5618-1-12JUL2020.jpg		Jul 12, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 4

NGS Name: 6917 G 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5619](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	16	53 N	18 W	470409.00	923709.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2007) Stamping: 6917 G 4 2007

2.0 MILES SOUTH-SOUTHWEST OF PAYNE, 5.5 MILES EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, 48.0 FEET NORTH OF COUNTY ROAD 133, 14.0 FEET WEST OF AN ENTRANCE, 33.5 FEET SOUTHWEST OF A MINIMUM ROAD SIGN, 32.0 FEET EAST-NORTHEAST OF THE NORTH LEG OF THE WHITEFACE RIVER STATE FOREST SIGN, 2.4 FEET SOUTH OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
1293.567	.016	2/1						VERTICAL ADJUSTMENT	2012	00000702		
1293.567	.016	2/1						VERTICAL CONTROL SURVEY	2009	VWITT		

Geoid Separations(ft): GEOID18 = -96.712 12B = -96.706 09 = -96.598 03 = -96.414

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_4-DM5619-3N-12JUN2007.jpg	N	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_4-DM5619-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_4-DM5619-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 5

NGS Name: 6917 G 5

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	18 W	470410.00	923554.00	2	

NGS ACRN: DM5620	Get Map
NGS Quad / Sta Num : 47092322/	
USGS Quad: PAYNE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	MNDT

Description: (2007) **Stamping:** 6917 G 5 2007

1.8 MILES SOUTH OF PAYNE AT THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 133, IN A HEADWALL OF A BOX CULVERT IN THE SOUTHEAST CORNER OF A COUNTY ROAD 133 CULVERT OVER A CREEK, 33.4 FEET SOUTH OF COUNTY ROAD 133, 99.6 FEET EAST OF COUNTY ROAD 7.

Station Notes

THE DISK IS SET IN A DRILL HOLE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>			
1303.688	.016	2/1				VERTICAL ADJUSTMENT			2012	00000702			
1303.688	.016	2/1				VERTICAL CONTROL SURVEY			2009	VWITT			

Geoid Separations(ft): GEOID18 = -96.696 12B = -96.689 09 = -96.571 03 = -96.391

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_5-DM5620-3W-12JUN2007.jpg	W	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_5-DM5620-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_5-DM5620-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 6

NGS Name: 6917 G 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5621](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	1	53 N	18 W	470556.00	923401.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	POOR	Horz=NO Vert=NO	YES		PROJECTS 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)	SURVEY DISK	MNDT

Description: (2007) Stamping: 6917 G 6 2007

1.5 MILES EAST-NORTHEAST OF PAYNE, 0.2 MILE NORTH ALONG COUNTY ROAD 7 FROM THE CENTER OF PAYNE, THEN 1.5 MILES EAST ON COUNTY ROAD 232 TO A DITCH CROSSING, 33.7 FEET SOUTH OF COUNTY ROAD 232, 10.9 FEET WEST OF AN ENTRANCE, 1.8 FEET NORTH OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1311.201	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1311.198	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Geoid Separations(ft): GEOID18 = -96.939 12B = -96.932 09 = -96.814 03 = -96.630

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_6-DM5621-3S-12JUN2007.jpg	S	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_6-DM5621-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_6-DM5621-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 G 7

NGS Name: 6917 G 7

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5622](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	9	53 N	17 W	470514.44	922956.65	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6917 G 7 2007

3.4 MILES NORTH-NORTHWEST OF CANYON, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON TO TRUNK HIGHWAY 53 MILEPOINT 33.25, THEN 1.3 MILES WEST ON COUNTY ROAD 232, 35.6 FEET NORTH OF COUNTY ROAD 232, 20.9 FEET WEST OF A DRIVEWAY, 95.9 FEET WEST OF A POWER POLE, 73.0 FEET SOUTHWEST OF AN EAST GATE POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference	
1359.236	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	
1359.275	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702	
1359.272	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference	
1359.321	.262		1262.622	.197	2011	GPS - OPUS	2020	GPSBM	
1359.351	.262		1262.652	.197	2011	GPS - OPUS	2020	GPSBM	
1359.285	.262		1262.579	.197	2011	GPS - RTRN	2020	RTRN2020	
1359.321	.262		1262.616	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.699 12B = -96.706 09 = -96.565 03 = -96.378

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference		
47 05 14.44096	92 29 56.65542	487774.692	259524.138	.131	3	GPS - OPUS	2020	GPSBM		
47 05 14.44106	92 29 56.65538	487774.695	259524.148	.131	3	GPS - OPUS	2020	GPSBM		
47 05 14.44105	92 29 56.65435	487774.766	259524.147	.131	3	GPS - RTRN	2020	RTRN2020		
47 05 14.44084	92 29 56.65446	487774.758	259524.126	.131	3	GPS - RTRN	2017	RTRN2017		

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference		
2774366.785	542896.631	1765158.140	17109520.295	.131	3	GPS - OPUS	2020	GPSBM		
2774366.787	542896.642	1765158.143	17109520.305	.131	3	GPS - OPUS	2020	GPSBM		
2774366.858	542896.641	1765158.214	17109520.305	.131	3	GPS - RTRN	2020	RTRN2020		
2774366.851	542896.620	1765158.207	17109520.283	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_7-DM5622-3N-12JUL2020.jpg	N	Jul 12, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_7-DM5622-2-12JUL2020.jpg		Jul 12, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_G_7-DM5622-1-12JUL2020.jpg		Jul 12, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 H

NGS Name: 6917 H

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6461](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	10	53 N	17 W	470532.43	922820.41	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1970	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	MNDT

Description: (2007)

Stamping: 6917 H 1967

3.5 MILES NORTH OF CANYON, 3.5 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 33.6, 95.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 173.0 FEET NORTH OF A FIELD ENTRANCE WEST, 1.1 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1361.087	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1361.142	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1361.129	.016	2/1					VERTICAL CONTROL SURVEY	2009	VGNES
1361.129	.016	2/1					VERTICAL CONTROL SURVEY	2009	VWITT
1361.129	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG
NGVD29				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1360.525	.033	3					VERTICAL CONTROL SURVEY	1970	CS6917

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1361.165	.262			1264.476	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.683 12B = -96.689 09 = -96.548 03 = -96.355

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Determination Method	Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
47 05 32.43140	92 28 20.40994	494435.808	261343.942	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Determination Method	Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order			Year	Reference
2781011.881	544772.200	1771803.357	17111386.054	.131	3	GPS - RTRN		2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_H-DF6461-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_H-DF6461-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_H-DF6461-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 J

NGS Name: 6917 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6459](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	26	54 N	17 W	470755.98	922817.04	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1970	2017	GOOD	Horz=NO Vert=NO	YES	91065	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1970)

Stamping: 6917 J 1970

2.6 MILES SOUTH OF COTTON, IN THE SOUTHEAST CORNER OF NORTHBOUND TRUNK HIGHWAY 53 BOX CULVERT NUMBER 91065 OVER JENKINS CREEK, 2.6 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 36.40, 25.8 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE. THE SURVEY MARK IS UNSUITABLE FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1336.041	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1336.087	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1336.077	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.437	.033	3				VERTICAL CONTROL SURVEY	1970	CS6917

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1336.113	.262		1239.066	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.050 12B = -97.047 09 = -96.929 03 = -96.732

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 07 55.97590	92 28 17.04473	494672.644	275888.240	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2781126.456	559316.805	1771937.842	17125925.221	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_J-DF6459-3E-18SEP2017.jpg	E	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_J-DF6459-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_J-DF6459-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 K

NGS Name: 6917 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6458](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	54 N	17 W	470925.00	922823.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1970	2017	NOT FOUND	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNDT

Description: (2019)

Stamping:

1.0 MILE SOUTH OF COTTON, AT TRUNK HIGHWAY 53 STATION 1752+00, 160.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1331.470	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1331.464	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1330.381	.033	3				VERTICAL CONTROL SURVEY	1970 CS6917

Geoid Separations(ft): GEOID18 = -97.270 12B = -97.267 09 = -97.162 03 = -96.965

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 L

NGS Name: 6917 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6464](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	53 N	17 W	470237.00	922812.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1970	1992	DESTROYED	Horz=NO Vert=NO	NO			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - MEDIUM	BENCH MARK DISK	MNDT

Description: (1978) Stamping: 6917 L 1970

IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 53 BOX CULVERT HEADWALL, 0.3 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 30.25, 17.9 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53.

Station Notes

THE CULVERT HAS BEEN REPLACED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1340.355	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1340.345	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1339.814	.033	3				VERTICAL CONTROL SURVEY	1970	CS6917

Geoid Separations(ft): GEOID18 = -96.214 12B = -96.220 09 = -96.069 03 = -95.882

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 M

NGS Name: 6917 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6460](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	3	53 N	17 W	470611.70	922820.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1970	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	MNDT

Description: (2007) Stamping: 6917 M 1967

4.6 MILES SOUTH OF COTTON, 4.5 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 34.4, 86.5 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 1.0 FOOT SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1364.741	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1364.800	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1364.787	.016	2/1				VERTICAL CONTROL SURVEY	2009	VGNES
1364.787	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1364.787	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1364.157	.033	3				VERTICAL CONTROL SURVEY	1970	CS6917

Geoid Separations(ft): GEOID18 = -96.785 12B = -96.791 09 = -96.653 03 = -96.460

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M-DF6460-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M-DF6460-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M-DF6460-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 M 1

NGS Name: 6917 M 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6456](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	10	54 N	17 W	471048.87	922846.61	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1964	2017	GOOD	Horz=NO Vert=NO	YES	69018	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1992)

Stamping: 6917 M 1 1964

0.75 MILE NORTH OF COTTON, IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 53 BRIDGE NUMBER 69018, 0.75 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 39.75, 19.5 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53.

Station Notes

THE SURVEY MARK HAS BEEN DEEMED UNSAFE DUE TO A FALL RISK AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE. THE SURVEY MARK IS UNSUITABLE FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1322.845	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1322.832	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1322.832	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1322.855	.262		1225.378	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.480 12B = -97.477 09 = -97.378 03 = -97.182

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 10 48.87486	92 28 46.61109	492634.859	293407.726	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2778941.707	576816.936	1769777.780	17143422.140	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M_1-DF6456-3N-14SEP2017.jpg	N	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M_1-DF6456-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6917_M_1-DF6456-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6917 N

NGS Name: 6917 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6455](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	3	54 N	17 W	471107.00	922910.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	1990	DESTROYED	Horz=NO Vert=NO	NO	6604		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (1992)

Stamping: 6917 N

IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 6604 OVER THE WHITEFACE RIVER,
1.2 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN
COTTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1318.278	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1318.278	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Geoid Separations(ft): GEOID18 = -97.533 12B = -97.533 09 = -97.434 03 = -97.237

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 P

NGS Name: 6917 P

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	22	55 N	17 W	471338.00	922913.00			1966	2017	NOT FOUND	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNDT

Description: (1966)

Stamping:

5.0 MILES NORTH OF COTTON, AT TRUNK HIGHWAY 53 STATION 1733+66, 108.0 FEET EAST OF TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1345.804	.033	3				VERTICAL CONTROL SURVEY	1966 CS6917

Geoid Separations(ft): GEOID18 = -97.795 12B = -97.792 09 = -97.720 03 = -97.529

* No Horizontal Positions in the Database *



Mn/DOT Name: 6917 Q

NGS Name: 6917 Q

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	22	55 N	17 W	471504.00	922854.00	2	

NGS ACRN: [DF6450](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1966	2017	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNDT

Description: (1992)

Stamping:

6.0 MILES NORTH OF COTTON, AT TRUNK HIGHWAY 53 STATION 1771+04, AT TRUNK HIGHWAY 53 MILEPOINT 44.8, 80.0 FEET EAST OF TRUNK HIGHWAY 53, 1.0 FOOT WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.017	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1355.017	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.639	.033	3				VERTICAL CONTROL SURVEY	1966	CS6917

Geoid Separations(ft): GEOID18 = -97.890 12B = -97.887 09 = -97.825 03 = -97.644

* No Horizontal Positions in the Database *



Mn/DOT Name: 6927 A

NGS Name: 6927 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9539](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	32	51 N	20 W	465135.44	925441.38		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1953	2017	DESTROYED	Horz=NO Vert=NO	NO			NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1999)

Stamping: 6927 A 1953

4.2 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, IN THE SOUTHEAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT, AT TRUNK HIGHWAY 73 MILEPOINT 38.70, STATION 221+96, THE 25.0 FEET EAST OF TRUNK HIGHWAY 73.

Station Notes

THE DISK HAS BEEN REMOVED.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1263.990	.033	3				VERTICAL CONTROL SURVEY	1953	CS6927	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
			1169.866	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
			1169.962	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1264.597	.131		1170.034	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769	
1264.597	.131		1170.034	.066	1996	GPS - STATIC	2002	HFLOO	

Geoid Separations(ft): GEOID18 = -94.741 12B = -94.731 09 = -94.636 03 = -94.534

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 51 35.43998	92 54 41.38451	384537.276	176878.767	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 51 35.44010	92 54 41.38538	384537.215	176878.779	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 51 35.43977	92 54 41.38493	384537.246	176878.746	.033	C	ADJUSTMENT	2003	GPS1769
46 51 35.43977	92 54 41.38493	384537.246	176878.747	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671828.593	459394.477	1662549.711	17026190.109	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671828.533	459394.489	1662549.651	17026190.121	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671828.564	459394.455	1662549.682	17026190.087	.033	C	ADJUSTMENT	2003	GPS1769
2671828.564	459394.456	1662549.682	17026190.088	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 B

NGS Name: 6927 B

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DE9540 NGS Quad / Sta Num : 46092444/ USGS Quad: FLOODWOOD Get Map
SW	8	51 N	20 W	465442.29	925439.23	2	C	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: 6927 B 1999

0.65 MILE SOUTH OF FLOODWOOD, 0.65 MILE SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 42.3, 67.0 FEET EAST OF TRUNK HIGHWAY 73, 16.1 FEET SOUTH-SOUTHWEST OF A POWER POLE, 21.0 FEET NORTH OF AN ENTRANCE, 3.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1270.388	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1270.388	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1175.181	.013	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1175.273	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1270.404	.131		1175.329	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1270.404	.131		1175.329	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.216 12B = -95.200 09 = -95.121 03 = -95.010

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 42.29254	92 54 39.22971	384798.329	195809.221	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 42.29264	92 54 39.23057	384798.270	195809.232	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 42.29245	92 54 39.22986	384798.319	195809.212	.033	C	ADJUSTMENT	2003	GPS1769
46 54 42.29245	92 54 39.22986	384798.318	195809.211	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671932.033	478326.059	1662677.915	17045113.240	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671931.973	478326.069	1662677.855	17045113.250	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671932.022	478326.050	1662677.905	17045113.231	.033	C	ADJUSTMENT	2003	GPS1769
2671932.022	478326.050	1662677.905	17045113.231	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 B RESET

NGS Name: 6927 B RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5171](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	8	51 N	20 W	465442.29	925439.23	2	3	2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6927 B RESET 2017

0.65 MILE SOUTH OF FLOODWOOD, 0.65 MILE SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 42.3, 67.0 FEET EAST OF TRUNK HIGHWAY 73, 16.1 FEET SOUTH-SOUTHWEST OF A POWER POLE, 21.0 FEET NORTH OF AN ENTRANCE, 3.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1270.306	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1270.394	.262		1175.194	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.216 12B = -95.200 09 = -95.121 03 = -95.010

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 54 42.29182	92 54 39.23003	384798.307	195809.148	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2671932.010	478325.986	1662677.893	17045113.167	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_B_RESET-DR5171-3E-06SEP2017.jpg	E	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_B_RESET-DR5171-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_B_RESET-DR5171-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 C

NGS Name: 6927 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9541](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	17	51 N	20 W	465412.18	925439.49	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	SURVEY DISK	MNDT

Description: (1999) **Stamping:** 6927 C 1999

1.2 MILES SOUTH OF FLOODWOOD, 1.2 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 41.75, 76.0 FEET EAST OF TRUNK HIGHWAY 73, 40.0 FEET SOUTH OF COUNTY ROAD 839, 3.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1276.290	.016	2/1					VERTICAL ADJUSTMENT	2004	00000464	
1276.290	.016	2/1					VERTICAL CONTROL SURVEY	2002	VFLOO	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
				1181.136	.017	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1181.231	.018	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1276.277	.131			1181.313	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769	
1276.277	.131			1181.313	.066	1996	GPS - STATIC	2002	HFLOO	

Geoid Separations(ft): GEOID18 = -95.138 12B = -95.124 09 = -95.042 03 = -94.934

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 54 12.17948	92 54 39.48984			384762.329	192758.353	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 54 12.17957	92 54 39.49071			384762.268	192758.363	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 54 12.17928	92 54 39.49019			384762.304	192758.333	.033	C	ADJUSTMENT	2003	GPS1769
46 54 12.17928	92 54 39.49019			384762.305	192758.332	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)				MN State Plane - North Zone				UTM - Zone 15		Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
		2671921.433	475275.077	1662663.323	17042063.593	.013		ADJUSTMENT	2012	GPS2800	

NAD83(2007)				MN State Plane - North Zone				UTM - Zone 15		Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
		2671921.372	475275.086	1662663.262	17042063.602	.016		ADJUSTMENT	2007	GPS2300	

NAD83(1996)				MN State Plane - North Zone				UTM - Zone 15		Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
		2671921.409	475275.057	1662663.298	17042063.573	.033	C	ADJUSTMENT	2003	GPS1769	
		2671921.409	475275.057	1662663.298	17042063.573	.033	C	GPS - STATIC	2002	HFLOO	



Mn/DOT Name: 6927 C RESET

NGS Name: 6927 C RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5173](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	17	51 N	20 W	465412.18	925439.49	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 8 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 C RESET 2017

1.2 MILES SOUTH OF FLOODWOOD, 1.2 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 41.75, 76.0 FEET EAST OF TRUNK HIGHWAY 73, 36.7 FEET SOUTH OF COUNTY ROAD 839, 3.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1276.097	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1276.103	.262		1180.979	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.138 12B = -95.124 09 = -95.042 03 = -94.934

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 54 12.17974	92 54 39.49115	384762.238	192758.380	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2671921.342	475275.103	1662663.232	17042063.620	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_C_RESET-DR5173-3SE-10AUG2017.jpg	SE	Aug 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_C_RESET-DR5173-2-10AUG2017.jpg		Aug 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_C_RESET-DR5173-1-10AUG2017.jpg		Aug 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 D

NGS Name: 6927 D

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DE9542 NGS Quad / Sta Num : 46092443/ USGS Quad: PRAIRIE LAKE	Get Map
SW	29	51 N	20 W	465202.06	925439.25	2	C		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (1999)

Stamping: 6927 D 1999

3.75 MILES SOUTH OF FLOODWOOD, 3.75 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 39.2, 123.0 FEET EAST OF TRUNK HIGHWAY 73, 33.0 FEET NORTH OF COUNTY ROAD 840, 7.0 FEET EAST OF AN ENTRANCE, 2.6 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1270.978	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1270.975	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1176.179	.011	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1176.271	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1270.962	.131		1176.343	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1270.962	.131		1176.343	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.810 12B = -94.800 09 = -94.705 03 = -94.603

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 52 02.05521	92 54 39.25094	384701.406	179574.460	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 52 02.05532	92 54 39.25181	384701.346	179574.472	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 52 02.05500	92 54 39.25136	384701.377	179574.439	.033	C	ADJUSTMENT	2003	GPS1769
46 52 02.05500	92 54 39.25136	384701.376	179574.437	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671970.274	462091.403	1662694.864	17028885.648	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671970.213	462091.414	1662694.803	17028885.659	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671970.244	462091.382	1662694.835	17028885.626	.033	C	ADJUSTMENT	2003	GPS1769
2671970.244	462091.382	1662694.834	17028885.626	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 D RESET

NGS Name: 6927 D RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5177](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	29	51 N	20 W	465202.05	925439.25	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 12 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 D RESET 2017

3.75 MILES SOUTH OF FLOODWOOD, 3.75 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 39.2, 123.0 FEET EAST OF TRUNK HIGHWAY 73, 33.0 FEET NORTH OF COUNTY ROAD 840 (MIRBAT ROAD), 7.0 FEET EAST OF A FIELD ENTRANCE, 2.6 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1270.755	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1270.723	.262			1175.926	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.810 12B = -94.800 09 = -94.705 03 = -94.603

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 52 02.05475	92 54 39.24996	384701.474	179574.413	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2671970.342	462091.357	1662694.932	17028885.601	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_D_RESET-DR5177-3N-10AUG2017.jpg	N	Aug 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_D_RESET-DR5177-2-10AUG2017.jpg		Aug 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_D_RESET-DR5177-1-10AUG2017.jpg		Aug 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 E

NGS Name: 6927 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9543](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	32	51 N	20 W	465122.56	925440.80	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2019) **Stamping:** 6927 E 1999

4.5 MILES SOUTH OF FLOODWOOD, 4.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 38.45, 74.0 FEET EAST OF TRUNK HIGHWAY 73, 5.8 FEET SOUTH OF A FENCE CORNER, 4.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1269.591	.016	2/1					VERTICAL ADJUSTMENT	2004	00000464
1269.587	.016	2/1					VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
				1174.886	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1174.978	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1269.584	.131			1175.053	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1269.584	.131			1175.053	.066	1996	GPS - STATIC	2003	HSTLO
1269.584	.131			1175.053	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1269.584	.131			1175.053	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.708 12B = -94.701 09 = -94.603 03 = -94.498

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 22.55717	92 54 40.80038	384570.190	175573.286	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 22.55728	92 54 40.80125	384570.129	175573.298	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 22.55696	92 54 40.80079	384570.161	175573.265	.033	C	ADJUSTMENT	2003	GPS1931
46 51 22.55696	92 54 40.80079	384570.161	175573.265	.033	C	GPS - STATIC	2003	HSTLO
46 51 22.55696	92 54 40.80079	384570.161	175573.265	.033	C	ADJUSTMENT	2003	GPS1769
46 51 22.55696	92 54 40.80079	384570.161	175573.265	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671872.374	458089.333	1662591.761	17024885.491	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671872.314	458089.343	1662591.701	17024885.502	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671872.346	458089.311	1662591.733	17024885.470	.033	C	ADJUSTMENT	2003	GPS1931
2671872.346	458089.311	1662591.733	17024885.470	.033	C	GPS - STATIC	2003	HSTLO
2671872.346	458089.311	1662591.733	17024885.470	.033	C	ADJUSTMENT	2003	GPS1769
2671872.346	458089.311	1662591.733	17024885.470	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 E RESET

NGS Name: 6927 E RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5179](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	32	51 N	20 W	465122.56	925440.80	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 E RESET 2017

4.5 MILES SOUTH OF FLOODWOOD, 4.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 38.45, 74.0 FEET EAST OF TRUNK HIGHWAY 73, 5.8 FEET SOUTH OF A FENCE CORNER, 4.0 FEET SOUTH OF A WITNESS POST.

Station Pair: FALBO - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1269.440	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1269.486	.262		1174.784	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.708 12B = -94.701 09 = -94.603 03 = -94.498

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 22.55749	92 54 40.80068	384570.169	175573.319	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2671872.353	458089.365	1662591.741	17024885.523	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_E_RESET-DR5179-3E-06SEP2017.jpg	E	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_E_RESET-DR5179-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_E_RESET-DR5179-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 F

NGS Name: 6927 F

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9544](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	5	50 N	20 W	465036.08	925437.56	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2019) Stamping: 6927 F 1999

5.4 MILES SOUTH OF FLOODWOOD, 5.4 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 37.55, 71.0 FEET SOUTHEAST OF TRUNK HIGHWAY 73, 15.0 FEET SOUTHWEST OF AN ENTRANCE, 69.0 FEET WEST-NORTHWEST OF A POWER POLE, 2.5 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>			
1267.563	.016	2/1						VERTICAL ADJUSTMENT	2004	00000464			
1267.560	.016	2/1						VERTICAL CONTROL SURVEY	2002	VFLOO			

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>			
			1172.996	.011	2011			HORIZONTAL ADJUSTMENT	2012	GPS2800			
			1173.091	.011	2007			HORIZONTAL ADJUSTMENT	2007	GPS2300			
1267.550	.131		1173.164	.066	1996			HORIZONTAL ADJUSTMENT	2003	GPS1769			
1267.550	.131		1173.164	.066	1996			GPS - STATIC	2002	HFLOO			

Geoid Separations(ft): GEOID18 = -94.583 12B = -94.577 09 = -94.481 03 = -94.376

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 36.07928	92 54 37.56415	384767.456	170862.990	.010		ADJUSTMENT	2012	GPS2800

<u>NAD83(2007)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 36.07940	92 54 37.56501	384767.396	170863.002	.010		ADJUSTMENT	2007	GPS2300

<u>NAD83(1996)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 36.07907	92 54 37.56457	384767.427	170862.969	.033	C	ADJUSTMENT	2003	GPS1769
46 50 36.07907	92 54 37.56457	384767.426	170862.969	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672108.846	453380.894	1662821.954	17020178.859	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672108.786	453380.906	1662821.894	17020178.871	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672108.817	453380.872	1662821.924	17020178.838	.033	C	ADJUSTMENT	2003	GPS1769
2672108.817	453380.872	1662821.924	17020178.838	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 F RESET

NGS Name: 6927 F RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5180](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	5	50 N	20 W	465036.08	925437.56	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 F RESET 2017

5.4 MILES SOUTH OF FLOODWOOD, 5.4 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 37.55, 71.0 FEET SOUTHEAST OF TRUNK HIGHWAY 73, 69.0 FEET WEST-NORTHWEST OF A POWER POLE WITH A GUY WIRE, 15.0 FEET SOUTHWEST OF A FIELD ENTRANCE, 2.5 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1267.363	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1267.327	.262		1172.750	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.583 12B = -94.577 09 = -94.481 03 = -94.376

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 50 36.07883	92 54 37.56331	384767.514	170862.944	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2672108.905	453380.848	1662822.012	17020178.814	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_F_RESET-DR5180-3SE-06SEP2017.jpg	SE	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_F_RESET-DR5180-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_F_RESET-DR5180-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 G

NGS Name: 6927 G

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9545](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	18	50 N	20 W	464906.87	925445.93	2	C	1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: 6927 G 1999

7.15 MILES SOUTH OF FLOODWOOD, 7.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 35.80, 73.0 FEET WEST OF TRUNK HIGHWAY 73, 5.1 FEET NORTH-NORTHEAST OF A RIGHT-OF-WAY POST, 2.7 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.865	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1292.858	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1198.544	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1198.639	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1292.845	.131		1198.715	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1292.845	.131		1198.715	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.331 12B = -94.327 09 = -94.229 03 = -94.127

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 49 06.87453	92 54 45.93094	384132.460	161828.533	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 49 06.87465	92 54 45.93180	384132.400	161828.546	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 49 06.87432	92 54 45.93137	384132.430	161828.512	.033	C	ADJUSTMENT	2003	GPS1769
46 49 06.87432	92 54 45.93137	384132.431	161828.512	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2671549.090	444341.519	1662250.598	17011144.334	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2671549.030	444341.531	1662250.538	17011144.346	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2671549.060	444341.497	1662250.568	17011144.313	.033	C	ADJUSTMENT	2003	GPS1769
2671549.060	444341.497	1662250.568	17011144.313	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 G RESET

NGS Name: 6927 G RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5183](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	18	50 N	20 W	464906.87	925445.93	2	3	2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 6 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 G RESET 2017

7.15 MILES SOUTH OF FLOODWOOD, 7.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 35.80, 73.0 FEET WEST OF TRUNK HIGHWAY 73, 5.1 FEET NORTH-NORTHWEST OF A RIGHT-OF-WAY POST, 2.7 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1292.671	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1292.658	.262			1198.334	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.331 12B = -94.327 09 = -94.229 03 = -94.127

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 49 06.87470	92 54 45.93049			384132.491	161828.550	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2671549.121	444341.536			1662250.629	17011144.351	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_G_RESET-DR5183-3W-06SEP2017.jpg	W	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_G_RESET-DR5183-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_G_RESET-DR5183-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 H

NGS Name: 6927 H

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9546](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	18	50 N	20 W	464834.65	925445.78	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (1999) **Stamping:** 6927 H 1999

8.0 MILES SOUTH OF FLOODWOOD, 7.95 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 35.05, 250.0 FEET NORTH OF TRUNK HIGHWAY 73, 23.0 FEET WEST OF COUNTY ROAD 827, 3.2 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1291.989	.016	2/1					VERTICAL ADJUSTMENT	2004	00000464	
1291.982	.016	2/1					VERTICAL CONTROL SURVEY	2002	VFLOO	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
				1197.783	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1197.878	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1291.992	.131			1197.954	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769	
1291.992	.131			1197.954	.066	1996	GPS - STATIC	2002	HFLOO	

Geoid Separations(ft): GEOID18 = -94.239 12B = -94.232 09 = -94.134 03 = -94.035

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 48 34.65168	92 54 45.78334			384123.456	158563.785	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 48 34.65179	92 54 45.78420			384123.396	158563.797	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 48 34.65146	92 54 45.78377			384123.426	158563.763	.033	C	ADJUSTMENT	2003	GPS1769
46 48 34.65146	92 54 45.78377			384123.425	158563.764	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)				MN State Plane - North Zone				UTM - Zone 15				Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference			
		2671567.266	441076.814	1662264.484	17007881.109	.013		ADJUSTMENT	2012	GPS2800			

NAD83(2007)				MN State Plane - North Zone				UTM - Zone 15				Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference			
		2671567.206	441076.825	1662264.424	17007881.120	.013		ADJUSTMENT	2007	GPS2300			

NAD83(1996)				MN State Plane - North Zone				UTM - Zone 15				Project Info	
		X	Y	X	Y	Acc	Order	Determination Method	Year	Reference			
		2671567.236	441076.792	1662264.454	17007881.087	.033	C	ADJUSTMENT	2003	GPS1769			
		2671567.236	441076.792	1662264.454	17007881.087	.033	C	GPS - STATIC	2002	HFLOO			



Mn/DOT Name: 6927 H RESET

NGS Name: 6927 H RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5185](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	18	50 N	20 W	464834.65	925445.78	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 H RESET 2017

8.0 MILES SOUTH OF FLOODWOOD, 7.95 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 35.05, 250.0 FEET NORTH OF TRUNK HIGHWAY 73, 23.0 FEET WEST OF COUNTY ROAD 827 (MOBERG ROAD), 3.2 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1291.799	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1291.769	.262		1197.537	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.239 12B = -94.232 09 = -94.134 03 = -94.035

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 48 34.65213	92 54 45.78294	384123.484	158563.831	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671567.293	441076.860	1662264.511	17007881.154	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_H_RESET-DR5185-3W-06SEP2017.jpg	W	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_H_RESET-DR5185-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_H_RESET-DR5185-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 J

NGS Name: 6927 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9547](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	21	50 N	20 W	464743.33	925313.67	2	C	1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 50 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: 6927 J 1999

8.0 MILES NORTH OF CROMWELL, 8.25 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT A TRUNK HIGHWAY 73 MILEPOINT 33.45, 69.0 FEET NORTH OF TRUNK HIGHWAY 73, 45.0 FEET EAST OF AN ENTRANCE, 3.7 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.981	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1289.968	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1195.874	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1195.969	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1289.958	.131		1196.051	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1289.958	.131		1196.051	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.091 12B = -94.081 09 = -93.989 03 = -93.884

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 43.32798	92 53 13.66902	390502.122	153327.100	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 43.32809	92 53 13.66988	390502.062	153327.112	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 43.32775	92 53 13.66949	390502.089	153327.077	.033	C	ADJUSTMENT	2003	GPS1769
46 47 43.32775	92 53 13.66949	390502.090	153327.079	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2677989.328	435893.422	1668676.754	17002691.680	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2677989.268	435893.433	1668676.694	17002691.691	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2677989.295	435893.398	1668676.721	17002691.656	.033	C	ADJUSTMENT	2003	GPS1769
2677989.295	435893.398	1668676.721	17002691.656	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 J RESET

NGS Name: 6927 J RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5188](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	21	50 N	20 W	464743.33	925313.67	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 50 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 J RESET 2017

8.0 MILES NORTH OF CROMWELL, 8.25 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT TRUNK HIGHWAY 73 MILEPOINT 33.46, 69.0 FEET NORTH OF TRUNK HIGHWAY 73, 45.0 FEET EAST OF AN ENTRANCE TO A GRAVEL PIT, 14.7 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1289.751	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1289.948	.262			1195.867	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.091 12B = -94.081 09 = -93.989 03 = -93.884

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 47 43.32800	92 53 13.66932			390502.101	153327.102	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2677989.307	435893.423			1668676.733	17002691.682	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_J_RESET-DR5188-3N-06SEP2017.jpg	N	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_J_RESET-DR5188-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_J_RESET-DR5188-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 K

NGS Name: 6927 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9548](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	28	50 N	20 W	464718.09	925245.29	2	C	1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: 6927 K 1999

7.65 MILES NORTH OF CROMWELL, 7.65 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, TO TRUNK HIGHWAY 73 MILEPOINT 32.85, THEN 0.1 MILE EAST ON A ROAD, 30.0 FEET NORTH OF A ROAD, 3.5 FEET WEST-SOUTHWEST OF A FENCE CORNER, 113.6 FEET WEST OF A POWER POLE, 2.5 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1305.900	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1305.890	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1211.855	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1211.946	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1305.903	.131		1212.025	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1305.903	.131		1212.025	.066	1996	GPS - STATIC	2003	HSTLO
1305.903	.131		1212.025	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1305.903	.131		1212.025	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.016 12B = -94.002 09 = -93.914 03 = -93.809

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 18.08916	92 52 45.28821	392462.874	150759.095	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 18.08928	92 52 45.28907	392462.814	150759.108	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 18.08893	92 52 45.28865	392462.843	150759.072	.033	C	ADJUSTMENT	2003	GPS1931
46 47 18.08893	92 52 45.28865	392462.843	150759.072	.033	C	GPS - STATIC	2003	HSTLO
46 47 18.08893	92 52 45.28865	392462.843	150759.072	.033	C	ADJUSTMENT	2003	GPS1769
46 47 18.08893	92 52 45.28865	392462.843	150759.072	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679971.412	433341.829	1670654.549	17000138.665	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679971.352	433341.841	1670654.489	17000138.677	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679971.382	433341.806	1670654.518	17000138.642	.033	C	ADJUSTMENT	2003	GPS1931
2679971.382	433341.805	1670654.518	17000138.642	.033	C	GPS - STATIC	2003	HSTLO
2679971.382	433341.806	1670654.518	17000138.642	.033	C	ADJUSTMENT	2003	GPS1769
2679971.382	433341.806	1670654.518	17000138.642	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: 6927 K RESET

NGS Name: 6927 K RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5189](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	28	50 N	20 W	464718.09	925245.29	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 K RESET 2017

7.65 MILES NORTH OF CROMWELL, 7.65 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL TO TRUNK HIGHWAY 73 MILEPOINT 32.85, THEN 0.1 MILE EAST ON COUNTY ROAD 86, 30.0 FEET NORTH OF COUNTY ROAD 86, 3.5 FEET WEST-SOUTHWEST OF A FENCE CORNER, 2.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1305.834	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1306.083	.262		1212.081	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -94.016 12B = -94.002 09 = -93.914 03 = -93.809

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
46 47 18.08867	92 52 45.28852	392462.852	150759.046	.131	3	GPS - RTRN 2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
2679971.391	433341.779	1670654.527	17000138.616	.131	3	GPS - RTRN 2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_K_RESET-DR5189-3N-06SEP2017.jpg	N	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_K_RESET-DR5189-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_K_RESET-DR5189-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 L

NGS Name: 6927 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5184](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	17	50 N	20 W	464906.30	925444.43	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6927 L 2017

7.5 MILES SOUTH OF FLOODWOOD, 7.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 35.8, 32.3 FEET EAST OF TRUNK HIGHWAY 73, 45.3 FEET NORTH OF AN ENTRANCE, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1293.915	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1293.944	.262			1199.620	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.331 12B = -94.324 09 = -94.229 03 = -94.127

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 49 06.29773	92 54 44.43039	384236.479	161769.478	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2671653.597	444283.332	1662354.981	17011086.037	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_L-DR5184-3E-10OCT2017.jpg	E	Oct 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_L-DR5184-2-10OCT2017.jpg		Oct 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_L-DR5184-1-10OCT2017.jpg		Oct 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 M

NGS Name: 6927 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5174](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	20	51 N	20 W	465334.96	925440.43	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 M 2017

1.9 MILES SOUTH OF FLOODWOOD, 1.9 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 41.0, 43.3 FEET EAST OF TRUNK HIGHWAY 73, 18.9 FEET SOUTHEAST OF MILEPOST NUMBER 41, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1286.316	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1286.224	.262		1191.192	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.046 12B = -95.029 09 = -94.944 03 = -94.839

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 53 34.96426	92 54 40.42538	384675.180	188988.195	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671865.677	471504.414	1662602.650	17038294.646	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_M-DR5174-3E-09OCT2017.jpg	E	Oct 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_M-DR5174-2-09OCT2017.jpg		Oct 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_M-DR5174-1-09OCT2017.jpg		Oct 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6927 N

NGS Name: 6927 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5172](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	8	51 N	20 W	465434.05	925441.24	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6927 N 2017

1.25 MILES SOUTH OF FLOODWOOD, 0.75 MILE SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 42.1, 64.2 FEET WEST OF TRUNK HIGHWAY 73, 46.5 FEET NORTH OF AN ENTRANCE, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj		Year	Reference	
1273.856	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj		Year	Reference	
1273.820	.262			1178.639	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.193 12B = -95.180 09 = -95.098 03 = -94.990

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 54 34.05114	92 54 41.23512	384654.179	194975.043	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2671794.836	477490.733	1662539.683	17044278.455	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_N-DR5172-3W-09OCT2017.jpg	W	Oct 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_N-DR5172-2-09OCT2017.jpg		Oct 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6927_N-DR5172-1-09OCT2017.jpg		Oct 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 A

NGS Name: 6928 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5120](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	6	57 N	20 W	465541.37	925452.45	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 A 2017

IN FLOODWOOD, 0.3 MILE NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 43.4, 36.3 FEET EAST OF TRUNK HIGHWAY 73, 43.5 FEET SOUTH OF A GRAVEL ROAD, 90.9 FEET NORTH OF THE NORTHEAST CORNER OF A BRIDGE, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1244.594	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1244.761	.262			1149.410	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.367 12B = -95.351 09 = -95.275 03 = -95.161

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 55 41.37076	92 54 52.45478	383915.584	201800.298	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2670999.469	484309.402	1661753.588	17051095.234	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_A-DR5120-3E-31JUL2017.jpg	E	Jul 31, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_A-DR5120-2-31JUL2017.jpg		Jul 31, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_A-DR5120-1-31JUL2017.jpg		Jul 31, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 B

NGS Name: 6928 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5121](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	6	51 N	20 W	465629.46	925437.02	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 46 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6928 B 2017

0.9 MILE NORTH OF FLOODWOOD, 1.2 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 44.4, 33.7 FEET WEST-NORTHWEST OF TRUNK HIGHWAY 73, 39.3 FEET NORTH-NORTHEAST OF A FIELD ENTRANCE, 1.5 EAST-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1249.331	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1249.213	.262		1153.738	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.495 12B = -95.479 09 = -95.403 03 = -95.282

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 56 29.45669	92 54 37.02140	385015.402	206665.938	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2672058.706	489183.867	1662818.756	17055966.237	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_B-DR5121-3W-01AUG2017.jpg	W	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_B-DR5121-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_B-DR5121-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 C

NGS Name: 6928 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5122](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	32	52 N	20 W	465701.98	925411.09	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 46 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6928 C 2017

1.9 MILES NORTH OF FLOODWOOD, 1.95 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 45.1, 36.1 FEET EAST-SOUTHEAST OF TRUNK HIGHWAY 73, 16.9 FEET NORTH-NORTHEAST OF A FIELD ENTRANCE, 1.5 WEST-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1251.976	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1251.789	.262		1156.221	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.584 12B = -95.567 09 = -95.498 03 = -95.367

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 57 01.97865	92 54 11.09344	386833.628	209950.518	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2673849.455	492483.351	1664613.072	17059261.981	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_C-DR5122-3E-31JUL2017.jpg	E	Jul 31, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_C-DR5122-2-31JUL2017.jpg		Jul 31, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_C-DR5122-1-31JUL2017.jpg		Jul 31, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 D

NGS Name: 6928 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5124](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	20	52 N	20 W	465820.97	925435.43	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 51 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 D 2017

3.0 MILES NORTH OF FLOODWOOD, 3.65 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 46.75, 33.0 FEET WEST OF TRUNK HIGHWAY 73, 12.7 FEET NORTH OF A FIELD ENTRANCE, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1249.108	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1248.944	.262		1153.174	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.790 12B = -95.771 09 = -95.712 03 = -95.567

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 58 20.96512	92 54 35.43002	385192.101	217963.120	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2672141.340	500481.683	1662916.149	17067259.205	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_D-DR5124-3W-01AUG2017.jpg	W	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_D-DR5124-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_D-DR5124-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 E

NGS Name: 6928 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5125](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	18	52 N	20 W	465856.93	925436.09	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 43 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6928 E 2017

4.0 MILES NORTH OF FLOODWOOD, 4.25 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 47.5, 100.5 FEET WEST OF TRUNK HIGHWAY 73, 18.6 FEET NORTH OF COUNTY ROAD 732 (PARANTALA ROAD). 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1251.313	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1251.366	.262			1155.500	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.886 12B = -95.866 09 = -95.810 03 = -95.659

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 58 56.92501	92 54 36.09425	385167.415	221606.793	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2672086.322	504124.861	1662865.923	17070900.946	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_E-DR5125-3N-01AUG2017.jpg	N	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_E-DR5125-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_E-DR5125-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 F

NGS Name: 6928 F

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5129](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	6	52 N	20 W	470044.34	925525.98	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 33 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6928 F 2017

6.0 MILES NORTH OF FLOODWOOD, 6.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 49.7, 82.3 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 29.6 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1247.832	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1247.947	.262		1151.805	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.158 12B = -96.138 09 = -96.092 03 = -95.925

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 00 44.33540	92 55 25.97625	381774.453	232510.086	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2668602.889	514998.989	1659398.134	17081775.178	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_F-DR5129-3E-31JUL2017.jpg	E	Jul 31, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_F-DR5129-2-31JUL2017.jpg		Jul 31, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_F-DR5129-1-31JUL2017.jpg		Jul 31, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 G

NGS Name: 6928 G

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5130](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	36	53 N	21 W	470135.07	925553.57	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 47 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 G 2017

7.1 MILES NORTH OF FLOODWOOD, 7.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 50.7, 65.6 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1258.190	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1258.124	.262		1161.861	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.279 12B = -96.263 09 = -96.217 03 = -96.043

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 01 35.06532	92 55 53.57027	379893.761	237661.652	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2666679.496	520134.438	1657482.221	17086911.063	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_G-DR5130-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_G-DR5130-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_G-DR5130-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 H

NGS Name: 6928 H

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5133](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	25	53 N	21 W	470309.02	925708.27	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2022	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 44 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 H 2017

8.9 MILES NORTH OF FLOODWOOD, 9.65 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 52.85, 55.2 FEET NORTHEAST OF TRUNK HIGHWAY 73, 83.9 FEET EAST OF COUNTY ROAD 186 (NORTH SAVANNA ROAD), 14.4 FEET SOUTHWEST OF CABLE BOX NUMBER A 69, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1249.453	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1249.466	.262			1152.987	.197	2011	GPS - OPUS	2022	GPSBM
1249.466	.262			1152.987	.197	2011	GPS - OPUS	2022	GPSBM
1249.331	.262			1152.868	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.476 12B = -96.463 09 = -96.424 03 = -96.240

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 03 09.01847	92 57 08.27107	374779.359	247213.403	.131	3	GPS - OPUS	2022	GPSBM
47 03 09.01843	92 57 08.27086	374779.373	247213.399	.131	3	GPS - OPUS	2022	GPSBM
47 03 09.01906	92 57 08.27122	374779.349	247213.463	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2661486.120	529642.726	1652303.304	17096422.322	.131	3	GPS - OPUS	2022	GPSBM		
2661486.134	529642.722	1652303.318	17096422.318	.131	3	GPS - OPUS	2022	GPSBM		
2661486.109	529642.786	1652303.293	17096422.381	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_H-DR5133-3NE-01AUG2017.jpg	NE	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_H-DR5133-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_H-DR5133-1-05DEC2022.jpg		Dec 5, 2022

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 J

NGS Name: 6928 J

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5134](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	23	53 N	21 W	470335.48	925802.13	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 48 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 J 2017

9.5 MILES NORTH OF FLOODWOOD, 10.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 53.7, 53.8 FEET SOUTHWEST OF TRUNK HIGHWAY 73, 21.5 FEET NORTHWEST OF AN ENTRANCE, 1.5 NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1247.412	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1247.399	.262		1150.890	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.519 12B = -96.509 09 = -96.466 03 = -96.279

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 03 35.47598	92 58 02.13162	371067.320	249918.321	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2657751.958	532316.504	1648574.094	17099099.895	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_J-DR5134-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_J-DR5134-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_J-DR5134-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 K

NGS Name: 6928 K

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5137](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	10	53 N	21 W	470505.36	925915.80	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 58 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 K 2017

11.5 MILES NORTH-NORTHWEST OF FLOODWOOD, 12.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 55.75, 97.4 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 73, 42.6 FEET NORTH OF COUNTY ROAD 133, 5.0 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1262.212	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1262.189	.262			1165.532	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.660 12B = -96.657 09 = -96.611 03 = -96.430

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 05 05.35854	92 59 15.79883	366029.199	259059.522	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2652638.375	541414.870	1643474.310	17108201.329	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_K-DR5137-3N-02AUG2017.jpg	N	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_K-DR5137-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_K-DR5137-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 L

NGS Name: 6928 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5138](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	10	53 N	21 W	470541.92	925933.44	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 52 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6928 L 2017

12.2 MILES NORTH-NORTHWEST OF FLOODWOOD, 13.25 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 56.5, 50.9 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 73, 25.3 FEET NORTH-NORTHWEST OF A FIELD ENTRANCE, 1.5 FEET NORTH-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1267.888	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1267.855	.262			1171.146	.197	2011		GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.716 12B = -96.709 09 = -96.663 03 = -96.489

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>	
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u>	<u>Order</u>				
47 05 41.92051	92 59 33.44094			364833.903	262772.397	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>	
<u>X</u>	<u>Y</u>					<u>Acc</u>	<u>Order</u>				
2651412.353	545117.406			1642253.557	17111904.018	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_L-DR5138-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_L-DR5138-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_L-DR5138-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 M

NGS Name: 6928 M

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5142](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	21	54 N	21 W	470846.67	930005.26	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 61 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6928 M 2017

20.0 MILES SOUTH-SOUTHWEST OF HIBBING, 18.65 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 60.1, 46.6 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 73, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference	
1297.022	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference	
1297.061	.262		1200.099	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.965 12B = -96.958 09 = -96.913 03 = -96.745

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 08 46.66593	93 00 05.25901	362764.000	281506.298	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2649187.029	563831.913	1640053.290	17130614.275	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_M-DR5142-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_M-DR5142-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_M-DR5142-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6928 N

NGS Name: 6928 N

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5143](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	16	54 N	21 W	470919.97	930020.44	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 39 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6928 N 2017

19.4 MILES SOUTH-SOUTHWEST OF HIBBING, 18.0 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 60.80, 66.4 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 73, 64.7 FEET SOUTH-SOUTHEAST OF COUNTY ROAD 184 (FLOODWOOD RIVER ROAD), 9.8 FEET EAST-NORTHEAST OF THE SOUTHEAST CORNER OF A CABLE BOX, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1302.547	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1302.622	.262		1205.631	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -96.995 12B = -96.991 09 = -96.939 03 = -96.778

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 09 19.97471	93 00 20.43623	361738.776	284888.598	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2648133.833	567205.272	1639004.850	17133987.732	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_N-DR5143-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_N-DR5143-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6928_N-DR5143-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6929 A

NGS Name: 6929 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5146](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	4	54 N	21 W	471104.31	930110.15	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6929 A 2017

17.3 MILES SOUTH-SOUTHWEST OF HIBBING, 15.9 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 62.95, 31.2 FEET SOUTHWEST OF TRUNK HIGHWAY 73, 21.2 FEET SOUTHEAST OF AN ENTRANCE, 1.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1313.183	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1313.222	.262		1216.159	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.060 12B = -97.063 09 = -96.998 03 = -96.853

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 11 04.30820	93 01 10.15480	358379.304	295484.505	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2644686.787	577771.895	1635572.728	17144554.891	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_A-DR5146-3SW-01AUG2017.jpg	SW	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_A-DR5146-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_A-DR5146-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6929 B

NGS Name: 6929 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5148](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	33	55 N	21 W	471226.44	930116.21	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 57 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** 6929 B 2017

15.8 MILES SOUTH-SOUTHWEST OF HIBBING, 14.3 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 64.55, 29.1 FEET WEST-NORTHWEST OF TRUNK HIGHWAY 73, 6.7 FEET WEST-NORTHWEST OF A GUARD RAIL, 1.5 FEET EAST-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1319.564	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1319.512	.262			1222.393	.197	2011		GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.109 12B = -97.119 09 = -97.040 03 = -96.919

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method				Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference	
47 12 26.43535	93 01 16.20782	358021.809	303808.861	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method				Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference	
2644260.209	586092.141	1635157.043	17152872.646	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_B-DR5148-3W-26JUL2017.jpg	W	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_B-DR5148-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_B-DR5148-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6929 C

NGS Name: 6929 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5151](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	20	55 N	21 W	471409.51	930141.28	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: 6929 C 2017

13.7 MILES SOUTH-SOUTHWEST OF HIBBING, 12.1 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 66.7, 72.1 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 175.5 FEET SOUTH-SOUTHEAST OF GILBOE ROAD, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1336.280	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1336.398	.262		1239.223	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.155 12B = -97.175 09 = -97.077 03 = -96.978

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 14 09.50984	93 01 41.28385	356367.397	314265.361	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2642519.204	596533.399	1633430.137	17163312.385	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_C-DR5151-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_C-DR5151-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_C-DR5151-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6929 D

NGS Name: 6929 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5152](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	17	55 N	21 W	471458.62	930140.52	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 55 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6929 D 2017

12.4 MILES SOUTH-SOUTHWEST OF HIBBING, 11.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 67.65, 30.0 FEET EAST-SOUTHEAST OF TRUNK HIGHWAY 73, 1.5 FEET WEST-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1343.698	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1343.754	.262		1246.543	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -97.191 12B = -97.211 09 = -97.106 03 = -97.021

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
47 14 58.61914	93 01 40.52386	356456.527	319240.899	.131	3	GPS - RTRN 2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u> <u>Year</u> <u>Reference</u>
2642567.008	601508.933	1633484.340	17168286.083	.131	3	GPS - RTRN 2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_D-DR5152-3SE-02AUG2017.jpg	SE	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_D-DR5152-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_D-DR5152-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6929 E

NGS Name: 6929 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5157](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	5	55 N	21 W	471642.46	930127.49	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 26 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: 6929 E 2017

10.6 MILES SOUTH-SOUTHWEST OF HIBBING, 9.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 69.7, 44.6 FEET WEST OF TRUNK HIGHWAY 73, 7.5 FEET NORTH OF AN ENTRANCE, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1339.682	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)	Height	Acc	Adj		Year	Reference	
1339.748	.262		1242.412	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.313 12B = -97.336 09 = -97.221 03 = -97.152

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - Central Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 16 42.45632	93 01 27.48788	357432.563	110908.777	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2643456.011	612030.007	1634386.604	17178802.296	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_E-DR5157-3W-26JUL2017.jpg	W	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_E-DR5157-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6929_E-DR5157-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 10

NGS Name: 6947 L 10

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5613](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	20	53 N	19 W	470407.00	924631.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1975	2007	GOOD	Horz=NO Vert=YES	YES	69506	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (1975)

Stamping: 6947 L 10 1975

1.9 MILES WEST OF MEADOWLANDS, IN AN ABUTMENT IN THE SOUTHEAST CORNER OF COUNTY ROAD 133 BRIDGE NUMBER 69506 OVER THE ST. LOUIS RIVER, 1.95 MILES WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, 26.0 FEET SOUTH OF COUNTY ROAD 133.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1272.133	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702	
1272.133	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT	

Geoid Separations(ft): GEOID18 = -96.752 12B = -96.739 09 = -96.663 03 = -96.486

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_10-DM5613-3S-23MAY2007.jpg	S	May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_10-DM5613-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_10-DM5613-1-23MAY2007.jpg		May 23, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 11

NGS Name: 6947 L 11

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DM5615 Get Map
NW	34	53 N	19 W	470219.00	924436.00	2		NGS Quad / Sta Num : 47092323/ USGS Quad: MEADOWLANDS

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1983	2007	GOOD	Horz=NO Vert=YES	YES	69533	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	VERTICAL CONTROL DISK	MNDT

Description: (1983)

Stamping: 6947 L 11 1983

2.5 MILES SOUTH-SOUTHWEST OF MEADOWLANDS IN AN ABUTMENT IN THE SOUTHEAST CORNER OF COUNTY ROAD 5 BRIDGE NUMBER 69533 OVER THE WHITEFACE RIVER, 0.5 MILE WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, THEN 2.2 MILES SOUTH ON COUNTY ROAD 5, 17.0 FEET EAST OF COUNTY ROAD 5.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1262.878	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1262.881	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Geoid Separations(ft): GEOID18 = -96.473 12B = -96.466 09 = -96.378 03 = -96.204

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_11-DM5615-3E-24MAY2007.jpg	E	May 24, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_11-DM5615-2-24MAY2007.jpg		May 24, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_11-DM5615-1-24MAY2007.jpg		May 24, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 12

NGS Name: 6947 L 12

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	53 N	19 W	470317.68	924436.36	2	3

NGS ACRN: [DM5614](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2021	POOR	Horz=NO Vert=NO	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 12 2007

1.0 MILE SOUTH-SOUTHWEST OF MEADOWLANDS, 0.5 MILE WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND A SCHOOL IN MEADOWLANDS, THEN 1.0 MILE SOUTH ON COUNTY ROAD 5, 64.8 FEET EAST OF COUNTY ROAD 5, 26.8 FEET SOUTH OF ANDREWS ROAD, 2.5 FEET WEST OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1273.505	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1273.505	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1273.423	.262		1176.792	.197	2011	GPS - RTRN	2021 RTRN2021

Geoid Separations(ft): GEOID18 = -96.630 12B = -96.621 09 = -96.535 03 = -96.358

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 03 17.67694	92 44 36.36234	426851.107	247826.432	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2713547.567	530689.779	1704345.613	17097400.363	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_12-DM5614-3E-01JAN1980.jpg	E	Jan 1, 1980
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_12-DM5614-2-01JAN1980.jpg		Jan 1, 1980
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_12-DM5614-1-01JAN1980.jpg		Jan 1, 1980

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 3

NGS Name: 6947 L 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5606](#) [Get Map](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	1	55 N	20 W	471627.00	924835.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2019) Stamping: 6947 L 3 2007

7.5 MILES NORTH OF TOIVOLA, 6.4 MILES EAST ALONG TRUNK HIGHWAY 37 FROM THE JUNCTION OF TRUNK HIGHWAY 37 AND TRUNK HIGHWAY 169 IN HIBBING TO TRUNK HIGHWAY 37 MILEPOINT 6.4, THEN 8.3 MILES SOUTH ON COUNTY ROAD 5, 46.9 FEET WEST OF COUNTY ROAD 5, 400.0 FEET SOUTH OF KYLVEN ROAD, 4.9 FEET EAST OF A PARKING LOT, 149.2 FEET SOUTH OF AN ENTRANCE, 1.4 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1290.034	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702	
1290.034	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT	

Geoid Separations(ft): GEOID18 = -97.851 12B = -97.854 09 = -97.775 03 = -97.657

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_3-DM5606-3W-12JUN2007.jpg	W	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_3-DM5606-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_3-DM5606-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 4

NGS Name: 6947 L 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5607](#) [Get Map](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	13	55 N	20 W	471459.00	924837.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1988	2007	GOOD	Horz=NO Vert=YES	NO	69576	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNDT

Description: (1988) Stamping: 6947 L 4 1988

5.7 MILES NORTH OF TOIVOLA, IN AN ABUTMENT IN THE SOUTHEAST CORNER OF COUNTY ROAD 5 BRIDGE NUMBER 69576 OVER THE SWAN RIVER, 6.4 MILES EAST ALONG TRUNK HIGHWAY 37 FROM THE JUNCTION OF TRUNK HIGHWAY 37 AND TRUNK HIGHWAY 169 IN HIBBING TO TRUNK HIGHWAY 37 MILEPOINT 6.4, THEN 10.0 MILES SOUTH ON COUNTY ROAD 5, 22.0 FEET EAST OF COUNTY ROAD 5.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1278.390	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1278.387	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Geoid Separations(ft): GEOID18 = -97.772 12B = -97.772 09 = -97.697 03 = -97.562

* No Horizontal Positions in the Database *



Mn/DOT Name: 6947 L 5

NGS Name: 6947 L 5

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	31	55 N	19 W	471219.39	924836.94	2	C

NGS ACRN: [DM5608](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2015	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 5 2007

2.7 MILES NORTH OF TOIVOLA, 6.4 MILES EAST ALONG TRUNK HIGHWAY 37 FROM THE JUNCTION OF TRUNK HIGHWAY 37 AND TRUNK HIGHWAY 169 IN HIBBING TO TRUNK HIGHWAY 37 MILEPOINT 6.4, THEN 13.1 MILES SOUTH ON COUNTY ROAD 5, 35.0 FEET EAST OF COUNTY ROAD 5, 15.5 FEET SOUTH OF AN ENTRANCE, 40.5 FEET SOUTH-SOUTHEAST OF A POWER POLE, 3.3 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1293.948	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1293.948	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year Reference
1293.948			1196.320	.022	2011	HORIZONTAL ADJUSTMENT	2018 GPS3119
1293.948	.131		1196.497	.066	1996	GPS - STATIC	2017 HMNCORS07
1293.948			1196.320	.022	2011	GPS - STATIC	2017 HMNPH

Geoid Separations(ft): GEOID18 = -97.641 12B = -97.644 09 = -97.575 03 = -97.405

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 19.38641	92 48 36.93628	410444.657	302783.186	.013		ADJUSTMENT	2018	GPS3119
47 12 19.38641	92 48 36.93628	410444.657	302783.186	.013	C	GPS - STATIC	2017	HMNPH

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 19.38625	92 48 36.93681	410444.620	302783.170	.033	C	GPS - STATIC	2017	HMNCORS07

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>								
MN State Plane - North Zone		UTM - Zone 15				Project Info		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2696684.255	585502.961	1687561.303	17152215.313	.013		ADJUSTMENT	2018	GPS3119
2696684.255	585502.961	1687561.303	17152215.313	.013	C	GPS - STATIC	2017	HMNPH

<u>NAD83(1996)</u>								
MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2696684.218	585502.945	1687561.267	17152215.297	.033	C	GPS - STATIC	2017	HMNCORS07

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_5-DM5608-3E-11MAY2015.jpg	E	May 11, 2015
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_5-DM5608-2-11MAY2015.jpg		May 11, 2015
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_5-DM5608-1-11MAY2015.jpg		May 11, 2015

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 6

NGS Name: 6947 L 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5609](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	20	54 N	19 W	470817.46	924725.54	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 6 2007

2.0 MILES SOUTHEAST OF TOIVOLA, 2.45 MILES SOUTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 52 IN TOIVOLA, 35.6 FEET EAST OF COUNTY ROAD 5, 11.8 FEET NORTH A OF FIELD ENTRANCE, 82.5 FEET NORTH OF A POWER POLE. 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1289.325	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1289.328	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1289.345	.262		1192.028	.197	2011	GPS - OPUS	2020	GPSBM
1289.384	.262		1192.068	.197	2011	GPS - OPUS	2020	GPSBM
1289.299	.262		1191.989	.197	2011	GPS - RTRN	2020	RTRN2020

Geoid Separations(ft): GEOID18 = -97.316 12B = -97.310 09 = -97.241 03 = -97.047

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 08 17.46467	92 47 25.53954	415268.230	278248.803	.131	3	GPS - OPUS	2020	GPSBM
47 08 17.46463	92 47 25.53947	415268.234	278248.799	.131	3	GPS - OPUS	2020	GPSBM
47 08 17.46433	92 47 25.53839	415268.309	278248.769	.131	3	GPS - RTRN	2020	RTRN2020

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2701711.925	561012.043	1692554.787	17127726.757	.131	3	GPS - OPUS	2020	GPSBM
2701711.930	561012.039	1692554.791	17127726.753	.131	3	GPS - OPUS	2020	GPSBM
2701712.005	561012.009	1692554.866	17127726.723	.131	3	GPS - RTRN	2020	RTRN2020

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_6-DM5609-3E-13JUL2020.jpg	E	Jul 13, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_6-DM5609-2-13JUL2020.jpg		Jul 13, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_6-DM5609-1-13JUL2020.jpg		Jul 13, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 7

NGS Name: 6947 L 7

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5610](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	31	54 N	19 W	470643.29	924728.00	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 7 2007

3.5 MILES SOUTH-SOUTHEAST OF TOIVOLA, 4.25 MILES SOUTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND SOUTHWY ROAD 52/817 (ANOKA ROAD) IN TOIVOLA, 71.4 FEET SOUTHEAST OF COUNTY ROAD 5, 69.6 FEET SOUTHWEST OF COUNTY ROAD 741 (MEADOWLANDS TRUNK ROAD), 18.6 FEET NORTHEAST OF A TRAIL (OLD RAILROAD GRADE), 107.9 FEET NORTHEAST OF A POWER POLE, 3.4 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1285.732	.016	2/1					VERTICAL ADJUSTMENT		2012	00000702		
1285.732	.016	2/1					VERTICAL CONTROL SURVEY		2009	VWITT		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1285.719	.262		1188.607	.197	2011		GPS - OPUS		2021	GPSBM		

Geoid Separations(ft): GEOID18 = -97.113 12B = -97.103 09 = -97.040 03 = -96.844

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - South Zone		Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year
47 06 43.29396	92 47 28.00489	415056.263	268707.946	.131	3	GPS - OPUS	2021

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year
2701579.616	551470.548	1692409.897	17118189.034	.131	3	GPS - OPUS	2021

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_7-DM5610-3SE-27JUL2021.jpg	SE	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_7-DM5610-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_7-DM5610-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 8

NGS Name: 6947 L 8

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5611](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	7	53 N	19 W	470518.00	924733.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 8 2007

3.0 MILES NORTHWEST OF MEADOWLANDS, 1.35 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5 ABOUT 4.0 MILES WEST OF MEADOWLANDS, 0.35 MILE NORTH OF COUNTY ROAD 740 (CHURCH ROAD), 40.9 FEET WEST OF COUNTY ROAD 5, 20.1 FEET NORTH OF A FIELD ENTRANCE, 2.9 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.053	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1274.053	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Geoid Separations(ft): GEOID18 = -96.916 12B = -96.903 09 = -96.837 03 = -96.650

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_8-DM5611-3W-12JUN2007.jpg	W	Jun 12, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_8-DM5611-2-12JUN2007.jpg		Jun 12, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_8-DM5611-1-12JUN2007.jpg		Jun 12, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: 6947 L 9

NGS Name: 6947 L 9

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM5612](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

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1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	19	53 N	19 W	470409.16	924724.61	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2007	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	SURVEY DISK	MNDT

Description: (2007)

Stamping: 6947 L 9 2007

2.5 MILES WEST OF MEADOWLANDS, 2.65 MILES WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND WESTERN AVENUE, 54.0 FEET SOUTH OF COUNTY ROAD 133, 16.4 FEET WEST OF A FIELD ENTRANCE, 2.5 FEET NORTH OF AN EAST-WEST FENCE LINE, 1.4 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1273.971	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1273.974	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1273.984	.262		1177.235	.197	2011	GPS - OPUS	2021	GPSBM
1274.010	.262		1177.261	.197	2011	GPS - OPUS	2021	GPSBM

Geoid Separations(ft): GEOID18 = -96.748 12B = -96.732 09 = -96.666 03 = -96.486

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 09.16900	92 47 24.61006	415223.327	253090.738	.131	3	GPS - OPUS	2021	GPSBM
47 04 09.16842	92 47 24.61034	415223.308	253090.680	.131	3	GPS - OPUS	2021	GPSBM

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2701877.012	535856.446	1692686.485	17102580.540	.131	3	GPS - OPUS	2021	GPSBM
2701876.993	535856.387	1692686.466	17102580.481	.131	3	GPS - OPUS	2021	GPSBM

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_9-DM5612-3S-27JUL2021.jpg	S	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_9-DM5612-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/6947_L_9-DM5612-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: A 159

NGS Name: A 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0494](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	53 N	18 W	470554.00	923556.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: A 159 1935

IN PAYNE, ALONG THE DULUTH, MISSABE AND NORTHERN RAILROAD, AT A JOG IN A FENCE, 300.0 FEET NORTH OF STATION PAYNE, 27.0 FEET WEST OF COUNTY ROAD 7, 15.0 FEET NORTH OF A GATE AND COUNTY ROAD 32, 75.0 FEET SOUTH OF SECTION TOOL HOUSE NUMBER 309, 57.0 FEET EAST OF THE EAST MAIN TRACK.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1310.457	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.975 12B = -96.968 09 = -96.857 03 = -96.670

* No Horizontal Positions in the Database *



Mn/DOT Name: A 164

NGS Name: A 164

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0713](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	29	52 N	17 W	465738.74	923046.78	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2020	NOT FOUND	Horz=NO Vert=NO	NO			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	BENCH MARK DISK	NGS

Description: (2019)

Stamping: A 164 1935

3.2 MILES EAST ON COUNTY ROAD 47 FROM THE ALBORN RAILROAD STATION, 55.0 FEET WEST OF MACARTHUR ROAD,
35.0 FEET NORTH OF COUNTY ROAD 47, 55.0 FEET WEST OF A DRIVE NORTH AT THE EAST LINE OF SECTION 29, 81.5 FEET
WEST OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1343.436	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1342.947	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1342.947	.007	1				VERTICAL CONTROL SURVEY	1958 L63 MINN

Geoid Separations(ft): GEOID18 = -95.531 12B = -95.525 09 = -95.397 03 = -95.213

* No Horizontal Positions in the Database *



Mn/DOT Name: A 271

NGS Name: A 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0638](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	25	52 N	21 W	465723.00	925730.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1958	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: A 271 1948

2.8 MILES NORTHWEST OF FLOODWOOD, 2.8 MILES NORTHWEST ALONG THE GREAT NORTHERN RAILWAY FROM THE STATION AT FLOODWOOD, ABOUT 0.3 MILE NORTHWEST OF MILEPOST 78, 0.35 MILE NORTHWEST OF A NORTH-SOUTH GRAVEL ROAD CROSSING, 53.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST TRACK, 26.0 FEET SOUTHWEST OF AN ABANDONED ROAD PARALLELING THE TRACK, 27.5 FEET SOUTHEAST OF TELEGRAPH POLE NUMBER 4, IN LINE WITH THE ROW OF POLES, 2.0 FEET SOUTHEAST OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1263.160	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -95.603 12B = -95.584 09 = -95.515 03 = -95.390

* No Horizontal Positions in the Database *



Mn/DOT Name: A 272

NGS Name: A 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0714](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	6	51 N	20 W	465541.00	925452.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1999	DESTROYED	Horz=NO Vert=NO	NO	2983		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	NGS

Description: (1999) Stamping: A 272 1948

AT FLOODWOOD, 0.3 MILE NORTHWEST ON TRUNK HIGHWAY 73 FROM WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2, 12.7 FEET WEST OF TRUNK HIGHWAY 73, IN THE NORTHEAST CORNER OF TRUNK HIGHWAY 73 BRIDGE NUMBER 2983 OVER THE FLOODWOOD RIVER, A NEW BRIDGE WAS BUILT IN 1979.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1245.795	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1245.244	.016	2				VERTICAL CONTROL SURVEY	1974 L23566
1245.158	.016	2				VERTICAL CONTROL SURVEY	1949 L28 MINN

Geoid Separations(ft): GEOID18 = -95.367 12B = -95.348 09 = -95.272 03 = -95.157

* No Horizontal Positions in the Database *



Mn/DOT Name: A 273

NGS Name: A 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0519](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	16	53 N	20 W	470408.49	925231.62	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2021	GOOD	Horz=YES Vert=YES	YES		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: A 273 1948

6.7 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL IN MEADOWLANDS, 0.2 MILE WEST OF A SLIGHT CURVE IN COUNTY ROAD 133, 41.0 FEET NORTH OF COUNTY ROAD 133, 11.0 FEET EAST OF A FIELD ROAD NORTH, 18.0 FEET NORTH-NORTHEAST OF THE EAST END OF A METAL CULVERT, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1279.876	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1279.220	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1279.220	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1279.912	.262		1183.229	.197	2011	GPS - OPUS	2021	GPSBM
1279.902	.262		1183.219	.197	2011	GPS - OPUS	2021	GPSBM

Geoid Separations(ft): GEOID18 = -96.683 12B = -96.660 09 = -96.627 03 = -96.434

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Determination Method	Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 04 08.49184	92 52 31.61654	393969.857	253125.909	.131	3	GPS - OPUS	2021	GPSBM
47 04 08.49216	92 52 31.61665	393969.849	253125.942	.131	3	GPS - OPUS	2021	GPSBM

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Determination Method	Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2680625.453	535714.381	1671443.036	17102466.573	.131	3	GPS - OPUS	2021	GPSBM
2680625.446	535714.413	1671443.028	17102466.605	.131	3	GPS - OPUS	2021	GPSBM

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_273-SJ0519-3N-27JUL2021.jpg	N	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_273-SJ0519-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_273-SJ0519-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: A 275

NGS Name: A 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0477](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	11	54 N	19 W	471004.06	924257.71	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: A 275 1948

4.5 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA, AT THE JUNCTION OF COUNTY ROAD 52 AND A NORTH-SOUTH CROSSROAD, 126.0 FEET NORTH OF COUNTY ROAD 52, 17.0 FEET EAST OF A CROSSROAD, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1297.891	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1297.251	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1297.251	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.569 12B = -97.569 09 = -97.487 03 = -97.300

* No Horizontal Positions in the Database *



Mn/DOT Name: A 280

NGS Name: A 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1328](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	32	55 N	21 W	471145.35	930137.18	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) **Stamping:** A 280 1948

6.0 MILES SOUTH OF HIBBING, 7.0 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING, THEN 0.50 MILE WEST ON COUNTY ROAD 18, THEN 0.40 MILE NORTHWEST ON A TRAIL THAT RUNS ALONG THE POWER LINES, 28.8 FEET EAST-NORTHEAST OF A TRAIL (OLD TRUNK HIGHWAY 73), 2730.0 FEET NORTHWEST OF A TRAIL SOUTHEAST, 10.0 FEET SOUTHEAST OF A REFUGE SIGN AT THE NORTHWEST CORNER OF A REFUGE, 1.0 FOOT SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1354.512	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1353.747	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1353.747	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1353.747	.007	1					VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.067 12B = -97.073 09 = -97.004 03 = -96.870

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_280-SJ1328-3E-12JUL2017.jpg	E	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_280-SJ1328-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/A_280-SJ1328-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: A 29

NGS Name: A 29

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0120](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	25	51 N	17 W	465220.00	922657.00	2		1934	1934	GOOD	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: A 29 1934

1.0 MILE NORTH OF SAGINAW ON AN ABANDONED RAILROAD, 18 RAILS NORTH OF A RAILROAD BRIDGE, 20.0 FEET WEST OF AN OLD RAILROAD BED.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1339.709	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1339.295	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1339.295	.007	1				VERTICAL CONTROL SURVEY	1959	L82 MINN

Geoid Separations(ft): GEOID18 = -94.531 12B = -94.521 09 = -94.416 03 = -94.222

* No Horizontal Positions in the Database *



Mn/DOT Name: A 291

NGS Name: A 291

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0664](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	51 N	20 W	465238.00	925154.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - SMALL	BENCH MARK DISK	NGS

Description: (2001)

Stamping: A 291 1948

1.3 MILES NORTHWEST OF GOWAN, 1.3 MILES NORTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 224.7, 23.9 FEET SOUTHEAST OF TRUNK HIGHWAY 2, IN THE SOUTHEAST CORNER OF A TRUNK HIGHWAY 2 BOX CULVERT AT A SMALL CREEK.

Station Notes

THE GEODETIC UNIT REPORTED ON 8-29-01 THAT THE OLD BOX CULVERT WAS REPLACED WITH A NEW BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1240.355	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1239.765	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1239.702	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -94.918 12B = -94.905 09 = -94.816 03 = -94.705

* No Horizontal Positions in the Database *



Mn/DOT Name: A 294

NGS Name: A 294

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0354](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	55 N	18 W	471705.41	923609.21	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	CGS

Description: (1948)

Stamping: A 294 1948

1.05 MILES NORTH ON A RAILROAD FROM THE RAILROAD STATION AT FENS, 1.5 MILES SOUTH OF THE RAILROAD STATION AT ZIM, 0.15 MILE NORTH OF RAILROAD MILEPOST 54, 214.0 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 144.0 FEET EAST OF COUNTY ROAD 7, 18.5 FEET SOUTH OF A ROAD EAST, 97.0 FEET EAST OF THE SOUTHEAST CORNER OF A WOOD BRIDGE ON A ROAD EAST, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1330.001	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1329.285	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1329.285	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.982 12B = -97.982 09 = -97.910 03 = -97.785

* No Horizontal Positions in the Database *



Mn/DOT Name: A 33

NGS Name: A 33

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0351](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	55 N	18 W	471608.00	923617.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1995	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1995)

Stamping: A 33 1934

10.5 MILES SOUTH OF IRON JUNCTION, 10.5 MILES SOUTH ALONG TRUNK HIGHWAY 7 FROM THE JUNCTION OF TRUNK HIGHWAY 7 AND MAIN STREET IN IRON JUNCTION.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1326.874	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1326.159	.007	1				VERTICAL CONTROL SURVEY	1934	L27 MINN

Geoid Separations(ft): GEOID18 = -97.956 12B = -97.956 09 = -97.880 03 = -97.746

* No Horizontal Positions in the Database *



Mn/DOT Name: A 33 RESET

NGS Name: A 33 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0352](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

[Get Map](#)

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	
SE	3	55 N	18 W	
	471614.00	923616.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2005	DESTROYED	Horz=NO Vert=NO	NO	RR	FLUSH	SEE DESCRIPTION

Monument Type

WALL

Disk Type

BENCH MARK DISK

Mon. Agency

NGS

Description: (1948)

Stamping: A 33 1934 RESET 1948

AT FENS, AT THE RAILROAD STATION AND A ROAD CROSSING, 27.0 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 43.0 FEET NORTH OF A ROAD, 41.0 FEET WEST OF COUNTY ROAD 7, 102.0 FEET NORTH OF THE NORTHWEST CORNER OF THE RAILROAD STATION, IN THE SOUTHEAST WING WALL OF A RAILROAD CULVERT, 3.5 FEET WEST OF THE EAST END OF A WING WALL.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1326.812	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1326.100	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.959 12B = -97.959 09 = -97.884 03 = -97.749

* No Horizontal Positions in the Database *



Mn/DOT Name: ADAM MNDT

NGS Name: ADAM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9550](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	52 N	20 W	465936.98	925433.45		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1993	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: ADAM 1993

4.2 MILES NORTH OF FLOODWOOD, 5.05 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 48.25, 79.0 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 43.5 FEET EAST OF COUNTY ROAD 191, 63.5 FEET SOUTHWEST OF A POWER POLE, 85.2 FEET SOUTH-SOUTHEAST OF A GUY POLE, 115.2 FEET NORTH OF A CABLE MARKER, 3.0 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
			1167.291	.011	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1167.380	.012	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1263.285	.131		1167.439	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1769
1263.285	.131		1167.439	.066	1996	GPS - STATIC		2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.991 12B = -95.971 09 = -95.922 03 = -95.764

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 36.98340	92 54 33.45161	385374.431	225664.384	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 36.98346	92 54 33.45246	385374.372	225664.390	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 36.98321	92 54 33.45208	385374.398	225664.365	.033	C	ADJUSTMENT	2003	GPS1769
46 59 36.98321	92 54 33.45208	385374.397	225664.365	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672259.540	508183.842	1663044.383	17074958.029	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672259.481	508183.848	1663044.324	17074958.036	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672259.508	508183.823	1663044.350	17074958.010	.033	C	ADJUSTMENT	2003	GPS1769
2672259.508	508183.823	1663044.350	17074958.010	.033	C	GPS - STATIC	2002	HFLOO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ADAM-DE9550-1-10JUL2017.jpg		Jul 10, 2017
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: ADAM MNDT RESET

NGS Name: ADAM RESET

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	17	52 N	20 W	465936.98	925433.45	2	3

NGS ACRN: [DR5126](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: ADAM 1993 2017

4.2 MILES NORTH OF FLOODWOOD, 5.05 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 48.25, 79.0 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 43.5 FEET EAST OF COUNTY ROAD 191(ADAM ROAD), 63.5 FEET SOUTHWEST OF A POWER POLE, 85.2 FEET SOUTH-SOUTHEAST OF A GUY POLE, 115.2 FEET NORTH OF A CABLE MARKER, 3.0 FEET WEST OF A WITNESS POST.

Station Pair: LAURA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1263.055	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88									
Orthometric Height			Ellipsoid (NAD83)			Project Info			
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference	
1263.088	.262		1167.117	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.991 12B = -95.971 09 = -95.922 03 = -95.764

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>										
Geodetic Position		St Louis County - South Zone				Project Info				
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
46 59 36.98395	92 54 33.45135	385374.449	225664.439	.131	3	GPS - RTRN	2017	RTRN2017		

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15				Project Info			
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2672259.558	508183.898	1663044.401	17074958.085	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ADAM_RESET-DR5126-3E-10JUL2017.jpg	E	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ADAM_RESET-DR5126-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ADAM_RESET-DR5126-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: AHMIK MNDT

NGS Name: AHMIK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0672](#)
NGS Quad / Sta Num : 46092442/1067
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	51 N	20 W	465130.06	925018.87	2	2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: AHMIK 1974

6.0 MILES SOUTHEAST OF FLOODWOOD, 5.6 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 226.6, 61.4 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 5.0 FEET WEST OF A POWER POLE NUMBER 5, 5.4 FEET SOUTHWEST OF A WITNESS POST, THE MONUMENT WAS FOUND OUT OF THE GROUND, THE DISK IS MISSING.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1269.263	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.639	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1269.256	.197			1174.696	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.741 12B = -94.731 09 = -94.642 03 = -94.527

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 30.06140	92 50 18.86789	402778.763	176234.910	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 30.05473	92 50 18.86949	402778.649	176234.234	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 30.25458	92 50 18.15366			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
2690074.566	458902.635	1680786.891	17025674.433	.066	2	ADJUSTMENT	1999	17648		

<u>NAD83(1986)</u>		<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
2690074.457	458901.959	1680786.781	17025673.757	.066	2	ADJUSTMENT	1986	17289		

<u>NAD27</u>		<u>MN State Plane - North Zone</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2065459.482	130838.420			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: ALBORN

NGS Name: ALBORN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1661](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/1002
USGS Quad: BROOKSTON NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	21	52 N	18 W	465842.61	923748.30		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1952	GOOD	Horz=? Vert=YES	NO		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2019)

Stamping: ALBORN 1952

3.0 MILES WEST OF ALBORN, 2.1 MILES WEST ON COUNTY ROAD 47 TO THE JUNCTION OF COUNTY ROAD 47 AND COUNTY ROAD 156 THEN 0.7 MILES WEST ON COUNTY ROAD 156, THEN 0.2 MILES NORTH ON A FARM DRIVE THEN PASS THROUGH A GATE IN A BARNYARD AND GO EAST 120.0 FEET ALONG THE NORTH SIDE OF A FENCE, IN A PASTURE, 25.0 FEET SOUTHEAST OF A FENCE CORNER, 22.0 FEET EAST-NORTHEAST OF A WITNESS POST, 82.20 FEET NORTH OF ALBORN RM 1, 67.93 FEET EAST-SOUTHEAST OF ALBORN RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1394.354	.131		1298.701	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648	

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1394.387						RECIPROCAL VERTICAL ANGLE	1952	HORZ	

Geoid Separations(ft): GEOID18 = -95.830 12B = -95.820 09 = -95.712 03 = -95.548

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 58 42.60837	92 37 48.29829	455043.834	219870.939	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 58 42.60392	92 37 48.30076	455043.661	219870.488	.033	1	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Reference
46 58 42.81400	92 37 47.60100			.100	1	CLASSICAL SURVEY 11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2741971.615	502972.651	1732721.038	17069656.005	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2741971.447	502972.199	1732720.869	17069655.553	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		Determination Method			Project Info	
X	Y	X	Y	Acc	Order	Reference
2117356.787	174909.643			.100	1	CLASSICAL SURVEY 11100



Mn/DOT Name: ALBORN AZ MK

NGS Name: ALBORN AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ1757](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	21	52 N	18 W	465841.00	923800.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
	1952	GOOD	Horz=? Vert=?	NO			SEE DESCRIPTION

Monument Type

UNKNOWN

Disk Type

AZIMUTH MARK DISK

Mon. Agency

CGS

Description: (1952)

Stamping:

3.0 MILES WEST OF ALBORN, 2.1 MILES WEST ON COUNTY ROAD 47 TO THE JUNCTION OF COUNTY ROAD 47 AND
COUNTY ROAD 156 THEN 0.7 MILE WEST ON COUNTY ROAD 156.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.827 12B = -95.817 09 = -95.712 03 = -95.548



Mn/DOT Name: ALBORN RM 1

NGS Name: ALBORN RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ1758](#)

[Get Map](#)

NGS Quad / Sta Num : 46092414/

USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	21	52 N	18 W	465841.81	923748.53		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: ALBORN NO 1 1952

3.0 MILES WEST OF ALBORN, 2.1 MILES WEST ON COUNTY ROAD 47 TO THE JUNCTION OF COUNTY ROAD 47 AND COUNTY ROAD 156 THEN 0.7 MILES WEST ON COUNTY ROAD 156, 82.0 FEET SOUTH OF STATION ALBORN, 43.37 FEET NORTH-NORTHWEST OF STATION ANDY RESET, 1.0 FOOT EAST OF A FENCE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.830 12B = -95.817 09 = -95.712 03 = -95.548



Mn/DOT Name: ALBORN RM 2

NGS Name: ALBORN RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ1759](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	
NW	21	52 N	18 W	465842.73	923749.26			1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON	
<u>Monument Type</u> BLANK												<u>Disk Type</u> REFERENCE MARK DISK			<u>Mon. Agency</u> NGS	

Description: (1952)

Stamping: ALBORN NO 2 1952

3.0 MILES WEST OF ALBORN, 2.1 MILES WEST ON COUNTY ROAD 47 TO THE JUNCTION OF COUNTY ROAD 47 AND COUNTY ROAD 156 THEN 0.7 MILE WEST ON COUNTY ROAD 156, 45.0 FEET WEST OF A FENCE CORNER, 67.93 FEET WEST-SOUTHWEST OF STATION ALBORN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.830 12B = -95.817 09 = -95.712 03 = -95.548



Mn/DOT Name: ANDREW

NGS Name: ANDREW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5132](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	25	53 N	21 W	470240.33	925625.18	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 41 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: ANDREW 2017

8.3 MILES NORTH OF FLOODWOOD, 8.85 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 52.05, 52.3 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 14.2 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 19.3 FEET WEST OF CABLE BOX NUMBER A 55, 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Station Pair: GUAIL MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1248.593	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1248.475	.262		1152.065	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.424 12B = -96.411 09 = -96.371 03 = -96.187

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
47 02 40.32514	92 56 25.18035	377745.118	244287.313	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2664475.928	526741.594	1655288.148	17093518.449	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDREW-DR5132-3E-01AUG2017.jpg	E	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDREW-DR5132-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDREW-DR5132-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ANDY

NGS Name: ANDY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0047](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>					
NE	4	50 N	17 W	465050.10	922930.17	2	2					
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>					
1974	1981	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON					

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2019) Stamping: ANDY 1974

1.8 MILES SOUTH-SOUTHWEST OF GRAND LAKES ON TRUNK HIGHWAY 2 RIGHT-OF-WAY, 1.65 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOST 243.25, 56.7 FEET NORTH OF TRUNK HIGHWAY 2, 92.0 FEET WEST OF AN 8.0 INCH DIAMETER POPLAR TREE WITH A BOAT SPIKE, 6.8 FEET NORTHEAST OF A 6.0 INCH DIAMETER BIRCH TREE, 3.7 FEET SOUTH OF A STEEL WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1319.623	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1319.617	.197		1225.408	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.409 12B = -94.396 09 = -94.304 03 = -94.121

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>										
Geodetic Position				St Louis County - South Zone				Project Info		
Latitude	Longitude			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 50.09592	92 29 30.16843			489561.106	171947.511	.066	2	ADJUSTMENT	1999	17648
<u>NAD27</u>										
Geodetic Position								Project Info		
Latitude	Longitude			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 50.29837	92 29 29.47026					.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>									
MN State Plane - North Zone		UTM - Zone 15				Project Info			
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2776888.722	455341.786	1767557.946	17021996.997	.066	2	ADJUSTMENT	1999	17648	
<u>NAD27</u>									
MN State Plane - North Zone						Project Info			
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2152275.103	127278.756			.100	2	CLASSICAL SURVEY	1977	15924	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY-RN0047-3W-06MAR2024.jpg	W	Mar 6, 2024
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY-RN0047-2-06MAR2024.jpg		Mar 6, 2024
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY-RN0047-1-06MAR2024.jpg		Mar 6, 2024

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ANDY RESET

NGS Name: ANDY RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1809](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1174
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	4	50 N	17 W	465050.10	922930.17	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1981	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2003)

Stamping: ANDY 1974 1981

9.5 MILES NORTH-NORTHWEST OF CLOQUET, 1.65 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.5 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 243.20, 56.5 FEET NORTH OF TRUNK HIGHWAY 2, 46.6 FEET SOUTHWEST OF STATION 6907 AD, 43.4 FEET SOUTH-SOUTHEAST OF ANDY RM 1, 26.0 FEET NORTHEAST OF THE NORTH LEG OF A NO PASSING SIGN, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1317.081	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1317.087	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1317.087	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1319.335	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1317.114	.262		1222.721	.197	2011	GPS - RTRN	2017	RTRN2017
			1222.711	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1222.799	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1317.091	.131		1222.911	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1317.091	.131		1222.911	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.409 12B = -94.396 09 = -94.304 03 = -94.409

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 50.09551	92 29 30.16750	489561.171	171947.469	.131	3	GPS - RTRN	2017	RTRN2017
46 50 50.09574	92 29 30.16777	489561.152	171947.493	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 50.09587	92 29 30.16865	489561.091	171947.506	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 50.09560	92 29 30.16858	489561.096	171947.479	.033	C	ADJUSTMENT	2004	GPS1957
46 50 50.09560	92 29 30.16858	489561.096	171947.479	.033	C	GPS - STATIC	2003	HGRAND
46 50 50.09592	92 29 30.16843	489561.106	171947.511	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 50.09009	92 29 30.17088	489560.936	171946.920	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 50 50.29837	92 29 29.47026			.100	2	CLASSICAL SURVEY	1950	UNK

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.787	455341.744	1767558.010	17021996.956	.131	3	GPS - RTRN	2017	RTRN2017
2776888.769	455341.767	1767557.992	17021996.979	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.707	455341.780	1767557.930	17021996.992	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.712	455341.753	1767557.935	17021996.964	.033	C	ADJUSTMENT	2004	GPS1957
2776888.712	455341.753	1767557.935	17021996.964	.033	C	GPS - STATIC	2003	HGRAND
2776888.722	455341.786	1767557.946	17021996.997	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.557	455341.193	1767557.779	17021996.405	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2152275.100	127278.760			.100	2	CLASSICAL SURVEY	1950	UNK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RESET-RN1809-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RESET-RN1809-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RESET-RN1809-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ANDY RM 1

NGS Name: ANDY RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1055](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	4	51 N	17 W	465050.50	922930.40	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	PIPE CAP	MNDT

Description: (2001)

Stamping: ANDY 1974 NO 1 1979

9.5 MILES NORTH-NORTHWEST OF CLOQUET, 1.65 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.5 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 243.20, 43.4 FEET NORTH-NORTHWEST OF STATION ANDY RESET, 42.1 FEET WEST OF STATION 6907 AD, 1.4 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1320.115	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1320.115	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC
1320.076	.016	2/2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1319.787	.016	2				VERTICAL CONTROL SURVEY	1979	L23566

Geoid Separations(ft): GEOID18 = -94.409 12B = -94.396 09 = -94.304 03 = -94.124

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RM_1-RN1055-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RM_1-RN1055-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ANDY_RM_1-RN1055-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: APCO MNDT

NGS Name: APCO

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0658](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1071
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	16	51 N	20 W	465355.10	925306.64	2	C	1974	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: APCO 1974

2.5 MILES SOUTHEAST OF FLOODWOOD, 2.0 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 223.0, 55.3 FEET NORTHEAST OF TRUNK HIGHWAY 2, 33.0 FEET NORTHWEST OF A FIELD ROAD, 96.56 FEET WEST-NORTHWEST OF STATION 6907 W, 91.1 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 60.05 FEET SOUTH-SOUTHWEST OF APCO MNDT RM 1 1, 3.0 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1265.887	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	
1265.821	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1265.247	.016	2					VERTICAL CONTROL SURVEY	1974	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1265.880	.262			1170.772	.197	2011	GPS - OPUS	2020	GPSBM	
1265.791	.262			1170.683	.197	2011	GPS - OPUS	2020	GPSBM	
1265.805	.262			1170.713	.197	2011	GPS - RTRN	2020	RTRN2020	
1265.765	.262			1170.674	.197	2011	GPS - RTRN	2017	RTRN2017	
				1170.742	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1170.834	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1265.811	.131			1170.916	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957	
1265.811	.131			1170.916	.066	1996	GPS - STATIC	2003	HGRAND	
1265.811	.131			1170.916	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769	
1265.811	.131			1170.916	.066	1996	GPS - STATIC	2002	HFLOO	
1265.811	.197			1170.880	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -95.108 12B = -95.092 09 = -95.010 03 = -94.898

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 53 55.10177	92 53 06.64447	391199.989	190991.234	.131	3	GPS - OPUS	2020	GPSBM
46 53 55.10188	92 53 06.64494	391199.956	190991.245	.131	3	GPS - OPUS	2020	GPSBM
46 53 55.10206	92 53 06.64376	391200.038	190991.263	.131	3	GPS - RTRN	2020	RTRN2020
46 53 55.10191	92 53 06.64421	391200.007	190991.248	.131	3	GPS - RTRN	2017	RTRN2017
46 53 55.10176	92 53 06.64400	391200.021	190991.233	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 53 55.10185	92 53 06.64487	391199.961	190991.242	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 53 55.10150	92 53 06.64456	391199.982	190991.206	.033	C	ADJUSTMENT	2004	GPS1957
46 53 55.10150	92 53 06.64457	391199.982	190991.207	.033	C	GPS - STATIC	2003	HGRAND
46 53 55.10150	92 53 06.64457	391199.982	190991.206	.033	C	ADJUSTMENT	2003	GPS1769
46 53 55.10150	92 53 06.64457	391199.982	190991.206	.033	C	GPS - STATIC	2002	HFLOO
46 53 55.10737	92 53 06.63793	391200.446	190991.798	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 53 55.10061	92 53 06.64035	391200.274	190991.114	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 53 55.30176	92 53 05.92275			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2678373.427	473561.672	1669110.263	17040342.464	.131	3	GPS - OPUS	2020	GPSBM
2678373.395	473561.683	1669110.231	17040342.475	.131	3	GPS - OPUS	2020	GPSBM
2678373.477	473561.702	1669110.312	17040342.493	.131	3	GPS - RTRN	2020	RTRN2020
2678373.445	473561.687	1669110.281	17040342.478	.131	3	GPS - RTRN	2017	RTRN2017
2678373.460	473561.671	1669110.296	17040342.463	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2678373.400	473561.680	1669110.235	17040342.472	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2678373.421	473561.645	1669110.257	17040342.436	.033	C	ADJUSTMENT	2004	GPS1957
2678373.421	473561.645	1669110.256	17040342.436	.033	C	GPS - STATIC	2003	HGRAND
2678373.421	473561.645	1669110.256	17040342.436	.033	C	ADJUSTMENT	2003	GPS1769
2678373.421	473561.645	1669110.256	17040342.436	.033	C	GPS - STATIC	2002	HFLOO
2678373.880	473562.241	1669110.716	17040343.031	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2678373.714	473561.556	1669110.549	17040342.346	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2053758.478	145498.053			.100	2	CLASSICAL SURVEY	1977	15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/APCO-RN0658-3NE-21JUL2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/APCO-RN0658-2-06JUL2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/APCO-RN0658-1-06JUL2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
NE	Jul 21, 2020
	Jul 6, 2020
	Jul 6, 2020



Mn/DOT Name: APCO MNDT RM 1

NGS Name: APCO RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0659](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	16	51 N	20 W	465355.59	925306.15	2		1974	1999	GOOD	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: APCO NO 1 1974

1.9 MILES SOUTHEAST OF FLOODWOOD, 1.9 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 223.05, 112.8 FEET NORTHEAST OF TRUNK HIGHWAY 2, 33.5 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 60.05 FEET NORTH-NORTHEAST OF STATION APCO MNDT, 97.5 FEET NORTHWEST OF STATION 6907 W, 97.5 FEET NORTHWEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.142	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.564	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.108 12B = -95.092 09 = -95.010 03 = -94.898

* No Horizontal Positions in the Database *



Mn/DOT Name: ARLBERG

NGS Name: ARLBERG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1660](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/1003
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	8	51 N	18 W	465515.79	923934.28		1	1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 8 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952)

Stamping: ARLBERG 1952

4.0 MILES NORTHWEST OF BROOKSTON, 0.5 MILE SOUTH ON COUNTY ROAD 852 FROM THE COUNTY ROAD 852 AND COUNTY ROAD 8, 33.0 FEET EAST OF A DIM ROAD, 4.0 FEET SOUTH OF A WITNESS POST, 72.76 FEET NORTHEAST OF ARLBERG RM 1, 71.65 FEET SOUTHEAST OF ARLBERG RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1351.703	.131		1256.576	.066	1996	HORIZONTAL ADJUSTMENT	1999 17648

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1351.703						RECIPROCAL VERTICAL ANGLE	1952 HORZ

Geoid Separations(ft): GEOID18 = -95.289 12B = -95.272 09 = -95.184 03 = -95.039

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 55 15.79040	92 39 34.28264	447638.373	198934.525	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 55 15.78492	92 39 34.28498	447638.209	198933.970	1986	17289

<u>NAD27</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>Year</u>	<u>Reference</u>
46 55 15.98900	92 39 33.58300	1954	10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2734741.997	481975.748	1725465.896	17048677.595	1999	17648

<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2734741.838	481975.192	1725465.735	17048677.039	1986	17289

<u>NAD27</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2110127.170	153912.097	1954	10724



Mn/DOT Name: ARLBERG RM 1

NGS Name: ARLBERG RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ1797](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
NW	8	51 N	18 W	465515.24	923934.96			1952	1952	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON	NGS
Monument Type BLANK																
Disk Type REFERENCE MARK DISK																
Description: (1952)																
Stamping: ARLBERG NO 1 1952																

4.0 MILES NORTHWEST OF BROOKSTON, 0.5 MILE SOUTH ON COUNTY ROAD 852 FROM THE COUNTY ROAD 852 AND COUNTY ROAD 8, 14.0 FEET WEST OF THE CENTERLINE OF THE ROAD, 72.76 FEET SOUTHWEST OF STATION ARLBERG.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.289 12B = -95.272 09 = -95.184 03 = -95.039



Mn/DOT Name: ARLBERG RM 2

NGS Name: ARLBERG RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ1798](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
NW	8	51 N	18 W	465516.30	923935.00			1952	1952	GOOD	Horz=? Vert=YES	NO			STEEL SPIKE ADJ TO MON	NGS
Monument Type BLANK																
Disk Type REFERENCE MARK DISK																
Description: (1952) Stamping: ARLBERG NO 2 1952																

4.0 MILES NORTHWEST OF BROOKSTON, 0.5 MILE SOUTH ON COUNTY ROAD 852 FROM THE COUNTY ROAD 852 AND COUNTY ROAD 8, 71.65 FEET NORTHWEST OF STATION ARLBERG, 16.0 FEET WEST OF THE CENTERLINE OF THE ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.289 12B = -95.272 09 = -95.184 03 = -95.039



Mn/DOT Name: ARROWHEAD

NGS Name: ARROWHEAD

County: ST. LOUIS, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: RN1656 NGS Quad / Sta Num : 46092413/1004 USGS Quad: MARTIN LAKE Get Map	
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>		
NW	11	50 N	19 W	465002.33	924253.48		1		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1978	GOOD	Horz=NO Vert=NO	NO		PROJECTS 7 IN.	STEEL ROD ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1978)

Stamping: ARROWHEAD 1952

6.0 MILES EAST-SOUTHEAST OF GOWAN, 1.4 MILES SOUTH ON COUNTY ROAD 845 FROM THE JUNCTION OF COUNTY ROAD 845 AND TRUNK HIGHWAY 2 THEN 0.5 MILE EAST ON A ROAD TO THE ARROWHEAD LOOKOUT TOWER, 45.0 FEET EAST OF NORTHEAST LEG OF A TOWER, 4.5 FEET SOUTHWEST OF A WITNESS POST, 46.42 FEET SOUTHWEST OF ARROWHEAD RM 1, 69.15 FEET SOUTHEAST OF ARROWHEAD RM 2, 54.80 FEET EAST-NORTHEAST OF STATION ARROWHEAD ECC MNDT.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1609.852	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1610.430	.131		1516.129	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.452 09 = -94.380 03 = -94.245

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 02.32904	92 42 53.47765	433703.183	167217.077	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 02.32260	92 42 53.47934	433703.063	167216.425	.033	1	ADJUSTMENT	1986	17289

NAD27							Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 02.52100	92 42 52.76600			.100	1	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
2721072.890	450143.415	1711759.612	17016877.637	.033	1	ADJUSTMENT	1999	17648		

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
2721072.776	450142.762	1711759.496	17016876.984	.033	1	ADJUSTMENT	1986	17289		

NAD27		MN State Plane - North Zone							Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>		
2096458.570	122079.198			.100	1	CLASSICAL SURVEY	1954	10724		



Mn/DOT Name: ARROWHEAD ECC MNDT

NGS Name: ARROWHEAD ECC 16254

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1658](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1004
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	11	50 N	19 W	465002.21	924254.25		3	1978	2017	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION
				<u>Monument Type</u>	<u>Disk Type</u>				<u>Mon. Agency</u>						
				UNKNOWN	UNMONUMENTED				MNDT						

Description: (1978)

Stamping:

6.0 MILES EAST-SOUTHEAST OF GOWAN, NEAR THE ARROWHEAD LOOKOUT TOWER, 54.80 FEET WEST-SOUTHWEST OF STATION ARROWHEAD.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1612.628	.262			1518.327	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1612.005							RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.452 09 = -94.380 03 = -94.245

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.21043	92 42 54.24658			433649.678	167205.241	.131	3	ADJUSTMENT	1999 17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.20399	92 42 54.24827			433649.558	167204.589	.131	3	ADJUSTMENT	1986 17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.40240	92 42 53.53490					.100	3	CLASSICAL SURVEY	1980 16254

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2721019.486	450131.132			1711706.215	17016865.431	.131	3	ADJUSTMENT	1999 17648
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2721019.372	450130.478			1711706.100	17016864.779	.131	3	ADJUSTMENT	1986 17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Year</u> <u>Reference</u>
<u>X</u>	<u>Y</u>								
2096405.166	122066.916					.100	3	CLASSICAL SURVEY	1980 16254

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ARROWHEAD_ECC_16254-RN1658-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ARROWHEAD LOOKOUT TOWER

NGS Name: ARROWHEAD LOOKOUT TOWER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1657](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1023
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	50 N	19 W	465002.26	924254.30		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	LOOKOUT TOWER	NGS

Description: (1978)

Stamping:

6.0 MILES EAST-SOUTHEAST OF GOWAN.

Station Notes

IT IS A STEEL STRUCTURE, ABOUT 70.0 FEET HIGH AND HAS A LOOKOUT CAGE ON THE TOP.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.452 09 = -94.380 03 = -94.245

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>			<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.25507	92 42 54.29825		433646.100	167209.776	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>			<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.24880	92 42 54.29986		433645.986	167209.141	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							<u>Project Info</u>		
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 50 02.44400	92 42 53.60700				.100	4	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>			<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>								
2721015.871	450135.636		1711702.607	17016869.939	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>			<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>								
2721015.762	450135.001		1711702.498	17016869.303	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							<u>Project Info</u>		
<u>MN State Plane - North Zone</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>								
2096400.132	122071.105				.100	4	CLASSICAL SURVEY	1954	10724

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ARROWHEAD_LOOKOUT_TOWER-RN1657-3E-24JUL2017.jpg	E	Jul 24, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ARROWHEAD RM 1

NGS Name: ARROWHEAD RM 1

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	50 N	19 W	465002.65	924253.00		

NGS ACRN: CJ1807	Get Map
NGS Quad / Sta Num : 46092413/	
USGS Quad: MARTIN LAKE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	DESTROYED	Horz=NO Vert=NO	YES			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2019) **Stamping:** ARROWHEAD NO 1 1952

6.0 MILES EAST-SOUTHEAST OF GOWAN, 1.4 MILES SOUTH ON COUNTY ROAD 854 FROM THE JUNCTION OF COUNTY ROAD 854 AND TRUNK HIGHWAY 2 THEN 0.5 MILE EAST ON A ROAD TO THE ARROWHEAD LOOKOUT TOWER, 46.45 FEET NORTHEAST OF STATION ARROWHEAD.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Year</u>	<u>Reference</u>					
1612.067	.033	3				1962	USGS-VERT					

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.452 09 = -94.380 03 = -94.245

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ARROWHEAD_RM_1-CJ1807-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ARROWHEAD RM 2

NGS Name: ARROWHEAD RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1659](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1004
USGS Quad: MARTIN LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	11	50 N	19 W	465002.53	924254.43		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	NOT FOUND	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
UNKNOWN	REFERENCE MARK DISK	NGS

Description: (1978)

Stamping: ARROWHEAD NO 2 1952

6.0 MILES EAST-SOUTHEAST OF GOWAN, 1.4 MILES SOUTH ON COUNTY ROAD 854 FROM THE JUNCTION OF COUNTY ROAD 854 AND TRUNK HIGHWAY 2, THEN 0.5 MILE EAST TO THE ARROWHEAD LOOKOUT TOWER, 15.5 FEET NORTH OF THE NORTHWEST LEG OF A TOWER, 7.0 FEET NORTH OF A TRACK ROAD, 69.15 FEET NORTHWEST OF STATION ARROWHEAD.

Leveling-Derived Orthometric Heights (Feet)

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1609.747	.033	3					VERTICAL CONTROL SURVEY	1962	USGS-VERT	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1611.545	.131			1517.241	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.452 09 = -94.380 03 = -94.245

Lat/Lon and County Coordinates (Feet)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 02.53039	92 42 54.42781	433637.186	167237.701	.033	1	ADJUSTMENT	1999	17648

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 02.52395	92 42 54.42949	433637.067	167237.049	.033	1	ADJUSTMENT	1986	17289

Geodetic Position				Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 02.72233	92 42 53.71602			.100	1	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2721006.724	450163.486	1711693.502	17016897.788	.033	1	ADJUSTMENT	1999	17648

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2721006.610	450162.833	1711693.387	17016897.136	.033	1	ADJUSTMENT	1986	17289

MN State Plane - North Zone				Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2096392.412	122099.264			.100	1	CLASSICAL SURVEY	1980	16254

Station Photos

Type	File Name	Dir	Date
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ARROWHEAD_RM_2-RN1659-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: B 12 MN137

NGS Name: B 12

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6520](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	9	55 N	17 W	471522.33	922936.13	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1985	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 24 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MN-137

Description: (1992) **Stamping:** B 12 1985

6.1 MILES NORTH OF COTTON, 6.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON TO TRUNK HIGHWAY 53 MILEPOINT 45.10, THEN 0.5 MILE WEST ON ELLSBURG FOREST MANAGEMENT ROAD, 39.0 FEET WEST-SOUTHWEST OF WEST ELLSBURG FOREST ROAD, 53.8 FEET SOUTHWEST OF A STEEL GATE POST, 36.7 FEET SOUTH-SOUTHWEST OF A STEEL GATE POST, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1352.694	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1352.648	.262		1254.738	.197	2011	GPS - RTRN			2017	RTRN2017		
			1254.299	.016	2011	HORIZONTAL ADJUSTMENT			2012	GPS2800		
			1254.335	.015	2007	HORIZONTAL ADJUSTMENT			2007	GPS2300		
1352.031	.131		1254.318	.066	1996	HORIZONTAL ADJUSTMENT			2003	GPS1848		
1352.031	.131		1254.318	.066	1996	GPS - STATIC			2002	HTWIB		

Geoid Separations(ft): GEOID18 = -97.913 12B = -97.910 09 = -97.851 03 = -97.670

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - Central Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
47 15 22.32918	92 29 36.13260	489228.957	102265.563	.131	3	GPS - RTRN				2017	RTRN2017		
47 15 22.33082	92 29 36.13402	489228.859	102265.729	.013		ADJUSTMENT				2012	GPS2800		

NAD83(2007)		Geodetic Position		St Louis County - Central Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
47 15 22.33111	92 29 36.13487	489228.801	102265.758	.013		ADJUSTMENT				2007	GPS2300		

NAD83(1996)		Geodetic Position		St Louis County - Central Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
47 15 22.33120	92 29 36.13479	489228.806	102265.768	.033	C	ADJUSTMENT				2003	GPS1848		
47 15 22.33120	92 29 36.13479	489228.805	102265.767	.033	C	GPS - STATIC				2002	HTWIB		

NAD83(1986)		Geodetic Position		St Louis County - Central Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
47 15 22.33133	92 29 36.13743	489228.625	102265.780	.033	C	GPS - STATIC				1993	H1993		

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2775303.577	604493.847	1766178.492	17171094.505	.131	3	GPS - RTRN	2017	RTRN2017
2775303.478	604494.013	1766178.393	17171094.670	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2775303.419	604494.042	1766178.334	17171094.699	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2775303.425	604494.051	1766178.339	17171094.708	.033	C	ADJUSTMENT	2003	GPS1848
2775303.425	604494.051	1766178.339	17171094.708	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2775303.243	604494.063	1766178.157	17171094.720	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_12-DF6520-3W-13SEP2017.jpg	W	Sep 13, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_12-DF6520-2-13SEP2017.jpg		Sep 13, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_12-DF6520-1-13SEP2017.jpg		Sep 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: B 13 MN137

NGS Name: B 13

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6457](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	54 N	17 W	470945.44	922825.27	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1985	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 15 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MN-137

Description: (2001) **Stamping:** B 13 1985

0.5 MILE SOUTH OF COTTON, 0.45 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 38.50, 107.5 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 76.0 FEET WEST OF COUNTY ROAD 892, 59.0 FEET SOUTH OF COUNTY ROAD 892, 22.8 FEET NORTH-NORTHEAST OF A TELEPHONE CABLE MARKER, 140.7 FEET SOUTH OF A POWER POLE, 2.5 FEET WEST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1332.632	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1332.655	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1332.652	.016	2/1				VERTICAL CONTROL SURVEY	2007	VCOTT
1332.652	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1332.704	.262		1235.385	.197	2011	GPS - RTRN	2017	RTRN2017
			1235.306	.016	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1235.395	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1332.412	.131		1235.444	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1332.412	.131		1235.444	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -97.323 12B = -97.316 09 = -97.214 03 = -97.018

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 09 45.43623	92 28 25.27469	494106.924	286979.344	.131	3	GPS - RTRN	2017	RTRN2017
47 09 45.43647	92 28 25.27563	494106.859	286979.368	.013		ADJUSTMENT	2012	GPS2800
NAD83(2007)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 09 45.43660	92 28 25.27653	494106.797	286979.381	.013		ADJUSTMENT	2007	GPS2300
NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 09 45.43641	92 28 25.27622	494106.819	286979.362	.033	C	ADJUSTMENT	2003	GPS1848
47 09 45.43641	92 28 25.27622	494106.817	286979.360	.033	C	GPS - STATIC	2002	HTWIB
NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 09 45.43538	92 28 25.27735	494106.741	286979.255	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2780467.598	570401.768	1771294.381	17137007.142	.131	3	GPS - RTRN	2017	RTRN2017
2780467.533	570401.792	1771294.315	17137007.166	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2780467.471	570401.804	1771294.253	17137007.179	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2780467.492	570401.785	1771294.275	17137007.160	.033	C	ADJUSTMENT	2003	GPS1848
2780467.492	570401.785	1771294.275	17137007.160	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2780467.415	570401.680	1771294.197	17137007.055	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_13-DF6457-3S-18SEP2017.jpg	S	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_13-DF6457-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_13-DF6457-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: B 159

NGS Name: B 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0495](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	2	53 N	18 W	470555.00	923440.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2007	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 7 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) **Stamping:** B 159 1935

1.0 MILE EAST OF THE PAYNE RAILROAD CROSSING, 62.0 FEET NORTH OF COUNTY ROAD 232, 16.0 FEET WEST OF A TRAIL, 102.0 FEET NORTH OF THE NORTHEAST CORNER OF SMALL DWELLING, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

FOUND THE MARK LAYING ON THE TOP OF THE GROUND. REMOVED THE DISK AND RETURNED TO THE GEODETIC OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1309.502	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1308.934	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -96.955 12B = -96.949 09 = -96.831 03 = -96.644

* No Horizontal Positions in the Database *



Mn/DOT Name: B 164

NGS Name: B 164

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0141](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	27	52 N	17 W	465737.51	922925.63	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	NOT FOUND	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	BENCH MARK DISK	NGS

Description: (1935)

Stamping: B 164 1935

4.4 MILES EAST OF THE ALBORN RAILROAD STATION, NEAR COUNTY ROAD 47, AT A ROAD NORTH TO A LOOKOUT TOWER, 1.5 MILES WEST ON COUNTY ROAD 47 FROM THE JUNCTION OF COUNTY ROAD 47 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, 90.0 FEET WEST OF THE WEST END OF A CUT, 30.0 FEET SOUTH OF A ROAD AT A HIGH POINT, AT A CEMETERY, 21.0 FEET WEST OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1375.394	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1374.909	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1374.909	.007	1				VERTICAL CONTROL SURVEY	1958 L63 MINN

Geoid Separations(ft): GEOID18 = -95.476 12B = -95.469 09 = -95.344 03 = -95.154

* No Horizontal Positions in the Database *



Mn/DOT Name: B 271

NGS Name: B 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0645](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	36	52 N	21 W	465623.00	925556.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1999	DESTROYED	Horz=NO Vert=NO	NO	RR		STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	NGS

Description: (1999) Stamping: B 271 1948

1.35 MILES NORTHWEST ON A RAILROAD FROM THE JUNCTION OF A RAILROAD AND TRUNK HIGHWAY 73 AT FLOODWOOD, 14.5 FEET NORTHEAST OF NORTHEAST RAIL OF THE RAILROAD TRACKS, IN THE SOUTHEAST HEADWALL OF A RAILROAD BOX CULVERT AT A DRAINAGE DITCH.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1249.158	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.616	.007	1				VERTICAL CONTROL SURVEY	1974	L23566
1248.521	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT
1248.521	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -95.466 12B = -95.446 09 = -95.374 03 = -95.256

* No Horizontal Positions in the Database *



Mn/DOT Name: B 272

NGS Name: B 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0715](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	6	51 N	20 W	465548.00	925453.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	NGS

Description: (1999) **Stamping:** B 272 1948

AT FLOODWOOD, 0.45 MILE NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT THE NORTHWEST CORNER OF ELM STREET AND FOURTH AVENUE, IN THE SOUTH WALL OF THE LINCOLN SCHOOL BUILDING, 77.7 FEET WEST OF TRUNK HIGHWAY 73, 1.4 FEET WEST OF THE SOUTHEAST CORNER OF A SCHOOL, A NEW SCHOOL WAS BUILT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1255.188	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1254.637	.016	2						VERTICAL CONTROL SURVEY	1974	L23566
1254.551	.007	1						VERTICAL CONTROL SURVEY	1949	L28 MINN

Geoid Separations(ft): GEOID18 = -95.387 12B = -95.367 09 = -95.292 03 = -95.177

* No Horizontal Positions in the Database *



Mn/DOT Name: B 273

NGS Name: B 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0520](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	17	53 N	20 W	470410.00	925347.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: B 273 1948

7.65 MILES WEST ON TRUNK HIGHWAY 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, AT THE Y-JUNCTION OF COUNTY ROAD 133 AND A GRAVEL ROAD SOUTHWEST, 40.0 FEET NORTH OF COUNTY ROAD 133, 44.0 FEET NORTHWEST OF A ROAD SOUTHWEST EXTENDED, 17.0 FEET SOUTHWEST OF A DITCH, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

FOUND IN DITCH BOTTOM.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.440	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1264.784	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1264.784	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.666 12B = -96.647 09 = -96.614 03 = -96.420

* No Horizontal Positions in the Database *



Mn/DOT Name: B 275

NGS Name: B 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	54 N	19 W	471002.12	924436.81	2	

NGS ACRN:	SJ0478	Get Map
NGS Quad / Sta Num :	47092324/	
USGS Quad:	MEADOWLANDS NW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: B 275 1948

3.2 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA, 1.2 MILES EAST OF THE JUNCTION OF COUNTY ROAD 52 AND OVERTON ROAD, 52.0 FEET SOUTH OF COUNTY ROAD 52, 12.0 FEET WEST OF A GRASS DRIVE, ON THE HIGHEST POINT IN THE AREA, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.790	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.144	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1298.144	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN
1298.144	.033	3				VERTICAL CONTROL SURVEY	1958 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.549 12B = -97.546 09 = -97.467 03 = -97.280

* No Horizontal Positions in the Database *



Mn/DOT Name: B 280

NGS Name: B 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1327](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	28	55 N	21 W	471236.51	930122.32	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) **Stamping:** B 280 1948

4.4 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND A RAILROAD AT SILICA, 0.45 MILE SOUTH OF A ROAD WEST, 0.25 MILE NORTHWEST OF A WOOD BRIDGE OVER MUSKRAT CREEK, 34.0 FEET EAST OF TRUNK HIGHWAY 73, 135.0 FEET SOUTH OF THE TOP OF A GRADE, 16.0 FEET SOUTH OF THE SOUTH END OF A CUT, 16.0 FEET SOUTH OF A TELEPHONE POLE, ACROSS THE HIGHWAY FROM A GRAVEL PIT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1329.456	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1328.692	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1328.692	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1328.692	.007	1					VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.113 12B = -97.123 09 = -97.040 03 = -96.922

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/B_280-SJ1327-3E-11JUL2017.jpg	E	Jul 11, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: B 29

NGS Name: B 29

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0121](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	23	51 N	17 W	465339.00	922703.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	BENCH MARK DISK	NGS

Description: (1978)

Stamping: B 29 1934

3.0 MILES NORTHEAST OF SAGINAW ON AN ABANDONED RAILROAD, 30.0 FEET SOUTH OF A COUNTY ROAD 7 CROSSING,
22.0 FEET WEST OF AN OLD RAILROAD BED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1340.047	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1339.627	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1339.627	.007	1				VERTICAL CONTROL SURVEY	1959 L82 MINN

Geoid Separations(ft): GEOID18 = -94.737 12B = -94.734 09 = -94.616 03 = -94.422

* No Horizontal Positions in the Database *



Mn/DOT Name: B 291

NGS Name: B 291

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0671](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	35	51 N	20 W	465151.00	925048.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2005	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 8 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: B 291 1948

0.1 MILE SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 AT GOWAN, 5.05 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 72.8 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 56.7 FEET WEST OF TRUNK HIGHWAY 2 MILEPOST 226, 28.0 FEET NORTHEAST OF A RIGHT-OF-WAY POST, 19.6 FEET WEST-NORTHWEST OF A POWER POLE NUMBER 3, 10.5 FEET NORTHWEST OF A 24.0 INCH DIAMETER ELM TREE, 0.9 FOOT NORTHEAST OF A WITNESS POST.

Station Notes

THE GEODETIC UNIT FOUND THE MONUMENT TIPPED OVER ON 8-29-01, THE DISK WAS REMOVED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1260.204	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1259.591	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1259.561	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT
1259.561	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -94.800 12B = -94.787 09 = -94.698 03 = -94.583

* No Horizontal Positions in the Database *



Mn/DOT Name: BATOR MNDT

NGS Name: BATOR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4242](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	11	50 N	17 W	465000.54	922725.72	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: BATOR 2001

1.75 MILES SOUTH-SOUTHWEST OF SAGINAW, 0.75 MILE SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 1.0 MILE SOUTHWEST OF SAGINAW), AT TRUNK HIGHWAY 33 MILEPOINT 10.50, 56.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 18.7 FEET NORTH OF AN ENTRANCE, 3.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
1293.170	.016	2/1						VERTICAL ADJUSTMENT	2013	00000797		
1293.170	.016	2/1						VERTICAL CONTROL SURVEY	2009	VBUSC		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
			1198.931	.012	2011			HORIZONTAL ADJUSTMENT	2012	GPS2800		
			1199.020	.013	2007			HORIZONTAL ADJUSTMENT	2007	GPS2300		
1293.108	.131		1199.128	.066	1996			HORIZONTAL ADJUSTMENT	2004	GPS1957		
1293.108	.131		1199.128	.066	1996			GPS - STATIC	2003	HGRAND		

Geoid Separations(ft): GEOID18 = -94.209 12B = -94.193 09 = -94.107 03 = -93.914

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
46 50 00.54322	92 27 25.71823	498211.751	166924.232	.010		ADJUSTMENT	2012

<u>NAD83(2007)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
46 50 00.54336	92 27 25.71911	498211.690	166924.247	.013		ADJUSTMENT	2007

<u>NAD83(1996)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
46 50 00.54300	92 27 25.71907	498211.692	166924.210	.033	C	ADJUSTMENT	2004
46 50 00.54300	92 27 25.71907	498211.692	166924.210	.033	C	GPS - STATIC	2003



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785581.204	450391.430	1776239.725	17017036.610	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785581.143	450391.444	1776239.664	17017036.623	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785581.146	450391.407	1776239.667	17017036.587	.033	C	ADJUSTMENT	2004	GPS1957
2785581.146	450391.407	1776239.667	17017036.587	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR-DG4242-3W-03JUL2007.jpg	W	Jul 3, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR-DG4242-2-03JUL2007.jpg		Jul 3, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR-DG4242-1-03JUL2007.jpg		Jul 3, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BATOR MNDT RESET

NGS Name: BATOR RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1879](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	11	50 N	17 W	465000.54	922725.72	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** BATOR 2001 2017

8.0 MILES NORTH OF CLOQUET, 0.75 MILE SOUTH-SOUTHWEST ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 10.50, 56.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 33, 18.7 FEET NORTH OF AN ENTRANCE, 3.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1292.967	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1292.996	.262		1198.803	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.209 12B = -94.193 09 = -94.107 03 = -93.914

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 50 00.54333	92 27 25.71763	498211.792	166924.244	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2785581.246	450391.441	1776239.766	17017036.621	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR_RESET-DR1879-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR_RESET-DR1879-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BATOR_RESET-DR1879-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BETH

NGS Name: BETH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5150](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	21	55 N	21 W	471335.35	930105.70	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 41 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** BETH 2017

14.6 MILES SOUTH-SOUTHWEST OF HIBBING, 12.95 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 65.9, 25.8 FEET WEST OF TRUNK HIGHWAY 73, 18.7 FEET NORTH OF AN ENTRANCE, 6.5 FEET EAST OF A WITNESS POST.

Station Pair: JOHN - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1334.443	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1334.581	.262		1237.406	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.162 12B = -97.178 09 = -97.086 03 = -96.981

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 13 35.34644	93 01 05.70371	358797.702	310785.861	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method
2644978.048	593074.590	1635883.635	17159851.644	.131	3	GPS - RTRN

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BETH-DR5150-3W-26JUL2017.jpg	W	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BETH-DR5150-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BETH-DR5150-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BNSF MN137

NGS Name: BNSF

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9091](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	10	51 N	18 W	465534.95	923644.47		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2002	GOOD	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: B.N.S.F. 2001

14.5 MILES EAST OF FLOODWOOD, 14.40 MILES EAST ALONG COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 IN FLOODWOOD, 42.0 FEET SOUTH OF THE CENTERLINE OF COUNTY ROAD 8, 65.0 FEET WEST OF THE RAILROAD TRACKS, 3.5 FEET SOUTHEAST OF A GATEPOST, 2.5 FEET NORTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order/(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
			1252.307	.009	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1252.399	.009	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1347.635	.131		1252.475	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1931
1347.635	.131		1252.475	.066	1996	GPS - STATIC		2003	HSTLO

Geoid Separations(ft): GEOID18 = -95.315 12B = -95.305 09 = -95.207 03 = -95.046

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 34.95282	92 36 44.46582	459430.907	200848.084	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 34.95294	92 36 44.46670	459430.846	200848.097	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 34.95267	92 36 44.46639	459430.867	200848.069	.033	C	ADJUSTMENT	2003	GPS1931
46 55 34.95267	92 36 44.46639	459430.867	200848.069	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2746517.731	483987.943	1737239.426	17050672.912	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2746517.670	483987.955	1737239.365	17050672.924	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2746517.691	483987.927	1737239.386	17050672.897	.033	C	ADJUSTMENT	2003	GPS1931
2746517.691	483987.927	1737239.386	17050672.897	.033	C	GPS - STATIC	2003	HSTLO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BNSF-DF9091-1-03JUN2003.jpg		Jun 3, 2003

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BOBER MNDT

NGS Name: BOBER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0752](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1061
USGS Quad: MARTIN LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	35	51 N	19 W	465117.01	924258.55	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	1997	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1981) **Stamping:** BOBER 1974

5.8 MILES WEST-SOUTHWEST OF BROOKSTON, 5.5 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, 94.7 FEET NORTH OF TRUNK HIGHWAY 2, 67.4 FEET WEST-SOUTHWEST OF A RIGHT-OF-WAY POST, 69.3 FEET EAST-SOUTHEAST OF A POWER POLE, 4.9 FEET SOUTH OF AN EAST-WEST FENCE LINE, 3.7 FEET SOUTH OF A WITNESS POST, IN 1997 A DISTRICT SURVEY CREW FOUND THE MONUMENT TIPPED OVER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1390.991	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1390.355	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1391.008	.197			1296.474	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.665 09 = -94.583 03 = -94.455

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 17.00632	92 42 58.54983	433376.205	174784.389	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 16.99942	92 42 58.55162	433376.079	174783.690	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 17.19713	92 42 57.84750			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2720682.659	457707.655	1711379.776	17024439.030	.066	2	ADJUSTMENT			1999	17648

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2720682.539	457706.955	1711379.654	17024438.330	.066	2	ADJUSTMENT			1986	17289

NAD27		MN State Plane - North Zone					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2096067.662	129643.284			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: BOUND MNDT

NGS Name: BOUND

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0773](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1054
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	1	50 N	18 W	465054.73	923417.85	2	2	1974	1992	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1992) Stamping: BOUND 1974

2.2 MILES SOUTHEAST OF BROOKSTON, 1.65 MILES EAST OF COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 239.95, HALF WAY UP THE BACK SLOPE, 71.0 FEET SOUTH OF TRUNK HIGHWAY 2, 75.5 FEET EAST OF AN ENTRANCE, 46.7 FEET NORTHWEST OF A RIGHT-OF-WAY POST, 37.5 FEET NORTH-NORTHEAST OF A WITNESS POST, 45.39 FEET NORTHWEST OF BOUND MNDT RM 1, 36.23 FEET NORTHEAST OF STATION 6907 AF. THE DISK WAS SENT TO THE GEODETIC UNIT IN 1992.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.662	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.200	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.665	.197			1174.296	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.557 12B = -94.554 09 = -94.452 03 = -94.285

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>										
<u>Latitude</u>	<u>Longitude</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 54.72756	92 34 17.85233			469563.622	172437.613	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>										
<u>Latitude</u>	<u>Longitude</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 54.72179	92 34 17.85415			469563.497	172437.027	3.281		CLASSICAL SURVEY	1991	H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Geodetic Position</u>										
<u>Latitude</u>	<u>Longitude</u>									
46 50 54.92605	92 34 17.15609					.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2756888.040	455664.008	1747566.415	17022346.850	.066	2	ADJUSTMENT			1999	17648
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2756887.918	455663.423	1747566.292	17022346.265	3.281		CLASSICAL SURVEY			1991	H1991
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2132273.695	127600.520			.100	2	CLASSICAL SURVEY			1977	15924



Mn/DOT Name: BOUND MNDT RM 1

NGS Name: BOUND MNDT RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/1054
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465054.70	923417.90		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1981	1981	GOOD	Horz=? Vert=?	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	ALUMINUM MARKER (OTHER THAN A DISK)	MNDT

Description: Stamping: BOUND RM 1

2.2 MILES SOUTHEAST OF BROOKSTON, 1.65 MILES EAST OF COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 239.95, HALF WAY UP THE BACK SLOPE, 100.0 FEET SOUTH OF THE CENTERLINE OF TRUNK HIGHWAY 2, 45.39 FEET SOUTHEAST OF BOUND RESET, 1.6 FEET WEST OF A STEEL WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.557 12B = -94.554 09 = -94.452 03 = -94.285



Mn/DOT Name: BOUND RESET

NGS Name: BOUND RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1814](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465054.73	923417.85		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1981	2005	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	ALUMINUM MARKER (OTHER THAN A DISK)	MNDT

Description: (2002)

Stamping: BOUND 1974 1981

AT TRUNK HIGHWAY 2 MILEPOINT 239.4, 71.0 FEET SOUTH OF TRUNK HIGHWAY 2, 75.5 FEET EAST OF AN ENTRANCE, 46.7 FEET NORTHWEST OF A RIGHT-OF-WAY POST, 37.5 FEET NORTH-NORTHEAST OF A WITNESS POST.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.557 12B = -94.554 09 = -94.452 03 = -94.557

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 54.72756	92 34 17.85233	469563.622	172437.613	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 54.72179	92 34 17.85415	469563.495	172437.028	.066	2	ADJUSTMENT	1986	17289

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2756888.040	455664.008	1747566.415	17022346.850	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2756887.918	455663.423	1747566.292	17022346.265	.066	2	ADJUSTMENT	1986	17289



Mn/DOT Name: BR 69011 SE

NGS Name: BR 69011 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9920](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	6	51 N	20 W	465539.04	925452.61	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=NO	YES	69011	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	MNHD

Description: (1979)

Stamping: BR 69011 SE 1979

IN THE ABUTMENT IN THE SOUTHEAST CORNER OF TRUNK HIGHWAY 73 BRIDGE NUMBER 69011 OVER THE FLOODWOOD RIVER, 0.25 MILE NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 45.4, 30.1 FEET EAST OF TRUNK HIGHWAY 73.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.347	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Geoid Separations(ft): GEOID18 = -95.364 12B = -95.344 09 = -95.269 03 = -95.154

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69011_SE-DQ9920-3E-10JUL2017.jpg	E	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69011_SE-DQ9920-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69011_SE-DQ9920-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69022 SE

NGS Name: BR 69022 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

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1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	3	54 N	17 W	471107.73	922910.79		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2002	2017	GOOD	Horz=NO Vert=NO	YES	69022	FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
BRIDGE ABUTMENT	SURVEY DISK	MNDT

Description:

Stamping: BR 69022 SE 2002

1.2 MILES NORTH OF COTTON, IN THE ABUTMENT IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69022 OVER THE WHITEFACE RIVER, 1.25 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 53 (ARKOLA ROAD) IN COTTON, AT TRUNK HIGHWAY MILEPOINT 40.15, 21.0 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53.

Station Notes

IF THE COORDINATES AND/OR ELEVATIONS ARE ESTABLISHED OR PUBLISHED ON THIS GEODETIC CONTROL DISK, THEY SHOULD BE USED WITH CAUTION. THE GEODETIC CONTROL DISK IS LOCATED ON AN INTEGRAL ABUTMENT AND/OR A JOINTLESS BRIDGE AND IS SUBJECT TO MOVEMENT BEYOND GEODETIC TOLERANCES.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1319.630	.262			1222.097	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.536 12B = -97.533 09 = -97.437 03 = -97.241

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 11 07.72532	92 29 10.79159	490965.253	295318.446	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2777256.273	578713.370	1768095.518	17145320.209	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69022_SE-3N-14SEP2017.jpg	N	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69022_SE-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69022_SE-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69071 SE

NGS Name: BR 69071 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
				471236.27	922917.72		3	2012	2017	GOOD	Horz=NO Vert=NO	YES	69071	FLUSH	NO MAG MATERIAL
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
BRIDGE ABUTMENT				SURVEY DISK				MNMT							

Description:

Stamping: BR 69071 SE 2012

3.0 MILES NORTH OF COTTON, IN THE ABUTMENT IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 53 BRIDGE NUMBER 69071 OVER THE PALEFACE RIVER, 2.9 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 41.9, 8.7 FEET EAST OF TRUNK HIGHWAY 53 FOG LINE.

Station Notes

IF THE COORDINATES AND/OR ELEVATIONS ARE ESTABLISHED OR PUBLISHED ON THIS GEODETIC CONTROL DISK, THEY SHOULD BE USED WITH CAUTION. THE GEODETIC CONTROL DISK IS LOCATED ON AN INTEGRAL ABUTMENT AND/OR A JOINTLESS BRIDGE AND IS SUBJECT TO MOVEMENT BEYOND GEODETIC TOLERANCES.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.026	.262		1235.326	.197	2011	GPS - RTRN	2017	RTRN2017
1332.966	.262		1235.267	.197	2011	GPS - RTRN	2015	RTRN2015

Geoid Separations(ft): GEOID18 = -97.703 12B = -97.700 09 = -97.621 03 = -97.424

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 12 36.27106	92 29 17.72167	490490.919	304290.575	.131	3	GPS - RTRN	2017	RTRN2017
47 12 36.27107	92 29 17.72172	490490.916	304290.576	.131	3	GPS - RTRN	2015	RTRN2015

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2776706.628	587680.274	1767558.262	17154284.751	.131	3	GPS - RTRN	2017	RTRN2017
2776706.625	587680.275	1767558.259	17154284.752	.131	3	GPS - RTRN	2015	RTRN2015

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69071_SE-3N-14SEP2017.jpg	N	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69071_SE-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69071_SE-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69072 SE

NGS Name: BR 69072 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5154](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	9	55 N	21 W	471554.05	930125.86	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2014	2017	GOOD	Horz=NO Vert=NO	YES	69072	FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	SURVEY DISK	MNDT

Description: (2014)

Stamping: BR 69072 SE 2014

1.3 MILES SOUTH OF HIBBING, 1.9 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 68.75, 23.2 FEET EAST OF TRUNK HIGHWAY 73.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1335.168	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Geoid Separations(ft): GEOID18 = -97.254 12B = -97.277 09 = -97.165 03 = -97.086

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69072_SE-DR5154-3E-11JUL2017.jpg	E	Jul 11, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69072_SE-DR5154-2-11JUL2017.jpg		Jul 11, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69072_SE-DR5154-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69117 SE

NGS Name: BR 69117 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	50 N	17 W	464756.40	922657.82		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1990	2017	GOOD	Horz=NO Vert=NO	YES	69117	FLUSH	NO MAG MATERIAL

Monument Type
BRIDGE RAILING

Disk Type
VERTICAL CONTROL DISK

Mon. Agency
MNMT

Description:

Stamping: BR 69117 SE 1990

5.8 MILES NORTH OF CLOQUET, IN A RAIL IN THE SOUTHEAST CORNER OF SOUTHBOUND TRUNK HIGHWAY 33 BRIDGE NUMBER 69117 OVER THE PINE RIVER, 8.0 MILE NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND INTERSTATE HIGHWAY 35 IN CLOQUET, AT TRUNK HIGHWAY 33 MILEPOINT 8.0, 29.2 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -93.884 12B = -93.868 09 = -93.783 03 = -93.589

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69117_SE-3N-02AUG2017.jpg	N	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69117_SE-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69117_SE-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69118 SE

NGS Name: BR 69118 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	24	50 N	17 W	464757.08	922656.85			1990	2017	GOOD	Horz=NO Vert=NO	YES	69118	FLUSH	NO MAG MATERIAL
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
BRIDGE RAILING				BENCH MARK DISK				MNMT							

Description:

Stamping: BR 69118 SE 1990

5.8 MILES NORTH OF CLOQUET, IN A RAIL IN THE SOUTHEAST CORNER OF NORTHBOUND TRUNK HIGHWAY 33 BRIDGE NUMBER 69118 OVER THE PINE RIVER, 8.0 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND INTERSTATE HIGHWAY 35 IN CLOQUET, AT TRUNK HIGHWAY 33 MILEPOINT 8.0, 24.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -93.884 12B = -93.868 09 = -93.786 03 = -93.589

		<u>Station Photos</u>			
<u>Type</u>		<u>File Name</u>		<u>Dir</u>	<u>Date</u>
Location:		https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69118_SE-3E-02AUG2017.jpg		E	Aug 2, 2017
Monument:		https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69118_SE-2-02AUG2017.jpg			Aug 2, 2017
Disk:		https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69118_SE-1-02AUG2017.jpg			Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69121 SE

NGS Name: BR 69121 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465057.44	923449.95		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2017	GOOD	Horz=NO Vert=NO	YES	69121	FLUSH	NO MAG MATERIAL

Monument Type
BRIDGE RAILING

Disk Type
SURVEY DISK

Mon. Agency
MNDT

Description: (2017)

Stamping: BR 69121 SW 2002

10.9 MILES NORTHWEST OF CLOQUET, 5.60 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 239.25, 25.0 FEET NORTH OF TRUNK HIGHWAY 2.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.573 12B = -94.573 09 = -94.468 03 = -94.304

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SE-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SE-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SE-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69121 SW

NGS Name: BR 69121 SW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	18 W	465059.36	923442.30		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2017	GOOD	Horz=NO Vert=NO	YES	69121	FLUSH	NO MAG MATERIAL

Monument Type
BRIDGE RAILING

Disk Type
SURVEY DISK

Mon. Agency
MNMT

Description: (2017)

Stamping: BR 69121 SW 2002

11.0 MILES NORTHWEST OF CLOQUET, IN THE RAIL IN THE SOUTHWEST CORNER OF TRUNK HIGHWAY 2 BRIDGE NUMBER 69121 OVER THE RAILROAD TRACKS AND THE ST. LOUIS RIVER, 5.75 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 239.1, 25.0 FEET SOUTH OF TRUNK HIGHWAY 2.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.577 12B = -94.577 09 = -94.472 03 = -94.308

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SW-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SW-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69121_SW-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 69A14 SE

NGS Name: BR 69A14 SE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	51 N	18 W	465141.51	923617.44		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2014	2017	GOOD	Horz=NO Vert=NO	YES	69A14	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

SURVEY DISK

Mon. Agency

MN-137

Description: (2017)

Stamping: BR 69A14 2014

IN BROOKSTON, IN THE ABUTMENT IN THE SOUTHEAST CORNER OF COUNTY ROAD 31 BRIDGE NUMBER 69A14 OVER STONE BROOK, 0.5 MILE NORTH ALONG COUNTY ROAD 31 FROM THE JUNCTION OF COUNTY ROAD 31 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), 18.8 FEET EAST OF COUNTY ROAD 31.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -94.711 12B = -94.711 09 = -94.616 03 = -94.452

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69A14_SE-3E-25JUL2017.jpg	E	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69A14_SE-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_69A14_SE-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BR 9260

NGS Name: BR 9260

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	9	55 N	21 W	471554.00	930124.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1957	2017	DESTROYED	Horz=NO Vert=NO	NO	9260		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	SURVEY DISK	MNDT

Description: (2019)

Stamping:

IN SILICA, 1.75 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 6 IN HIBBING, IN THE SOUTHEAST ABUTMENT OF TRUNK HIGHWAY 73 BRIDGE NUMBER 9260 OVER THE WEST SWAN RIVER.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1334.541	.033	3				VERTICAL CONTROL SURVEY		1957	CS6929

Geoid Separations(ft): GEOID18 = -97.257 12B = -97.277 09 = -97.168 03 = -97.090

* No Horizontal Positions in the Database *



Mn/DOT Name: BR 9261

NGS Name: BR 9261

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	55 N	21 W	471636.71	930126.48	2	

NGS ACRN: [DR5156](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

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<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1957	2017	GOOD	Horz=NO Vert=NO	YES	9261	FLUSH	NO MAG MATERIAL

Monument Type

BRIDGE ABUTMENT

Disk Type

BENCH MARK DISK

Mon. Agency

MNDT

Description: (1957)

Stamping: BR 9261 1957

0.4 MILE SOUTH OF HIBBING, IN THE SOUTHEAST ABUTMENT OF TRUNK HIGHWAY 73 BRIDGE NUMBER 9261 OVER THE WEST SWAN RIVER, 1.0 MILE SOUTH OF THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 69.55, 24.5 FEET EAST OF TRUNK HIGHWAY 73.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1340.119	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1339.344	.033	3				VERTICAL CONTROL SURVEY	1957	CS6929

Geoid Separations(ft): GEOID18 = -97.306 12B = -97.329 09 = -97.214 03 = -97.142

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_9261-DR5156-3E-11JUL2017.jpg	E	Jul 11, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_9261-DR5156-2-11JUL2017.jpg		Jul 11, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BR_9261-DR5156-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKSTON

NGS Name: BROOKSTON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0763](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1008
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	32	51 N	18 W	465118.42	923846.98	2	2	1952	1995	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1995) Stamping: BROOKSTON 1952 1974

2.1 MILES SOUTHWEST OF BROOKSTON, 2.0 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, 89.0 FEET NORTH OF TRUNK HIGHWAY 2, 55.0 FEET EAST OF A DRIVEWAY NORTH, 39.1 FEET EAST OF UNDERGROUND CABLE MARKER NUMBER 18, 24.3 FEET EAST-SOUTHEAST OF A POWER POLE, 3.6 FEET WEST OF A WITNESS POST, AT TRUNK HIGHWAY 2 MILEPOINT 235.8, 78.63 FEET WEST-SOUTHWEST OF BROOKSTON RM 1, 87.85 FEET SOUTHEAST OF BROOKSTON RM 2, 89.09 FEET NORTHEAST OF BROOKSTON RM 3.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1337.136	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1336.513	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1337.136	.197			1242.639	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.665 12B = -94.662 09 = -94.570 03 = -94.422

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 18.41996	92 38 46.97770			450861.987	174876.021	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 18.41367	92 38 46.97916			450861.884	174875.384	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								<u>Year</u> <u>Reference</u>
46 51 18.61200	92 38 46.27800					.100	2	CLASSICAL SURVEY	1954 10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2738166.845	457945.583			1728856.565	17024653.118	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2738166.747	457944.946			1728856.466	17024652.480	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								<u>Year</u> <u>Reference</u>
2113552.183	129881.382					.100	2	CLASSICAL SURVEY	1954 10724



Mn/DOT Name: BROOKSTON AZ MK

NGS Name: BROOKSTON AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0765](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1008
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	5	50 N	18 W	465116.41	923819.55	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2001)

Stamping: BROOKSTON 1952

2.0 MILES SOUTHWEST OF BROOKSTON, 1.6 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 236.2, 64.2 FEET SOUTH OF TRUNK HIGHWAY 2, 50.5 FEET WEST OF AN ENTRANCE SOUTH, 22.3 FEET SOUTH OF THE WEST END OF A METAL CULVERT, 29.8 FEET NORTH OF A POWER POLE NUMBER 6, 1.7 FEET NORTHWEST OF A WITNESS POST.

Station Pair: KEOUGH - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1306.385	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1306.385	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1306.418	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1306.385	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1305.765	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1306.425	.262		1211.769	.197	2011	GPS - RTRN	2017	RTRN2017
			1211.677	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1211.769	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1306.395	.131		1211.877	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1306.395	.131		1211.877	.066	1996	GPS - STATIC	2003	HGRAND
1306.395	.262		1211.897	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.659 12B = -94.655 09 = -94.563 03 = -94.413

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 16.40802	92 38 19.55193	452767.702	174667.493	.131	3	GPS - RTRN	2017	RTRN2017
46 51 16.40805	92 38 19.55221	452767.682	174667.495	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 16.40818	92 38 19.55308	452767.622	174667.509	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 16.40797	92 38 19.55304	452767.625	174667.488	.033	C	ADJUSTMENT	2004	GPS1957
46 51 16.40797	92 38 19.55304	452767.625	174667.488	.033	C	GPS - STATIC	2003	HGRAND
46 51 16.40943	92 38 19.55264	452767.653	174667.636	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 16.40318	92 38 19.55413	452767.548	174667.002	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 16.60222	92 38 18.85376			.100	3	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2740074.216	457753.023	1730762.834	17024458.038	.131	3	GPS - RTRN	2017	RTRN2017
2740074.196	457753.026	1730762.815	17024458.041	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2740074.136	457753.039	1730762.755	17024458.054	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2740074.139	457753.018	1730762.757	17024458.032	.033	C	ADJUSTMENT	2004	GPS1957
2740074.139	457753.018	1730762.757	17024458.032	.033	C	GPS - STATIC	2003	HGRAND
2740074.166	457753.166	1730762.785	17024458.180	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2740074.066	457752.532	1730762.684	17024457.547	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2115459.504	129689.046			.100	3	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_AZ_MK-RN0765-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_AZ_MK-RN0765-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_AZ_MK-RN0765-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKSTON RM 1

NGS Name: BROOKSTON RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0764](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	32	51 N	18 W	465118.49	923845.85	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 12 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2019)

Stamping: BROOKSTON NO 1 1952

2.1 MILES WEST-SOUTHWEST OF BROOKSTON, 2.0 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 235.8, 97.0 FEET NORTH OF TRUNK HIGHWAY 2, 131.6 FEET EAST OF DRIVEWAY NUMBER 9177, 116.4 FEET WEST OF CABLE MARKER NUMBER 18, 98.8 FEET WEST OF A POWER POLE, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1336.054	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1336.044	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1336.080	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1335.916	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.296	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1336.073	.262		1241.415	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.665 12B = -94.662 09 = -94.570 03 = -94.422

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 51 18.48677	92 38 45.84694	450940.596	174882.593	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2738245.396	457952.814	1728935.091	17024660.237	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_1-RN0764-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_1-RN0764-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_1-RN0764-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BROOKSTON RM 2

NGS Name: BROOKSTON RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0762](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	32	51 N	18 W	465119.14	923847.68	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2007	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2001)

Stamping: BROOKSTON NO 2 1952

2.1 MILES WEST-SOUTHWEST OF BROOKSTON, 2.0 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, 87.9 FEET NORTHWEST OF STATION BROOKSTON, 174.2 FEET NORTH OF TRUNK HIGHWAY 2, 11.0 FEET EAST OF A DRIVEWAY NORTH, 69.5 FEET NORTH OF A POWER POLE, 71.0 FEET NORTH OF AN EAST-WEST POWER LINE, 4.0 FEET WEST OF A NORTH-SOUTH FENCE LINE, 88.9 FEET NORTH-NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1336.982	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1336.362	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.665 12B = -94.659 09 = -94.570 03 = -94.422

* No Horizontal Positions in the Database *



Mn/DOT Name: BROOKSTON RM 3

NGS Name: BROOKSTON RM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0761](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	32	51 N	18 W	465118.19	923848.22	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2007	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 10 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2019)

Stamping: BROOKSTON NO 3 1974

2.1 MILES WEST-SOUTHWEST OF BROOKSTON, 2.0 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 235.8, 63.0 FEET NORTH OF TRUNK HIGHWAY 2, 27.0 FEET WEST OF A DRIVEWAY NORTH, 13.6 FEET NORTHWEST OF THE WEST END OF A CULVERT UNDER A DRIVEWAY, 58.4 FEET SOUTHWEST OF CABLE MARKER POST NUMBER 18, 59.7 FEET SOUTHWEST OF A POWER POLE, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1339.348	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.728	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
				1244.761	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1244.853	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1339.335	.131			1244.961	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1339.335	.131			1244.961	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.665 12B = -94.662 09 = -94.570 03 = -94.422

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 18.18771	92 38 48.21542	450775.901	174852.705	.013		ADJUSTMENT	2012	GPS2800	

NAD83(2007)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 18.18784	92 38 48.21629	450775.841	174852.719	.013		ADJUSTMENT	2007	GPS2300	

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 51 18.18764	92 38 48.21624	450775.844	174852.698	.033	C	ADJUSTMENT	2004	GPS1957	
46 51 18.18764	92 38 48.21624	450775.844	174852.698	.033	C	GPS - STATIC	2003	HGRAND	



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2738080.958	457921.548	1728770.684	17024629.210	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2738080.898	457921.561	1728770.623	17024629.223	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2738080.901	457921.541	1728770.627	17024629.203	.033	C	ADJUSTMENT	2004	GPS1957
2738080.901	457921.541	1728770.627	17024629.203	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_3-RN0761-3N-22OCT2006.jpg	N	Oct 22, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_3-RN0761-2-22OCT2006.jpg		Oct 22, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_RM_3-RN0761-1-22OCT2006.jpg		Oct 22, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BULLEN

NGS Name: BULLEN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1870](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	52 N	17 W	465718.22	922727.39	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** BULLEN 2017

16.5 MILES NORTH OF CLOQUET, 8.0 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 19.30, 68.3 FEET NORTHWEST OF NORTHBOUND TRUNK HIGHWAY 33, 97.5 FEET SOUTHEAST OF SOUTHBOUND TRUNK HIGHWAY 33, ABOUT 350.0 FEET SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, 1.5 FEET SOUTHEAST OF A WITNESS POST.

Station Pair: CHALBERG MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1344.518	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1344.545	.262			1249.210	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.341 12B = -95.334 09 = -95.210 03 = -95.013

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								
46 57 18.21762	92 27 27.39046			498099.780	211268.919	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								
2785096.424	494732.597			1775817.151	17061359.980	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BULLEN-DR1870-3NE-16AUG2017.jpg	NE	Aug 16, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BULLEN-DR1870-2-16AUG2017.jpg		Aug 16, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BULLEN-DR1870-1-16AUG2017.jpg		Aug 16, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: BUSCHE MNDT

NGS Name: BUSCHE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AC5011](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	17 W	465038.86	922729.67	2	B	1995	2025	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STEEL ROD (IN SLEEVE) (DEPTH 24 FT)	METAL ROD	MNDT

Description: (2001)

Stamping: BUSCHE 1995

9.0 MILES NORTH OF CLOQUET, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 11.2, 32.5 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33, 51.5 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 33, 65.7 FEET SOUTHWEST OF THE SOUTHWEST CORNER OF NORTHBOUND TRUNK HIGHWAY 33 BRIDGE OVER TRUNK HIGHWAY 2, 61.7 FEET SOUTH-SOUTHEAST OF THE SOUTHEAST CORNER OF A SOUTHBOUND TRUNK HIGHWAY 33 BRIDGE OVER TRUNK HIGHWAY 2, 3.7 FEET NORTH OF A WITNESS POST.

Station Pair: DBUG - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u> <u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1351.746	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1351.749	.016	2/1				VERTICAL ADJUSTMENT	2013	00000797
1351.749	.016	2/1				VERTICAL CONTROL SURVEY	2009	VBUSC

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u> <u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1351.887	.262		1257.586	.197	2011	GPS - RTRN	2025	RTRN2025
1351.854	.262		1257.553	.197	2011	GPS - RTRN	2022	RTRN2022P
1351.841	.262		1257.540	.197	2011	GPS - RTRN	2022	RTRN2022T
1351.749			1257.452	.010	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119
1351.749	.131		1257.648	.066	1996	GPS - STATIC	2017	HMNCORS07
1351.749			1257.452	.010	2011	GPS - STATIC	2017	HMNPH
1351.949	.262		1257.662	.197	2011	GPS - RTRN	2017	RTRN2017
1351.664	.262		1257.376	.197	2011	GPS - RTRN	2015	RTRN2015
1351.749			1257.455	.013	2011	HORIZONTAL ADJUSTMENT	2014	GPS2987
1351.776			1257.455	.006	2011	HORIZONTAL ADJUSTMENT	2013	GPS2885-C
1351.769	.131		1257.540	.066	2007	HORIZONTAL ADJUSTMENT	2012	GPS2885
			1257.452	.007	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1351.802	.098		1257.540	.049	2007	HORIZONTAL ADJUSTMENT	2011	GPS2806
1351.802	.098		1257.540	.049	2007	GPS - STATIC	2011	HBMN3
			1257.540	.007	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1351.638	.098		1257.648	.049	1996	GPS - STATIC	2004	GPS1954
1351.703	.131		1257.648	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1351.736	.098		1257.648	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1351.703	.131		1257.648	.066	1996	GPS - STATIC	2003	HGRAND
1351.638	.131		1257.648	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1351.736	.131		1257.648	.066	1996	GPS - STATIC	2003	HSTLO
1351.638	.131		1257.648	.066	1996	GPS - STATIC	2002	HTWIB
1351.769	.131		1257.684	.066	1996	GPS - STATIC	1999	HBROO
1351.746	.098		1257.648	.049	1996	GPS - STATIC	1997	GPS805-B
1351.746	.131		1257.648	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -94.304 12B = -94.288 09 = -94.196 03 = -94.009

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 38.85941	92 27 29.67018	497937.370	170806.380	.131	3	GPS - RTRN	2025	RTRN2025
46 50 38.85981	92 27 29.66930	497937.432	170806.421	.131	3	GPS - RTRN	2022	RTRN2022P
46 50 38.85977	92 27 29.66912	497937.444	170806.417	.131	3	GPS - RTRN	2022	RTRN2022T
46 50 38.85960	92 27 29.67037	497937.357	170806.399	.007		ADJUSTMENT	2018	GPS3119
46 50 38.85960	92 27 29.67037	497937.357	170806.399	.007	C	GPS - STATIC	2017	HMNPH
46 50 38.85975	92 27 29.67086	497937.323	170806.415	.131	3	GPS - RTRN	2017	RTRN2017
46 50 38.85944	92 27 29.67089	497937.321	170806.383	.131	3	GPS - RTRN	2015	RTRN2015
46 50 38.85961	92 27 29.67037	497937.357	170806.400	.010		ADJUSTMENT	2014	GPS2987
46 50 38.85961	92 27 29.67037	497937.357	170806.400	.003		ADJUSTMENT	2013	GPS2885-C
46 50 38.85960	92 27 29.67037	497937.357	170806.399	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 38.85973	92 27 29.67125	497937.296	170806.412	.033	C	ADJUSTMENT	2012	GPS2885
46 50 38.85973	92 27 29.67124	497937.297	170806.412	.016	B	ADJUSTMENT	2011	GPS2806
46 50 38.85973	92 27 29.67124	497937.297	170806.412	.016	B	GPS - STATIC	2011	HBMN3
46 50 38.85973	92 27 29.67124	497937.297	170806.412	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	2017	HMNCORS07
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.016	B	GPS - STATIC	2004	GPS1954
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	ADJUSTMENT	2004	GPS1957
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.016	B	ADJUSTMENT	2003	GPS1931
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	2003	HGRAND
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	ADJUSTMENT	2003	GPS1848
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	2003	HSTLO
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	2002	HTWIB
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	1999	HBROO
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.016	B	GPS - STATIC	1997	GPS805-B
46 50 38.85953	92 27 29.67118	497937.301	170806.392	.033	C	GPS - STATIC	1997	GPS805-C

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2785274.198	454271.102	1775938.300	17020915.034	.131	3	GPS - RTRN	2025	RTRN2025
2785274.259	454271.143	1775938.361	17020915.075	.131	3	GPS - RTRN	2022	RTRN2022P
2785274.271	454271.139	1775938.374	17020915.071	.131	3	GPS - RTRN	2022	RTRN2022T
2785274.184	454271.121	1775938.287	17020915.053	.007		ADJUSTMENT	2018	GPS3119
2785274.184	454271.121	1775938.287	17020915.053	.007	C	GPS - STATIC	2017	HMNPH
2785274.150	454271.136	1775938.253	17020915.068	.131	3	GPS - RTRN	2017	RTRN2017
2785274.148	454271.105	1775938.251	17020915.037	.131	3	GPS - RTRN	2015	RTRN2015
2785274.184	454271.122	1775938.287	17020915.054	.010		ADJUSTMENT	2014	GPS2987
2785274.184	454271.122	1775938.287	17020915.054	.003		ADJUSTMENT	2013	GPS2885-C
2785274.184	454271.121	1775938.287	17020915.053	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2785274.123	454271.133	1775938.226	17020915.066	.033	C	ADJUSTMENT	2012	GPS2885
2785274.124	454271.134	1775938.226	17020915.066	.016	B	ADJUSTMENT	2011	GPS2806
2785274.124	454271.134	1775938.226	17020915.066	.016	B	GPS - STATIC	2011	HBMN3
2785274.124	454271.134	1775938.226	17020915.066	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	2017	HMNCORS07
2785274.128	454271.113	1775938.231	17020915.046	.016	B	GPS - STATIC	2004	GPS1954
2785274.128	454271.113	1775938.231	17020915.046	.033	C	ADJUSTMENT	2004	GPS1957
2785274.128	454271.113	1775938.231	17020915.046	.016	B	ADJUSTMENT	2003	GPS1931
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	2003	HGRAND
2785274.128	454271.113	1775938.231	17020915.046	.033	C	ADJUSTMENT	2003	GPS1848
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	2003	HSTLO
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	2002	HTWIB
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	1999	HBROO
2785274.128	454271.113	1775938.231	17020915.046	.016	B	GPS - STATIC	1997	GPS805-B
2785274.128	454271.113	1775938.231	17020915.046	.033	C	GPS - STATIC	1997	GPS805-C

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BUSCHE-AC5011-3N-01OCT2025.jpg	N	Oct 1, 2025
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BUSCHE-AC5011-2-01OCT2025.jpg		Oct 1, 2025
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BUSCHE-AC5011-1-01OCT2025.jpg		Oct 1, 2025

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: C 159

NGS Name: C 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0496](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	6	53 N	17 W	470558.00	923321.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2007	DESTROYED	Horz=NO Vert=NO	NO			NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935)

Stamping: C 159 1935

2.0 MILES EAST OF PAYNE, 2.0 MILES EAST ON COUNTY ROAD 232 FROM THE JUNCTION OF COUNTY ROAD 232 AND COUNTY ROAD 7, 87.0 FEET EAST OF A TRAIL SOUTH, 39.0 FEET SOUTH OF A ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1315.155	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1314.591	.007	1				VERTICAL CONTROL SURVEY	1958 L63 MINN

Geoid Separations(ft): GEOID18 = -96.926 12B = -96.922 09 = -96.798 03 = -96.614

* No Horizontal Positions in the Database *



Mn/DOT Name: C 165

NGS Name: C 165

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0490](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	54 N	18 W	471006.71	923606.59	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1948	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: C 165 1935

1.0 MILE NORTH ON A RAILROAD FROM THE RAILROAD STATION AT KELSEY, AT THE JUNCTION OF A RAILROAD AND COUNTY ROAD 52, 58.0 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 46.0 FEET NORTH OF COUNTY ROAD 52, 49.0 FEET NORTHEAST OF A CROSSING SIGN, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE CONCRETE WAS FOUND BROKEN AND DISK MISSING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1301.661	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1301.044	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1301.044	.007	1				VERTICAL CONTROL SURVEY	1948 L28 MINN
1301.044	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Geoid Separations(ft): GEOID18 = -97.565 12B = -97.572 09 = -97.460 03 = -97.277

* No Horizontal Positions in the Database *



Mn/DOT Name: C 271

NGS Name: C 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0648](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1011
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	6	51 N	20 W	465543.75	925510.47	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001)

Stamping: C 271 1948

IN FLOODWOOD, UNDER THE FLOODWOOD LOOKOUT TOWER, 0.2 MILE NORTHWEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND THE WEST JUNCTION OF TRUNK HIGHWAY 73, THEN 0.1 MILE EAST ON 7TH AVENUE, THEN 0.2 MILE NORTHWEST ON A RAILROAD STATION, 76.76 FEET SOUTH-SOUTHEAST OF STATION FLOODWOOD, 79.1 FEET SOUTHWEST OF A RAILROAD STATION, 6.0 FEET NORTH OF THE SOUTHWEST CORNER OF A TOWER, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1254.154	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1254.131	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1254.131	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1254.131	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND
1254.131	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO
1254.131	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1253.485	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1253.580	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1253.485	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1254.131	.197		1158.922	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.374 12B = -95.354 09 = -95.279 03 = -95.164

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 43.74584	92 55 10.46970	382666.632	202048.385	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 43.73934	92 55 10.47253	382666.432	202047.728	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 55 43.94339	92 55 09.75091			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2669748.535	484547.077	1660503.500	17051334.444	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2669748.340	484546.418	1660503.304	17051333.785	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2045133.099	156483.140			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_271-RN0648-3SE-10JUL2017.jpg	SE	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_271-RN0648-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_271-RN0648-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: C 272

NGS Name: C 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0723](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	16	52 N	19 W	465900.11	924434.73	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	1948	GOOD	Horz=NO Vert=YES	NO			STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** C 272 1948

6.5 MILES SOUTHWEST OF MEADOWLANDS, 6.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 51.0 FEET WEST OF COUNTY ROAD 5, 32.0 FEET NORTH OF AN ENTRANCE TO THE OLD COMMUNITY HALL, 79.0 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A HALL, 25.0 FEET NORTHWEST OF THE NORTH END OF A METAL CULVERT, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1279.423	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1278.829	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1278.829	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1279.190	.262			1183.259	.197	2011	GPS - RTRN	2021	RTRN2021

Geoid Separations(ft): GEOID18 = -95.932 12B = -95.915 09 = -95.830 03 = -95.676

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
46 59 00.11434	92 44 34.73327			426866.384	221729.674	.131	3	GPS - RTRN	2021
									RTRN2021

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
2713780.889	504595.515			1704543.971	17071316.218	.131	3	GPS - RTRN	2021
									RTRN2021



Mn/DOT Name: C 273

NGS Name: C 273

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	20	53 N	20 W	470409.00	925409.00	2	

NGS ACRN: [SJ0521](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO	CO RD		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	NGS

Description: (1948)

Stamping: C 273 1948

8.0 MILES WEST ON TRUNK HIGHWAY 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.35 MILE WEST OF A Y-JUNCTION OF COUNTY ROAD 133 AND A GRAVEL ROAD SOUTHWEST, IN THE EAST END OF THE SOUTH HEADWALL OF A COUNTY ROAD 133 BOX CULVERT AT A SMALL CREEK, 20.0 FEET SOUTH OF COUNTY ROAD 133.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1262.009	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1261.349	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1261.349	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.657 12B = -96.640 09 = -96.607 03 = -96.414

* No Horizontal Positions in the Database *



Mn/DOT Name: C 275

NGS Name: C 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	54 N	19 W	471002.59	924608.88	2	3

NGS ACRN: [SJ0479](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	GOOD	Horz=YES Vert=YES	YES		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: C 275 1948

2.0 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 IN TOIVOLA, AT THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 230 (OVERTON ROAD), 35.0 FEET SOUTH OF COUNTY ROAD 52, 61.0 FEET EAST OF COUNTY ROAD 230, 30.5 FEET EAST-SOUTHEAST OF A GUYED POWER POLE, 1.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1285.883	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1285.237	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1285.237	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1285.237	.033	3					VERTICAL CONTROL SURVEY	1958	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1285.913	.262			1188.383	.197	2011	GPS - OPUS	2021	GPSBM

Geoid Separations(ft): GEOID18 = -97.526 12B = -97.523 09 = -97.451 03 = -97.260

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
47 10 02.58899	92 46 08.87920			420611.729	288878.032	.131	3	GPS - OPUS	2021 GPSBM

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2706966.015	571684.542			1697821.059	17138388.343	.131	3	GPS - OPUS	2021 GPSBM

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_275-SJ0479-3S-27JUL2021.jpg	S	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_275-SJ0479-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/C_275-SJ0479-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: C 280

NGS Name: C 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1326](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	21	55 N	21 W	471333.00	930116.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1968	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: C 280 1948

3.25 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND A RAILROAD AT SILICA, NEAR ISLAND LAKE, 0.25 MILE SOUTH OF A ROAD WEST, 30.0 FEET SOUTHWEST OF TRUNK HIGHWAY 73, ALONG A CURVE, 98.0 FEET SOUTH OF A PRIVATE ROAD, 246.0 FEET SOUTH OF A SMALL LOG HOUSE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1348.560	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1347.796	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1347.796	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.152 12B = -97.168 09 = -97.077 03 = -96.972

* No Horizontal Positions in the Database *



Mn/DOT Name: C 291

NGS Name: C 291

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0674](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	35	51 N	20 W	465130.00	924956.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1974	GOOD	Horz=NO Vert=NO	NO	RR		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - SMALL	BENCH MARK DISK	NGS

Description: (1974) **Stamping:** C 291 1948

0.9 MILE SOUTHEAST ON A RAILROAD FROM GOWAN, 3.65 MILES SOUTHEAST ON A RAILROAD FROM A ROAD CROSSING IN PAUPORES, 20.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE RAILROAD TRACKS, 100.0 FEET SOUTHEAST OF THE SOUTH BANK OF THE ST. LOUIS RIVER, 175.0 FEET NORTHWEST OF A PRIVATE ROAD CROSSING, 0.2 MILE NORTHEAST OF STATION 6907 S, IN THE EAST END OF THE NORTH HEADWALL OF A RAILROAD BOX CULVERT.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1233.728	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1233.101	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1233.101	.007	1				VERTICAL CONTROL SURVEY	1974	L23566
1233.101	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -94.741 12B = -94.728 09 = -94.642 03 = -94.527

* No Horizontal Positions in the Database *



Mn/DOT Name: C 296

NGS Name: C 296

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0558](#) [Get Map](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	3	55 N	20 W	471658.04	925213.29	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** C 296 1948

3.85 MILES SOUTHWEST OF LITTLE SWAN, 0.85 MILE WEST OF A NORTH-SOUTH GRAVEL ROAD (COUNTY ROAD 956), 35.0 FEET SOUTH OF COUNTY ROAD 442, AT THE TOP OF A LOW GENTLE GRADE, AT A LOW SANDY CUT, 45.0 FEET EAST OF A DRIVE SOUTH, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1303.761	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1302.996	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1302.996	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.772 12B = -97.769 09 = -97.693 03 = -97.595

* No Horizontal Positions in the Database *



Mn/DOT Name: CANYON MNDT

NGS Name: CANYON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6509](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	53 N	17 W	470155.76	922817.18	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999) Stamping: CANYON 1992

0.55 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.45, 80.2 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 77.3 FEET SOUTH-SOUTHEAST OF A RIGHT-OF-WAY POST, 4.2 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1369.193	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1369.187	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
				1273.068	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1273.160	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1369.059	.131			1273.255	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1369.059	.131			1273.255	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.102 12B = -96.109 09 = -95.964 03 = -95.777

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 01 55.75975	92 28 17.18088	494653.249	239390.287	.010		ADJUSTMENT	2012	GPS2800

<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 01 55.75987	92 28 17.18177	494653.187	239390.299	.013		ADJUSTMENT	2007	GPS2300

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 01 55.75959	92 28 17.18157	494653.201	239390.271	.033	C	ADJUSTMENT	2003	GPS1848
47 01 55.75959	92 28 17.18157	494653.200	239390.273	.033	C	GPS - STATIC	2002	HTWIB

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 01 55.75602	92 28 17.18211	494653.164	239389.908	.033	C	GPS - STATIC	1993	H1993



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781413.802	522822.623	1772174.900	17089444.140	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781413.740	522822.634	1772174.838	17089444.152	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781413.754	522822.606	1772174.852	17089444.124	.033	C	ADJUSTMENT	2003	GPS1848
2781413.754	522822.606	1772174.852	17089444.124	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781413.720	522822.244	1772174.817	17089443.762	.033	C	GPS - STATIC	1993	H1993



Mn/DOT Name: CANYON MNDT RESET

NGS Name: CANYON RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1860](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	34	53 N	17 W	470155.76	922817.18	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 5 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: CANYON 1992 2017

0.55 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.45, 80.2 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 4.2 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1368.974	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1369.085	.262		1272.973	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.102 12B = -96.109 09 = -95.964 03 = -95.777

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 01 55.75900	92 28 17.17999	494653.310	239390.211	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2781413.864	522822.547	1772174.962	17089444.065	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CANYON_RESET-DR1860-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CANYON_RESET-DR1860-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CANYON_RESET-DR1860-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CARTY MNDT

NGS Name: CARTY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0676](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1065
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	35	51 N	20 W	465108.65	924944.26	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: CARTY 1974

6.8 MILES SOUTHEAST OF FLOODWOOD, 6.25 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 227.15, 300.0 FEET WEST OF TRUNK HIGHWAY 2, 32.0 FEET NORTH OF COUNTY ROAD 841, 64.6 FEET SOUTHWEST OF A POWER POLE NUMBER 11454, 60.37 FEET WEST OF CARTY MNDT RM 1, 60.03 FEET NORTH OF STATION 6907 R, 8.2 FEET SOUTHWEST OF A POWER POLE, 7.2 FEET NORTHWEST OF A POWER POLE, 61.0 FEET NORTH OF A WITNESS POST, 1.3 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1297.219	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963
1297.097	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1296.471	.016	2						VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1297.465	.262			1202.793	.197	2011		GPS - RTRN	2017	RTRN2017
				1202.524	.021	2011		HORIZONTAL ADJUSTMENT	2012	GPS2800
				1202.612	.022	2007		HORIZONTAL ADJUSTMENT	2007	GPS2300
1297.110	.131			1202.737	.066	1996		HORIZONTAL ADJUSTMENT	2004	GPS1957
1297.110	.131			1202.737	.066	1996		GPS - STATIC	2003	HGRAND
1297.110	.197			1202.589	.131	1996		HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.672 09 = -94.583 03 = -94.468

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.65023	92 49 44.25898	405173.575	174053.818	.131	3	GPS - RTRN	2017	RTRN2017
46 51 08.65090	92 49 44.25760	405173.671	174053.885	.020		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.65100	92 49 44.25846	405173.612	174053.895	.020		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.65058	92 49 44.25807	405173.638	174053.853	.033	C	ADJUSTMENT	2004	GPS1957
46 51 08.65058	92 49 44.25807	405173.638	174053.853	.033	C	GPS - STATIC	2003	HGRAND
46 51 08.65426	92 49 44.25739	405173.688	174054.225	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.64744	92 49 44.25889	405173.580	174053.535	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 08.84667	92 49 43.54298			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2692487.453	456741.617	1683195.833	17023511.179	.131	3	GPS - RTRN	2017	RTRN2017
2692487.548	456741.685	1683195.929	17023511.248	.020		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2692487.489	456741.695	1683195.869	17023511.257	.020		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2692487.516	456741.653	1683195.897	17023511.215	.033	C	ADJUSTMENT	2004	GPS1957
2692487.516	456741.653	1683195.897	17023511.215	.033	C	GPS - STATIC	2003	HGRAND
2692487.562	456742.026	1683195.943	17023511.588	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2692487.460	456741.334	1683195.840	17023510.897	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2067872.568	128677.749			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CARTY-RN0676-3N-24JUL2017.jpg	N	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CARTY-RN0676-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CARTY-RN0676-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CARTY MNDT RM 1

NGS Name: CARTY RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0675](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	35	51 N	20 W	465108.62	924943.39	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001) Stamping: CARTY NO 1 1974

1.3 MILES SOUTHEAST OF GOWAN, 1.3 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, 6.25 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 AT FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 227.15, 23.0 FEET NORTH OF A TOWNSHIP ROAD, 60.3 FEET EAST OF STATION CARTY MNDT, 64.6 FEET EAST OF A WITNESS POST, 89.4 FEET NORTHEAST OF STATION 6907 R, 89.8 FEET NORTHEAST OF A WITNESS POST, 62.8 FEET SOUTHEAST OF A POWER POLE NUMBER 11454.

Station Notes

THE GEODETIC UNIT COULD NOT FIND THE MARK ON 8-29-01.
THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1298.449	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1297.825	.016	2						VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.685 12B = -94.672 09 = -94.583 03 = -94.472

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CARTY_RM_1-RN0675-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CATFISH MNDT

NGS Name: CATFISH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
NE	7	51 N	20 W	465527.20	925456.80			1993	1998	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	MNDT
Monument Type ALUMINUM ALLOY ROD (NO SLEEVE)																
Disk Type SURVEY DISK																
Description: (1993) Stamping: CATFISH 1993																

IN FLOODWOOD, 0.05 MILE NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 220.75, 43.0 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 278.0 FEET NORTHWEST OF TRUNK HIGHWAY 73 NORTH, 22.0 FEET SOUTHEAST OF AN ENTRANCE, 50.7 FEET EAST OF THE NORTH LEG OF THE FLOODWOOD CAMPGROUND SIGN, 111.7 FEET WEST OF A TRUNK HIGHWAY 73 SIGN, 6.3 FEET NORTHWEST OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.331 12B = -95.311 09 = -95.236 03 = -95.124



Mn/DOT Name: CHAL MNDT

NGS Name: CHAL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1037](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	11	51 N	17 W	465508.59	922812.87	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1978) **Stamping:** CHAL 1978

3.0 MILES SOUTH-SOUTHWEST OF INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 16.6, 2.8 MILES SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53, 25.0 FEET EAST OF TRUNK HIGHWAY 33, 38.0 FEET SOUTH OF AN ENTRANCE, 88.0 FEET SOUTHWEST OF THE CORNER OF A POWER POLE, 13.7 FEET SOUTH-SOUTHWEST OF THE WEST END OF A METAL CULVERT, 9.5 FEET SOUTH-SOUTHEAST OF A MAILBOX POST, 95.65 FEET NORTHEAST OF CHAL RM 1, 148.86 FEET SOUTHEAST OF CHAL RM 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1352.287	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1352.028	.016	2					VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1352.294	.197			1257.475	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.026 12B = -95.029 09 = -94.905 03 = -94.711

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 55 08.59144	92 28 12.86673			494941.463	198135.812	.066	2	ADJUSTMENT	17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 55 08.58563	92 28 12.86799			494941.375	198135.224	.066	2	ADJUSTMENT	17289

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 55 08.79909	92 28 12.17867					.100	2	CLASSICAL SURVEY	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
									Reference
2782048.722	481573.853			1772752.363	17048210.811	.066	2	ADJUSTMENT	17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
									Reference
2782048.639	481573.264			1772752.279	17048210.222	.066	2	ADJUSTMENT	17289

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
									Reference
2157434.488	153511.246					.100	2	CLASSICAL SURVEY	16254



Mn/DOT Name: CHAL RM 1

NGS Name: CHAL RM 1

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	51 N	17 W	465508.04	922813.99	2	

NGS ACRN: [RN1036](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2009	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: CHAL NO. 1 1978

3.0 MILES SOUTH-SOUTHWEST OF INDEPENDENCE, 2.8 MILES SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53, 0.3 MILE SOUTH OF COUNTY ROAD 8, AT TRUNK HIGHWAY 33 MILEPOINT 16.55, 53.8 FEET WEST OF TRUNK HIGHWAY 33, 95.6 FEET SOUTHWEST OF STATION CHAL MNDT, 170.2 FEET SOUTH OF CHAL RM 2, 3.0 FEET NORTH OF A WITNESS POST.

Station Notes

5-11-2009 THE POSITION IS IN A DITCH BOTTOM. GRADED OUT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.411	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.151	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.033 12B = -95.036 09 = -94.911 03 = -94.714

* No Horizontal Positions in the Database *



Mn/DOT Name: CHAL RM 2

NGS Name: CHAL RM 2

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	51 N	17 W	465509.71	922814.25	2	

NGS ACRN: [RN1038](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2009	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: CHAL NO. 2 1978

3.0 MILES SOUTH-SOUTHWEST OF INDEPENDENCE, 2.8 MILES SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53, 0.3 MILE SOUTH OF COUNTY ROAD 8, AT TRUNK HIGHWAY 33 MILEPOINT 16.55, 70.3 FEET WEST OF TRUNK HIGHWAY 33, 33.0 FEET SOUTHEAST OF A POWER POLE, 32.0 FEET EAST-NORTHEAST OF A STEEL SIGN POST, 148.9 FEET NORTHWEST OF STATION CHAL MNDT, 170.2 FEET NORTH OF CHAL RM 1, 2.7 FEET EAST OF A WITNESS POST.

Station Notes

5-11-2009 THE POSITION IS IN A DITCH. GRADED OUT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.598	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.338	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.036 12B = -95.039 09 = -94.915 03 = -94.718

* No Horizontal Positions in the Database *



Mn/DOT Name: CHALBERG MNDT

NGS Name: CHALBERG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6512](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	35	52 N	17 W	465703.81	922752.01	2	C	1992	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999) Stamping: CHALBERG 1992

0.5 MILE SOUTH OF INDEPENDENCE, 0.4 MILE SOUTHWEST ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 18.90, 40.8 FEET NORTHWEST OF SOUTHBOUND TRUNK HIGHWAY 33, 3.0 FEET SOUTHEAST OF A WITNESS POST.

Station Pair: BULLEN - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1351.520	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1351.533	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1351.533	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1351.575	.262		1256.254	.197	2011	GPS - OPUS	2020	GPSBM
1351.529	.262		1256.211	.197	2011	GPS - RTRN	2020	RTRN2020
1351.677	.262		1256.359	.197	2011	GPS - RTRN	2017	RTRN2017
			1256.247	.016	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1256.336	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1351.441	.131		1256.441	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1351.441	.131		1256.441	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -95.321 12B = -95.318 09 = -95.190 03 = -94.997

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 03.81316	92 27 52.00589	496391.810	209809.701	.131	3	GPS - OPUS	2020	GPSBM
46 57 03.81312	92 27 52.00533	496391.849	209809.697	.131	3	GPS - RTRN	2020	RTRN2020
46 57 03.81289	92 27 52.00523	496391.856	209809.674	.131	3	GPS - RTRN	2017	RTRN2017
46 57 03.81297	92 27 52.00509	496391.866	209809.682	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 03.81307	92 27 52.00598	496391.804	209809.692	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 03.81275	92 27 52.00584	496391.814	209809.660	.033	C	ADJUSTMENT	2003	GPS1848
46 57 03.81275	92 27 52.00584	496391.812	209809.659	.033	C	GPS - STATIC	2002	HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 03.80800	92 27 52.00424	496391.924	209809.177	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2783400.847	493259.129	1774120.203	17059889.461	.131	3	GPS - OPUS	2020	GPSBM
2783400.885	493259.125	1774120.242	17059889.457	.131	3	GPS - RTRN	2020	RTRN2020
2783400.893	493259.102	1774120.249	17059889.434	.131	3	GPS - RTRN	2017	RTRN2017
2783400.902	493259.110	1774120.259	17059889.442	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2783400.840	493259.120	1774120.197	17059889.452	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2783400.850	493259.088	1774120.207	17059889.419	.033	C	ADJUSTMENT	2003	GPS1848
2783400.850	493259.088	1774120.207	17059889.419	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2783400.965	493258.607	1774120.322	17059888.939	.033	C	GPS - STATIC	1993	H1993

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHALBERG-DF6512-3NW-06JUL2020.jpg	NW	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHALBERG-DF6512-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHALBERG-DF6512-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CHRISTIANSON MNDT

NGS Name: CHRISTIANSON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE8056](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	18 W	465104.43	923519.51	2	C	1999	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: CHRISTIANSON 1999

1.25 MILES SOUTHEAST OF BROOKSTON, 6.25 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 238.55, 106.0 FEET SOUTH OF TRUNK HIGHWAY 2, 4.4 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1286.156	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1286.159	.016	2/1				VERTICAL ADJUSTMENT	2011 00000672
1286.192	.016	2/1				VERTICAL CONTROL SURVEY	2007 VBROO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1286.234	.262		1191.635	.197	2011	GPS - RTRN	2017 RTRN2017
			1191.553	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1191.641	.009	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1286.152	.131		1191.809	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1286.152	.131		1191.809	.066	1996	GPS - STATIC	2003 HGRAND
1286.192	.131		1191.759	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1733
1286.185	.131		1191.809	.066	1996	GPS - STATIC	1999 HBROO

Geoid Separations(ft): GEOID18 = -94.600 12B = -94.600 09 = -94.498 03 = -94.600

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>								
Geodetic Position		St Louis County - South Zone				Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.42976	92 35 19.50849	465279.469	173427.738	.131	3	GPS - RTRN	2017	RTRN2017
46 51 04.43002	92 35 19.50876	465279.450	173427.765	.007		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>								
Geodetic Position		St Louis County - South Zone				Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.43016	92 35 19.50963	465279.390	173427.779	.007		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>								
Geodetic Position		St Louis County - South Zone				Project Info		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.42992	92 35 19.50945	465279.402	173427.755	.033	C	ADJUSTMENT	2004	GPS1957
46 51 04.42992	92 35 19.50945	465279.402	173427.755	.033	C	GPS - STATIC	2003	HGRAND
46 51 04.42992	92 35 19.50945	465279.402	173427.755	.033	1	ADJUSTMENT	2002	GPS1733
46 51 04.42992	92 35 19.50945	465279.401	173427.754	.033	C	GPS - STATIC	1999	HBROO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2752595.783	456618.164	1743277.351	17023306.505	.131	3	GPS - RTRN	2017	RTRN2017
2752595.764	456618.190	1743277.333	17023306.531	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2752595.703	456618.204	1743277.272	17023306.545	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2752595.716	456618.180	1743277.285	17023306.521	.033	C	ADJUSTMENT	2004	GPS1957
2752595.716	456618.180	1743277.285	17023306.521	.033	C	GPS - STATIC	2003	HGRAND
2752595.716	456618.180	1743277.285	17023306.521	.033	1	ADJUSTMENT	2002	GPS1733
2752595.716	456618.180	1743277.285	17023306.521	.033	C	GPS - STATIC	1999	HBROO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHRISTIANSON-DE8056-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHRISTIANSON-DE8056-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CHRISTIANSON-DE8056-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CI ROW MON

NGS Name: CI ROW MON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1057](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	6	50 N	17 W	465049.20	923230.00	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1979	2017	GOOD	Horz=NO Vert=NO	YES		RECESSED 3 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
CONCRETE POST (PREFABRICATED)	METAL ROD	MNDT

Description: (1979)

Stamping:

3.3 MILES EAST-SOUTHEAST FROM BROOKSTON, 3.05 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.9, 99.2 FEET NORTH OF TRUNK HIGHWAY 2, 36.1 FEET EAST OF DRIVEWAY NUMBER 8175, STATION CI ROW MON IS THE HIGH POINT ON THE WEST END OF THE FLAT BAR ON A CAST IRON RIGHT-OF-WAY MONUMENT THAT IS 63.8 FEET NORTHWEST OF STATION EMIL MNDT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1316.621	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1316.730	.262			1222.242	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.491 12B = -94.488 09 = -94.393 03 = -94.219

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 49.20184	92 32 30.00036	477060.065	171867.559	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2764388.923	455156.871	1755063.319	17021829.557	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CI_ROW_MON-RN1057-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CI_ROW_MON-RN1057-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CI_ROW_MON-RN1057-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CL 100 STA 2642+57.5

NGS Name: CL 100 STA 2642+57.5

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	18 W	465054.00	923418.00	2	3

NGS ACRN: [RN1059](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1979	2017	GOOD	Horz=NO Vert=NO	YES		PROJECTS 10 IN.	MARKER IS STEEL ROD

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	PIPE CAP	MNDT

Description: (1979)

Stamping: CL 100 STA 264.2+57.5 SP 8-48-SEC 1

2.0 MILES SOUTHEAST OF BROOKSTON, 1.55 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31(THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 237.40, 100.0 FEET SOUTH OF TRUNK HIGHWAY 2, 49.4 FEET EAST OF STATION 6907 AF, 1.6 FEET EAST OF A STEEL RIGHT-OF-WAY POST.

Station Notes

THE MARK IS AN ALUMINUM RIGHT-OF-WAY MONUMENT, 1.5 INCH DIAMETER ALUMINUM CAP SET IN THE TOP OF A 1.5 INCH DIAMETER PIPE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1268.449	.016	2/2				VERTICAL ADJUSTMENT		1991	00000025

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1268.393	.262		1173.840	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.554 12B = -94.554 09 = -94.452 03 = -94.285

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 50 54.39800	92 34 17.40651	469594.560	172404.175	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
2756919.258	455630.831	1747597.573	17022313.644	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CL_100_STA_2642+57.5-RN1059-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CL_100_STA_2642+57.5-RN1059-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CL_100_STA_2642+57.5-RN1059-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CLIP JOINT MN137

NGS Name: CLIP JOINT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9099](#)

[Get Map](#)

NGS Quad / Sta Num : 47092322/

USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	10	52 N	18 W	470013.90	923708.28		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MN-137

Description: (2019)

Stamping: CLIP JOINT 2001

0.40 MILE NORTH OF PROSIT, 0.40 MILE NORTH ALONG COUNTY ROAD 47 FROM THE JUNCTION OF COUNTY ROAD 47 AND COUNTY ROAD 734 IN PROSIT, 64.0 FEET SOUTHEAST OF COUNTY ROAD 47, 49.0 FEET NORTHEAST OF COUNTY ROAD 719 (CHASE ROAD), 2.0 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1344.485	.262		1248.416	.197	2011	GPS - OPUS	2020	GPSBM
1344.466	.262		1248.396	.197	2011	GPS - OPUS	2020	GPSBM
1344.512	.262		1248.449	.197	2011	GPS - RTRN	2020	RTRN2020
			1248.291	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1248.383	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1344.354	.131		1248.429	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1344.354	.131		1248.429	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -96.069 12B = -96.063 09 = -95.945 03 = -95.777

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 13.90378	92 37 08.28026	457838.812	229114.838	.131	3	GPS - OPUS	2020	GPSBM
47 00 13.90388	92 37 08.28062	457838.787	229114.849	.131	3	GPS - OPUS	2020	GPSBM
47 00 13.90431	92 37 08.28025	457838.812	229114.892	.131	3	GPS - RTRN	2020	RTRN2020
47 00 13.90391	92 37 08.27929	457838.879	229114.851	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 13.90402	92 37 08.28018	457838.817	229114.863	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 13.90379	92 37 08.27993	457838.834	229114.839	.033	C	ADJUSTMENT	2003	GPS1931
47 00 13.90379	92 37 08.27993	457838.835	229114.839	.033	C	GPS - STATIC	2003	HSTLO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2744688.926	512239.193	1735449.846	17078915.135	.131	3	GPS - OPUS	2020	GPSBM
2744688.901	512239.203	1735449.821	17078915.145	.131	3	GPS - OPUS	2020	GPSBM
2744688.926	512239.246	1735449.846	17078915.189	.131	3	GPS - RTRN	2020	RTRN2020
2744688.993	512239.206	1735449.913	17078915.149	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2744688.931	512239.217	1735449.851	17078915.160	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2744688.949	512239.194	1735449.869	17078915.136	.033	C	ADJUSTMENT	2003	GPS1931
2744688.949	512239.194	1735449.869	17078915.137	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CLIP_JOINT-DF9099-3NE-07JUL2020.jpg	NE	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CLIP_JOINT-DF9099-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CLIP_JOINT-DF9099-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COLLUM MNDT

NGS Name: COLLUM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE8057](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	18 W	465053.55	923409.17		C	1999	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: COLLUM 1999

5.0 MILES SOUTHEAST OF BROOKSTON, 5.25 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 239.55, 156.0 FEET SOUTH OF TRUNK HIGHWAY 2, 2.3 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1184.076	.007	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1184.164	.008	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1278.606	.131		1184.338	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1278.606	.131		1184.338	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1931
1278.606	.131		1184.338	.066	1996	GPS - STATIC	2003 HGRAND
1278.606	.131		1184.338	.066	1996	GPS - STATIC	2003 HSTLO
1278.669	.131		1184.309	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1733
1278.672	.131		1184.338	.066	1996	GPS - STATIC	1999 HBROO

Geoid Separations(ft): GEOID18 = -94.550 12B = -94.547 09 = -94.445 03 = -94.550

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 53.55424	92 34 09.16981	470166.988	172317.808	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 53.55438	92 34 09.17068	470166.927	172317.822	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	C	ADJUSTMENT	2004	GPS1957
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	C	ADJUSTMENT	2003	GPS1931
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	C	GPS - STATIC	2003	HGRAND
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	C	GPS - STATIC	2003	HSTLO
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	1	ADJUSTMENT	2002	GPS1733
46 50 53.55412	92 34 09.17057	470166.935	172317.795	.033	C	GPS - STATIC	1999	HBROO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2757492.383	455549.268	1748170.335	17022231.326	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2757492.323	455549.282	1748170.275	17022231.340	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2757492.330	455549.256	1748170.283	17022231.313	.033	C	ADJUSTMENT	2004	GPS1957
2757492.330	455549.256	1748170.283	17022231.313	.033	C	ADJUSTMENT	2003	GPS1931
2757492.330	455549.256	1748170.283	17022231.313	.033	C	GPS - STATIC	2003	HGRAND
2757492.330	455549.256	1748170.283	17022231.313	.033	C	GPS - STATIC	2003	HSTLO
2757492.330	455549.256	1748170.283	17022231.313	.033	1	ADJUSTMENT	2002	GPS1733
2757492.330	455549.256	1748170.283	17022231.313	.033	C	GPS - STATIC	1999	HBROO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COLLUM-DE8057-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COLLUM MNDT RESET

NGS Name: COLLUM RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9897](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	18 W	465053.55	923409.17	2	3	2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: COLLUM 1999 2017

10.7 MILES NORTHWEST OF CLOQUET, 5.25 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 239.55, 156.0 FEET SOUTH OF TRUNK HIGHWAY 2, 2.3 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1278.406	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1278.449	.262		1183.899	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.550 12B = -94.547 09 = -94.445 03 = -94.278

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 50 53.55423	92 34 09.16962	470167.001	172317.806	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2757492.396	455549.267	1748170.348	17022231.325	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COLLUM_RESET-DQ9897-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COLLUM_RESET-DQ9897-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COLLUM_RESET-DQ9897-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CORSER

NGS Name: CORSER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9895](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	6	50 N	17 W	465047.60	923234.25	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: CORSER 2017

10.0 MILES NORTH-NORTHWEST OF CLOQUET, 4.0 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 240.8, 66.4 FEET SOUTH OF TRUNK HIGHWAY 2, 1.5 FEET NORTH OF A WITNESS POST.

Station Pair: CRAW MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1310.414	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Geoid Separations(ft): GEOID18 = -94.491 12B = -94.485 09 = -94.390 03 = -94.219

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CORSER-DQ9895-3S-09AUG2017.jpg	S	Aug 9, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CORSER-DQ9895-2-09AUG2017.jpg		Aug 9, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CORSER-DQ9895-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COTTON

NGS Name: COTTON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2162](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/1004
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	54 N	17 W	471008.24	922834.79		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1963	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952) Stamping: COTTON 1952

IN COTTON, IN THE SOUTHEAST ANGLE OF THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52, 100.0 FEET SOUTH OF THE APPROXIMATE CENTERLINE OF COUNTY ROAD 52, 99.0 FEET EAST OF THE APPROXIMATE CENTERLINE OF TRUNK HIGHWAY 53, 7.0 FEET NORTHWEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>						<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Ellipsoid (NAD83)</u> <u>Height</u> <u>Acc</u> <u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1328.737	.197		1231.579 .131 1996	HORIZONTAL ADJUSTMENT	1999	17648	

<u>NGVD29</u>						<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Ellipsoid (NAD83)</u> <u>Height</u> <u>Acc</u> <u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
1328.705				RECIPROCAL VERTICAL ANGLE	1952	HORZ	

Geoid Separations(ft): GEOID18 = -97.382 12B = -97.378 09 = -97.277 03 = -97.080

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>St Louis County - South Zone</u> <u>X</u> <u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 08.24398	92 28 34.78740	493450.306 289290.532	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>St Louis County - South Zone</u> <u>X</u> <u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 08.24277	92 28 34.79017	493450.114 289290.409	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u> <u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 08.47400	92 28 34.11000		.100	2	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>						<u>Project Info</u>		
<u>MN State Plane - North Zone</u> <u>X</u> <u>Y</u>		<u>UTM - Zone 15</u> <u>X</u> <u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2779791.643	572707.138	1770621.811	17139312.624	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>						<u>Project Info</u>		
<u>MN State Plane - North Zone</u> <u>X</u> <u>Y</u>		<u>UTM - Zone 15</u> <u>X</u> <u>Y</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2779791.453	572707.014	1770621.621	17139312.500	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>						<u>Project Info</u>		
<u>MN State Plane - North Zone</u> <u>X</u> <u>Y</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2155176.389	244646.417			.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: COTTON 2

NGS Name: COTTON 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2163](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/1004
USGS Quad: COTTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	15	54 N	17 W	471007.56	922836.80	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1992) **Stamping:** COTTON 2 1963

IN COTTON, IN THE SOUTHWEST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52, 47.0 FEET WEST OF OLD TRUNK HIGHWAY 53, 91.2 FEET NORTH OF STATION G 165 RESET, 72.42 FEET EAST OF COTTON 2 RM 4, 55.8 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF THE COTTON CONVENIENCE STORE, 32.0 FEET SOUTH OF A DRIVEWAY, 7.6 FEET EAST OF THE SOUTHEAST CORNER OF A WOOD FENCE AROUND LIQUID GAS TANKS.

Station Notes

IN 1992, COTTON 2 RM 4 COULD NOT BE FOUND BY THE GEODETIC UNIT. THE MARK IS UNDER A PROPANE TANK CAN.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1331.149	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1330.978	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1330.975	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
				1233.541	.016	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1233.629	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1330.673	.131			1233.666	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1330.673	.131			1233.666	.066	1996	GPS - STATIC	2002	HTWIB
1328.737	.262			1231.579	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1328.705							RECIPROCAL VERTICAL ANGLE	1963	HORZ

Geoid Separations(ft): GEOID18 = -97.382 12B = -97.378 09 = -97.277 03 = -97.080

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 10 07.55544	92 28 36.79929	493311.263	289220.813	.013		ADJUSTMENT	2012 GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 10 07.55556	92 28 36.80020	493311.200	289220.825	.013		ADJUSTMENT	2007 GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 10 07.55537	92 28 36.79994	493311.218	289220.806	.033	C	ADJUSTMENT	2003 GPS1848
47 10 07.55537	92 28 36.79994	493311.218	289220.806	.033	C	GPS - STATIC	2002 HTWIB
47 10 07.55549	92 28 36.79723	493311.405	289220.818	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year Reference
47 10 07.55427	92 28 36.79999	493311.214	289220.695	.131	3	ADJUSTMENT	1986 17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Year Reference
Latitude	Longitude						
47 10 07.78600	92 28 36.12000			.100	3	CLASSICAL SURVEY	1986 10744

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference
2779653.204	572636.260	1770483.324	17139241.960	.013		ADJUSTMENT	2012 GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference
2779653.141	572636.272	1770483.261	17139241.971	.013		ADJUSTMENT	2007 GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference
2779653.159	572636.253	1770483.279	17139241.952	.033	C	ADJUSTMENT	2003 GPS1848
2779653.159	572636.253	1770483.280	17139241.952	.033	C	GPS - STATIC	2002 HTWIB
2779653.347	572636.266	1770483.467	17139241.966	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year Reference
2779653.157	572636.141	1770483.277	17139241.841	.131	3	ADJUSTMENT	1986 17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year Reference
X	Y						
2155038.076	244575.594			.100	3	CLASSICAL SURVEY	1986 10744

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_2-SJ2163-3SW-18SEP2017.jpg	SW	Sep 18, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: COTTON 2 RM 4

NGS Name: COTTON 2 RM 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2402](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	54 N	17 W	471007.57	922837.85		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1963	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: Stamping: COTTON 2 NO 4 1963

710.0 FEET SOUTHEAST OF COTTON, 0.04 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 6.35 MILE EAST FROM THE CENTERLINE OF TRUNK HIGHWAY 53.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.378 12B = -97.375 09 = -97.273 03 = -97.077



Mn/DOT Name: COTTON AZ MK

NGS Name: COTTON AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2400](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	54 N	17 W	470953.00	922830.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1963	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	AZIMUTH MARK DISK	NGS

Description: (1952)

Stamping: COTTON 1952

34.0 FEET WEST OF THE APPROXIMATE CENTERLINE OF TRUNK HIGHWAY 53, 2.0 FEET NORTH OF A WITNESS POST, TO REACH FROM STATION COTTON GO SOUTHERLY ON TRUNK HIGHWAY 53 FOR 0.3 MILE TO THE STATION.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.342 12B = -97.339 09 = -97.237 03 = -97.040



Mn/DOT Name: COTTON LOOKOUT TOWER

NGS Name: COTTON LOOKOUT TOWER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2194](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/1025
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	54 N	17 W	471002.66	923015.36		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	LOOKOUT TOWER	NGS

Description: (2019)

Stamping:

2.0 MILES WEST OF COTTON, 1.25 MILES WEST OF TRUNK HIGHWAY 53, 0.1 MILE SOUTH OF COUNTY ROAD 52.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.428 12B = -97.428 09 = -97.323 03 = -97.129

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>				<u>St Louis County - South Zone</u>					
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 10 02.65527	92 30 15.35530	486500.795	288727.832	.328	4	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>				<u>St Louis County - South Zone</u>					
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 10 02.65470	92 30 15.35793	486500.613	288727.774	.328	4	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
47 10 02.88700	92 30 14.67500			.100	4	CLASSICAL SURVEY	1956	11100	

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>UTM - Zone 15</u>					
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2772847.766	572086.131	1763679.537	17138701.301	.328	4	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>UTM - Zone 15</u>					
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2772847.585	572086.072	1763679.356	17138701.242	.328	4	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2148232.506	244025.568			.100	4	CLASSICAL SURVEY	1956	11100	



Mn/DOT Name: COTTON RM 1

NGS Name: COTTON RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2401](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	
NE	15	54 N	17 W	471007.56	922835.41			1952	1963	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION	
<u>Monument Type</u> BLANK											<u>Disk Type</u> REFERENCE MARK DISK			<u>Mon. Agency</u> NGS		

Description: (1952)

Stamping: COTTON NO 1 1952

49.0 FEET EAST OF THE APPROXIMATE CENTERLINE OF COUNTY ROAD 52, SOUTHWEST OF STATION COTTON.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.382 12B = -97.378 09 = -97.277 03 = -97.080



Mn/DOT Name: CRAW MNDT

NGS Name: CRAW

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	6	50 N	17 W	465052.25	923305.27	2	C

NGS ACRN: RN0775	Get Map
NGS Quad / Sta Num : 46092412/1052	
USGS Quad: BROOKSTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2019) Stamping: CRAW 1974

3.0 MILES SOUTHEAST OF BROOKSTON, 2.55 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.40, 91.0 FEET NORTH OF TRUNK HIGHWAY 2, 210.0 FEET WEST OF A DRIVEWAY NUMBER 8257, 105.75 FEET SOUTHEAST OF CRAW MNDT RM 2, 71.55 FEET SOUTHWEST OF CRAW MNDT RM 1, 20.8 FEET SOUTH OF AN EAST-WEST FENCE LINE, 7.2 FEET NORTH OF A WITNESS POST.

Station Pair: CORSER - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1319.164	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	
1319.125	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1318.682	.016	2					VERTICAL CONTROL SURVEY	1974	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1319.269	.262			1224.751	.197	2011	GPS - OPUS	2020	GPSBM	
1319.118	.262			1224.604	.197	2011	GPS - RTRN	2020	RTRN2020	
1319.233	.262			1224.715	.197	2011	GPS - RTRN	2017	RTRN2017	
				1224.614	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1224.702	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1319.125	.131			1224.824	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957	
1319.125	.131			1224.824	.066	1996	GPS - STATIC	2003	HGRAND	
1319.121	.131			1224.804	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1733	
1319.125	.131			1224.824	.066	1996	GPS - STATIC	1999	HBROO	
1319.125	.197			1224.794	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -94.518 12B = -94.514 09 = -94.416 03 = -94.518

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 52.25071	92 33 05.26511	474609.041	172179.484	.131	3	GPS - OPUS	2020	GPSBM
46 50 52.25162	92 33 05.26421	474609.104	172179.576	.131	3	GPS - RTRN	2020	RTRN2020
46 50 52.25112	92 33 05.26461	474609.076	172179.525	.131	3	GPS - RTRN	2017	RTRN2017
46 50 52.25092	92 33 05.26448	474609.085	172179.505	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 52.25105	92 33 05.26536	474609.024	172179.519	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 52.25058	92 33 05.26522	474609.033	172179.471	.033	C	ADJUSTMENT	2004	GPS1957
46 50 52.25058	92 33 05.26522	474609.033	172179.471	.033	C	GPS - STATIC	2003	HGRAND
46 50 52.25058	92 33 05.26522	474609.033	172179.471	.033	1	ADJUSTMENT	2002	GPS1733
46 50 52.25058	92 33 05.26522	474609.034	172179.472	.033	C	GPS - STATIC	1999	HBROO
46 50 52.25399	92 33 05.26511	474609.042	172179.816	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 52.24830	92 33 05.26710	474608.902	172179.240	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 50 52.45389	92 33 04.56666			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2761935.393	455448.214	1752611.264	17022124.173	.131	3	GPS - OPUS	2020	GPSBM
2761935.455	455448.307	1752611.326	17022124.266	.131	3	GPS - RTRN	2020	RTRN2020
2761935.428	455448.256	1752611.299	17022124.215	.131	3	GPS - RTRN	2017	RTRN2017
2761935.437	455448.236	1752611.308	17022124.195	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2761935.376	455448.249	1752611.246	17022124.208	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2761935.386	455448.201	1752611.257	17022124.160	.033	C	ADJUSTMENT	2004	GPS1957
2761935.386	455448.201	1752611.257	17022124.160	.033	C	GPS - STATIC	2003	HGRAND
2761935.386	455448.201	1752611.257	17022124.160	.033	1	ADJUSTMENT	2002	GPS1733
2761935.386	455448.201	1752611.257	17022124.160	.033	C	GPS - STATIC	1999	HBROO
2761935.391	455448.547	1752611.262	17022124.505	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2761935.257	455447.969	1752611.127	17022123.928	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2137321.349	127385.217			.100	2	CLASSICAL SURVEY	1977	15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW-RN0775-3N-06JUL2020.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW-RN0775-2-06JUL2020.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW-RN0775-1-06JUL2020.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jul 6, 2020
	Jul 6, 2020
	Jul 6, 2020



Mn/DOT Name: CRAW MNDT RM 1

NGS Name: CRAW RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0777](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	6	50 N	17 W	465052.57	923304.35	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 16 IN.	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
ROCK (1 TO 3 METERS)	REFERENCE MARK DISK	MNDT

Description: (1974)

Stamping: CRAW NO. 1 1974

3.0 MILES SOUTHEAST OF BROOKSTON, 2.55 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.40, 134.0 FEET NORTH OF TRUNK HIGHWAY 2, 71.55 FEET NORTHEAST OF STATION CRAW MNDT, 141.9 FEET EAST-SOUTHEAST OF CRAW MNDT RM 2, 22.2 FEET NORTH OF AN EAST-WEST FENCE LINE, 14.2 FEET WEST OF A NORTH-SOUTH FENCE LINE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1321.005	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1321.224	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1320.785	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1321.031	.262			1226.517	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.521 12B = -94.514 09 = -94.416 03 = -94.245

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 52.56864	92 33 04.34542	474673.014	172211.614	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2761999.094	455480.879	1752674.982	17022156.735	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_1-RN0777-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_1-RN0777-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_1-RN0777-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CRAW MNDT RM 2

NGS Name: CRAW RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0776](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	6	50 N	17 W	465053.03	923306.27	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=NO	YES		PROJECTS 10 IN.	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
ROCK (1 TO 3 METERS)	REFERENCE MARK DISK	MNDT

Description: (1974)

Stamping: CRAW NO. 2 1974

3.0 MILES SOUTHEAST OF BROOKSTON, 2.55 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.40, 156.5 FEET NORTH OF TRUNK HIGHWAY 2, 105.75 FEET NORTHWEST OF STATION CRAW MNDT, 141.9 FEET WEST-NORTHWEST OF CRAW MNDT RM 1, 44.7 FEET NORTH OF A FENCE LINE.

Station Notes

NO WITNESS POST SET ON PRIVATE PROPERTY. THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1319.335	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	
1319.335	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025	

NGVD29			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1318.895	.016	2				VERTICAL CONTROL SURVEY	1974	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1319.364	.262		1224.847	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.521 12B = -94.518 09 = -94.419 03 = -94.248

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 53.03091	92 33 06.27407	474539.007	172258.623	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
2761864.699	455526.763	1752540.709	17022202.785	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_2-RN0776-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_2-RN0776-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CRAW_RM_2-RN0776-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CUL MNDT

NGS Name: CUL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0760](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1056
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	32	51 N	18 W	465119.37	923920.00	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001)

Stamping: CUL 1974

2.6 MILES WEST-SOUTHWEST OF BROOKSTON, 2.5 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 235.4, 89.5 FEET NORTH OF TRUNK HIGHWAY 2, 12.6 FEET SOUTHWEST OF A POWER POLE, 4.7 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1365.276	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1365.283	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1365.312	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1365.276	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1364.653	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1365.240	.262		1270.572	.197	2011	GPS - OPUS	2020	GPSBM
1365.230	.262		1270.565	.197	2011	GPS - RTRN	2020	RTRN2020
1365.381	.262		1270.716	.197	2011	GPS - RTRN	2017	RTRN2017
			1270.585	.013	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1270.677	.013	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1365.286	.131		1270.775	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1365.286	.131		1270.775	.066	1996	GPS - STATIC	2003	HGRAND
1365.286	.197		1270.772	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.665 09 = -94.573 03 = -94.432

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 19.36818	92 39 19.99613	448567.320	174977.976	.131	3	GPS - OPUS	2020	GPSBM
46 51 19.36789	92 39 19.99445	448567.437	174977.946	.131	3	GPS - RTRN	2020	RTRN2020
46 51 19.36804	92 39 19.99627	448567.310	174977.961	.131	3	GPS - RTRN	2017	RTRN2017
46 51 19.36815	92 39 19.99560	448567.356	174977.972	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 19.36828	92 39 19.99646	448567.297	174977.986	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 19.36811	92 39 19.99636	448567.304	174977.968	.033	C	ADJUSTMENT	2004	GPS1957
46 51 19.36811	92 39 19.99636	448567.304	174977.968	.033	C	GPS - STATIC	2003	HGRAND
46 51 19.36868	92 39 19.99652	448567.293	174978.026	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 19.36233	92 39 19.99807	448567.183	174977.383	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position						Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 19.56002	92 39 19.29746			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2735871.433	458028.322	1726562.277	17024738.949	.131	3	GPS - OPUS	2020	GPSBM
2735871.550	458028.293	1726562.393	17024738.921	.131	3	GPS - RTRN	2020	RTRN2020
2735871.424	458028.307	1726562.267	17024738.935	.131	3	GPS - RTRN	2017	RTRN2017
2735871.470	458028.319	1726562.313	17024738.947	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2735871.410	458028.332	1726562.254	17024738.960	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2735871.417	458028.315	1726562.260	17024738.942	.033	C	ADJUSTMENT	2004	GPS1957
2735871.417	458028.315	1726562.260	17024738.942	.033	C	GPS - STATIC	2003	HGRAND
2735871.406	458028.372	1726562.249	17024739.000	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2735871.302	458027.728	1726562.144	17024738.357	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone						Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2111256.632	129964.093			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CUL-RN0760-3N-06JUL2020.jpg	N	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CUL-RN0760-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CUL-RN0760-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: CULVER

NGS Name: CULVER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1654](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/1010
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	13	51 N	18 W	465440.18	923429.70		3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952) **Stamping:** CULVER 1952

4.0 MILES SOUTH OF ALBORN, 5.0 MILES WEST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 33, THEN 1.1 MILES SOUTH ON COUNTY ROAD 31, THEN 0.15 MILE EAST AND NORTH ON A TRACK ROAD TO THE TOP OF A HILL, 150.0 FEET SOUTHWEST OF AN INDIAN CEMETERY, 59.49 FEET NORTHWEST OF CULVER RM 1, 73.75 FEET NORTHEAST OF CULVER RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1371.388	.262			1276.431	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1371.388							RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -95.147 12B = -95.144 09 = -95.033 03 = -94.862

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 54 40.18029	92 34 29.69603			468776.731	195281.440	.131	3	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 54 40.17445	92 34 29.69709			468776.656	195280.849	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>								<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 54 40.38700	92 34 29.01100					.100	3	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2755909.616	478499.999			1746619.859	17045174.401	.131	3	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2755909.546	478499.407			1746619.789	17045173.809	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>								<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2131294.406	150437.236					.100	3	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: CULVER AZ MK

NGS Name: CULVER AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ7864](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	13	51 N	18 W	465419.00	923432.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

AZIMUTH MARK DISK

Mon. Agency

NGS

Description:

Stamping: CULVER 1952

1.65 MILES SOUTHWEST OF CULVER, 0.99 MILE WEST ALONG TRUNK HIGHWAY 8 FROM THE JUNCTION OF TRUNK HIGHWAY 8 AND COUNTY ROAD 7, THEN 1.42 MILES SOUTH ON COUNTY ROAD 31.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.092 12B = -95.092 09 = -94.980 03 = -94.810



Mn/DOT Name: CULVER RM 1

NGS Name: CULVER RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ7865](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	13	51 N	18 W	465439.68	923429.26		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description:

Stamping: CULVER NO 1 1952

1.26 MILES SOUTHWEST OF CULVER, 0.99 MILE WEST ALONG TRUNK HIGHWAY 8 FROM THE JUNCTION OF TRUNK HIGHWAY 8 AND COUNTY ROAD 7, THEN 1.02 MILE SOUTH ON COUNTY ROAD 31.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.144 12B = -95.144 09 = -95.033 03 = -94.862



Mn/DOT Name: CULVER RM 2

NGS Name: CULVER RM 2

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	13	51 N	18 W	465439.81	923430.61		

NGS ACRN: CJ7866	Get Map
NGS Quad / Sta Num : 46092411/	
USGS Quad: ALBORN	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: **Stamping:** CULVER NO 2 1952

1.26 MILES SOUTHWEST OF CULVER, 0.99 MILE WEST ALONG TRUNK HIGHWAY 8 FROM THE JUNCTION OF TRUNK HIGHWAY 8 AND COUNTY ROAD 7, THEN 1.02 MILE SOUTH ON COUNTY ROAD 31.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.144 12B = -95.144 09 = -95.033 03 = -94.862



Mn/DOT Name: D 159

NGS Name: D 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0497](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	5	53 N	17 W	470555.80	923207.20	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2007	GOOD	Horz=NO Vert=YES	YES		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: D 159 1935

3.0 MILES EAST OF PAYNE, 3.0 MILES EAST ON COUNTY ROAD 232 FROM THE JUNCTION OF COUNTY ROAD 232 AND COUNTY ROAD 7, 3.8 MILES WEST ALONG COUNTY ROAD 232 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 232, 46.0 FEET NORTH OF COUNTY ROAD 232, 30.0 FEET EAST OF A TRAIL NORTH (LAKE WILLIAMS SNOWMOBILE TRAIL), OPPOSITE A SMALL BAY ON THE NORTH SIDE OF LAKE NICHOLS, 1.4 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1319.715	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1319.712	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1319.594	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1319.030	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1319.030	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -96.886 12B = -96.883 09 = -96.758 03 = -96.568

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/D_159-SJ0497-3N-22MAY2007.jpg	N	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/D_159-SJ0497-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/D_159-SJ0497-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: D 165

NGS Name: D 165

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0491](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	11	54 N	18 W	471006.51	923442.84	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1988	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 14 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: D 165 1935

2.0 MILES NORTHEAST OF KELSEY, 1.0 MILE EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF A RAILROAD AND COUNTY ROAD 52, 50.0 FEET NORTH OF COUNTY ROAD 52, 25.0 FEET WEST OF A CROSSROAD, 25.0 FEET NORTH OF THE WEST END OF A METAL CULVERT, 1.5 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS MISSING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1315.079	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1314.453	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1314.453	.007	1				VERTICAL CONTROL SURVEY	1948	L28 MINN

Geoid Separations(ft): GEOID18 = -97.546 12B = -97.549 09 = -97.437 03 = -97.250

* No Horizontal Positions in the Database *



Mn/DOT Name: D 271

NGS Name: D 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0709](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	51 N	20 W	465529.33	925053.63	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: D 271 1948

3.2 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 33.0 FEET NORTH OF COUNTY ROAD 8, 33.0 FEET EAST OF A CROSSROAD, 74.0 FEET NORTH-NORTHWEST OF THE LAST POWER POLE, 257.0 FEET WEST-SOUTHWEST OF THE SOUTHWEST CORNER OF AN OLD FARMHOUSE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1280.864	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1280.234	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1280.234	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.361 12B = -95.341 09 = -95.269 03 = -95.144

* No Horizontal Positions in the Database *



Mn/DOT Name: D 272

NGS Name: D 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1965](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	9	52 N	19 W	470002.00	924435.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	NGS

Description: (1984) Stamping: D 272 1948

5.35 MILES SOUTHWEST OF MEADOWLANDS, 4.85 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, IN THE WEST END OF THE SOUTH ABUTMENT OF A COUNTY ROAD 5 BRIDGE OVER SPIDER CREEK, 12.0 FEET WEST OF COUNTY ROAD 5, 2.5 FEET WEST OF A BRIDGE RAIL.

Station Notes

THE STATION MAY BE REMOVED AS THE OLD BRIDGE WAS REPLACED BY BRIDGE NUMBER 96004 IN 1984.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1257.786	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1257.189	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.102 12B = -96.089 09 = -960000 03 = -95.840

* No Horizontal Positions in the Database *



Mn/DOT Name: D 273

NGS Name: D 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0522](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	19	53 N	20 W	470409.98	925524.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2020	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: D 273 1948

8.95 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 1.3 MILES WEST OF A Y-JUNCTION OF COUNTY ROAD 133 AND A ROAD SOUTHWEST, 44.0 FEET SOUTH OF COUNTY ROAD 133, 23.0 FEET EAST OF A FARM ROAD SOUTH, AT THE NORTHWEST CORNER OF A MEADOW, 15.0 FEET SOUTH-SOUTHEAST OF THE EAST END OF A METAL CULVERT, 2.0 FEET SOUTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.831	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.165	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1265.165	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.640 12B = -96.621 09 = -96.588 03 = -96.397

* No Horizontal Positions in the Database *



Mn/DOT Name: D 275

NGS Name: D 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	54 N	19 W	471002.00	924723.00	2	

NGS ACRN: SJ0480	Get Map
NGS Quad / Sta Num : 47092331/	
USGS Quad: TOIVOLA	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** D 275 1948

1.0 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA, 0.5 MILE WEST OF A BRIDGE OVER THE ST. LOUIS RIVER, 78.0 FEET SOUTH OF COUNTY ROAD 52, 24.0 FEET EAST OF A CROSSROAD, 51.5 FEET SOUTH OF A FENCE CORNER, 1.5 FEET WEST OF A FENCE, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

FOUND THE CONCRETE MARK LAYING ON THE TOP OF THE GROUND. REMOVED THE DISK AND RETURNED IT TO THE GEODETIC OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1290.207	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.551	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1289.551	.033	3				VERTICAL CONTROL SURVEY	1958	USGS-VERT

Geoid Separations(ft): GEOID18 = -97.503 12B = -97.503 09 = -97.431 03 = -97.241

* No Horizontal Positions in the Database *



Mn/DOT Name: D 280

NGS Name: D 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1325](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	20	55 N	21 W	471414.00	930143.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1968	DESTROYED	Horz=NO Vert=NO	NO	NONE		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: D 280 1948

2.25 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND A RAILROAD AT SILICA, IN THE EAST END OF THE SOUTH ABUTMENT OF A TRUNK HIGHWAY 73 BRIDGE OVER A SMALL CREEK, 11.5 FEET EAST OF TRUNK HIGHWAY 73, 2.3 FEET EAST OF A RAILING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1329.105	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1328.344	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN
1328.344	.007	1				VERTICAL CONTROL SURVEY	1952 Q470932

Geoid Separations(ft): GEOID18 = -97.159 12B = -97.175 09 = -97.077 03 = -96.981

* No Horizontal Positions in the Database *



Mn/DOT Name: DAISY MNDT

NGS Name: DAISY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9552](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	19	51 N	20 W	465329.36	925442.02	2	C	1999	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: DAISY 1999

2.0 MILES SOUTH OF FLOODWOOD, 2.05 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 40.9, 64.0 FEET WEST OF TRUNK HIGHWAY 73, 14.0 FEET SOUTH OF AN ENTRANCE, 44.1 FEET SOUTH OF A FIBER OPTICAL CABLE MARKER, 2.3 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1288.370	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1288.370	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1193.344	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1193.439	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1288.383	.131		1193.515	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1288.383	.131		1193.515	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.029 12B = -95.016 09 = -94.931 03 = -94.823

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 29.36245	92 54 42.02043	384561.055	188421.288	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 29.36256	92 54 42.02130	384560.994	188421.299	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 29.36223	92 54 42.02086	384561.025	188421.266	.033	C	ADJUSTMENT	2003	GPS1769
46 53 29.36223	92 54 42.02086	384561.025	188421.267	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671756.278	470936.589	1662492.555	17037727.213	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671756.217	470936.600	1662492.494	17037727.224	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671756.248	470936.567	1662492.525	17037727.191	.033	C	ADJUSTMENT	2003	GPS1769
2671756.248	470936.567	1662492.525	17037727.191	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY-DE9552-3N-07JUL2020.jpg	N	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY-DE9552-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY-DE9552-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DAISY MNDT RESET

NGS Name: DAISY RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5175](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	19	51 N	20 W	465329.36	925442.02	2	3	2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: DAISY 1999 2017

2.0 MILES SOUTH OF FLOODWOOD, 2.05 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 40.9, 64.0 FEET WEST OF TRUNK HIGHWAY 73, 14.0 FEET SOUTH OF A FIELD ENTRANCE, 2.3 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /Class</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1288.186	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /Class</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1288.144	.262			1193.128	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.029 12B = -95.016 09 = -94.931 03 = -94.823

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 53 29.36342	92 54 42.02049			384561.051	188421.386	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2671756.273	470936.687			1662492.550	17037727.311	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY_RESET-DR5175-3W-10AUG2017.jpg	W	Aug 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY_RESET-DR5175-2-10AUG2017.jpg		Aug 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DAISY_RESET-DR5175-1-10AUG2017.jpg		Aug 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DAL MNDT

NGS Name: DAL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1582](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	22	51 N	17 W	465255.74	922813.47		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	MARK IS STEEL PIPE

Monument Type	Disk Type	Mon. Agency
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	TRAVERSE STATION DISK	MNDT

Description: (1978)

Stamping: DAL 1978

11.0 MILES NORTH-NORTHWEST OF CLOQUET, 2.85 MILES NORTH ON TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, THEN 0.1 MILE SOUTH ON COUNTY ROAD 874, 20.5 FEET WEST OF COUNTY ROAD 874, 79.0 FEET NORTH OF A DRIVEWAY, 2.6 FEET EAST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1369.420	.197			1274.945	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1369.092							RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.672 09 = -94.560 03 = -94.373

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 52 55.74303	92 28 13.46518			494896.413	184675.762	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 52 55.73726	92 28 13.46683			494896.299	184675.177	.066	2	ADJUSTMENT	1986	17289

NAD27								Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 52 55.94877	92 28 12.77238					.100	2	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2782116.806	468114.229			1772801.640	17034756.687	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2782116.696	468113.643			1772801.529	17034756.101	.066	2	ADJUSTMENT	1986	17289

NAD27								Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2157502.935	140051.491					.100	2	CLASSICAL SURVEY	1980	16254



Mn/DOT Name: DALTON

NGS Name: DALTON

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1882](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	24	50 N	17 W	464800.10	922657.60	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019)

Stamping: DALTON 2017

5.7 MILES NORTH OF CLOQUET, 3.2 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 8.1, 25.5 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 33, 46.1 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33, 79.1 FEET SOUTH OF DRIVEWAYS NUMBERS 3979 AND 3983 EXTENDED, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1197.153	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1197.183	.262			1103.308	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -93.894 12B = -93.878 09 = -93.792 03 = -93.599

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 48 00.09617	92 26 57.59630	500167.239	154720.732	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2787639.228	438204.831	1778279.687	17004852.462	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DALTON-DR1882-3S-22AUG2017.jpg	S	Aug 22, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DALTON-DR1882-2-22AUG2017.jpg		Aug 22, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DALTON-DR1882-1-22AUG2017.jpg		Aug 22, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DANIELLE

NGS Name: DANIELLE

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR5145 Get Map NGS Quad / Sta Num : 47093221/ USGS Quad: FLOODWOOD LAKE
NW	9	54 N	21 W	471027.44	930037.95	2	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 57 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: DANIELLE 2017

18.1 MILES SOUTH-SOUTHWEST OF HIBBING, 16.7 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 62.10, 28.8 FEET WEST OF TRUNK HIGHWAY 73, 22.7 FEET NORTH OF AN ENTRANCE, 1.5 FEET EAST OF A WITNESS POST.

Station Pair: MARK - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1309.210	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1309.141	.262		1212.087	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.050 12B = -97.054 09 = -96.991 03 = -96.840

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 10 27.43863	93 00 37.95443	360576.893	291732.774	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2646915.246	574038.915	1637795.545	17140820.410	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DANIELLE-DR5145-3W-01AUG2017.jpg	W	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DANIELLE-DR5145-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DANIELLE-DR5145-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DBUG

NGS Name: DBUG

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	2	50 N	17 W	465041.80	922800.69	2	3

NGS ACRN: DQ9891	Get Map
NGS Quad / Sta Num : 46092143/	
USGS Quad: SAGINAW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 24 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: DBUG 2017

9.1 MILES NORTH OF CLOQUET, 0.4 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 244.40, 45.2 FEET SOUTH OF WESTBOUND TRUNK HIGHWAY 2, 79.4 FEET NORTH OF EASTBOUND TRUNK HIGHWAY 2, 25.3 FEET EAST OF A GAS PIPE MARKER, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: BUSCHE MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1325.781	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1325.804	.262		1231.487	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.331 12B = -94.317 09 = -94.226 03 = -94.039

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 41.80012	92 28 00.68880	495781.063	171104.672	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>							
2783115.480	454551.254	1773780.906	17021198.094	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DBUG-DQ9891-3E-09AUG2017.jpg	E	Aug 9, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DBUG-DQ9891-2-09AUG2017.jpg		Aug 9, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DBUG-DQ9891-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DENCE MNDT

NGS Name: DENCE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6511](#)

[Get Map](#)

NGS Quad / Sta Num : 46092144/

USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	52 N	17 W	465849.88	922816.14	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 12 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999)

Stamping: DENCE 1992

4.0 MILES SOUTH OF CANYON, 3.95 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 25.9, 89.6 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 32.7 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1317.445	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1317.465	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1317.465	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1317.514	.262		1221.894	.197	2011	GPS - OPUS	2021 GPSBM
1317.465	.262		1221.845	.197	2011	GPS - RTRN	2021 RTRN2021
1317.520	.262		1221.907	.197	2011	GPS - RTRN	2017 RTRN2017
			1221.874	.015	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1221.966	.016	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1317.386	.131		1222.071	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1848
1317.386	.131		1222.071	.066	1996	GPS - STATIC	2002 HTWIB

Geoid Separations(ft): GEOID18 = -95.620 12B = -95.613 09 = -95.485 03 = -95.289

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 49.88435	92 28 16.13557	494720.582	220557.221	.131	3	GPS - OPUS	2021	GPSBM
46 58 49.88491	92 28 16.13450	494720.657	220557.277	.131	3	GPS - RTRN	2021	RTRN2021
46 58 49.88427	92 28 16.13490	494720.629	220557.212	.131	3	GPS - RTRN	2017	RTRN2017
46 58 49.88488	92 28 16.13500	494720.622	220557.274	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 49.88497	92 28 16.13588	494720.561	220557.283	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 49.88465	92 28 16.13574	494720.571	220557.251	.033	C	ADJUSTMENT	2003	GPS1848
46 58 49.88465	92 28 16.13574	494720.572	220557.252	.033	C	GPS - STATIC	2002	HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 49.88015	92 28 16.13485	494720.631	220556.796	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781639.412	503991.774	1772374.372	17070620.281	.131	3	GPS - OPUS	2021	GPSBM
2781639.486	503991.831	1772374.446	17070620.338	.131	3	GPS - RTRN	2021	RTRN2021
2781639.459	503991.766	1772374.418	17070620.273	.131	3	GPS - RTRN	2017	RTRN2017
2781639.451	503991.828	1772374.411	17070620.335	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781639.390	503991.837	1772374.350	17070620.344	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781639.400	503991.804	1772374.360	17070620.311	.033	C	ADJUSTMENT	2003	GPS1848
2781639.400	503991.804	1772374.360	17070620.312	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781639.466	503991.349	1772374.425	17070619.856	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DENCE-DF6511-3E-26JUL2021.jpg	E	Jul 26, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DENCE-DF6511-2-26JUL2021.jpg		Jul 26, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DENCE-DF6511-1-26JUL2021.jpg		Jul 26, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DODO MNDT

NGS Name: DODO

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DF6506 Get Map NGS Quad / Sta Num : 47092233/ USGS Quad: CANYON
NW	35	54 N	17 W	470710.09	922819.07	2	C	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (2002) Stamping: DODO 1992

3.4 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 35.50, 31.4 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 134.5 FEET SOUTHWEST OF A CULVERT MARKER POST, 121.8 FEET SOUTH OF A CULVERT MARKER POST, 4.5 FEET EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.226	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1353.216	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1256.270	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1256.362	.008	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1353.213	.131		1256.418	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1352.983	.131		1256.418	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1353.213	.131		1256.418	.066	1996	GPS - STATIC	2003	HSTLO
1352.983	.131		1256.418	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.932 12B = -96.939 09 = -96.808 03 = -96.611

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 10.08880	92 28 19.06638	494531.552	271238.844	.007		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 10.08893	92 28 19.06729	494531.489	271238.857	.007		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 10.08875	92 28 19.06696	494531.512	271238.839	.033	C	ADJUSTMENT	2003	GPS1931
47 07 10.08875	92 28 19.06696	494531.512	271238.839	.033	C	ADJUSTMENT	2003	GPS1848
47 07 10.08875	92 28 19.06696	494531.512	271238.839	.033	C	GPS - STATIC	2003	HSTLO
47 07 10.08875	92 28 19.06696	494531.512	271238.839	.033	C	GPS - STATIC	2002	HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 10.08729	92 28 19.06736	494531.485	271238.690	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781024.455	554666.779	1771829.506	17121277.009	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781024.392	554666.792	1771829.443	17121277.022	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781024.415	554666.774	1771829.466	17121277.004	.033	C	ADJUSTMENT	2003	GPS1931
2781024.415	554666.774	1771829.466	17121277.004	.033	C	ADJUSTMENT	2003	GPS1848
2781024.415	554666.773	1771829.466	17121277.004	.033	C	GPS - STATIC	2003	HSTLO
2781024.415	554666.774	1771829.466	17121277.004	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781024.389	554666.626	1771829.439	17121276.856	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO-DF6506-3W-26JUL2017.jpg	W	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO-DF6506-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO-DF6506-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DODO MNDT RESET

NGS Name: DODO RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1854](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
NW	35	54 N	17 W	470710.09	922819.07	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: DODO 1992 2017

3.5 MILES SOUTH OF COTTON, 3.4 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 35.50, 31.4 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 8.9 FEET EAST OF A WITNESS POST.

Station Pair: JENKIN MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1352.970	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1353.016	.262			1256.080	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.932 12B = -96.939 09 = -96.808 03 = -96.611

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 07 10.08815	92 28 19.06722			494531.494	271238.779	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2781024.398	554666.713			1771829.448	17121276.943	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO_RESET-DR1854-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO_RESET-DR1854-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DODO_RESET-DR1854-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DOOW MNDT

NGS Name: DOOW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9551](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	8	51 N	20 W	465438.81	925357.61	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: DOOW 1999

0.9 MILE SOUTHEAST OF FLOODWOOD, 0.9 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 221.9, 67.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 32.9 FEET WEST OF A TELEPHONE CABLE PEDESTAL, 45.9 FEET WEST OF A POWER POLE, 68.0 FEET NORTHWEST OF A ROAD, 59.1 FEET SOUTHWEST OF A TELEPHONE POLE, 3.0 FEET NORTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1277.573	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1277.573	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1182.353	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1182.445	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1277.556	.131		1182.514	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1277.556	.131		1182.514	.066	1996	GPS - STATIC	2003	HGRAND
1277.556	.131		1182.514	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1277.556	.131		1182.514	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.216 12B = -95.197 09 = -95.118 03 = -95.006

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 54 38.81144	92 53 57.61023	387685.950	195439.749	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 54 38.81154	92 53 57.61110	387685.890	195439.760	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 54 38.81135	92 53 57.61027	387685.947	195439.740	.033	C	ADJUSTMENT	2004	GPS1957
46 54 38.81135	92 53 57.61026	387685.948	195439.740	.033	C	GPS - STATIC	2003	HGRAND
46 54 38.81135	92 53 57.61026	387685.948	195439.740	.033	C	ADJUSTMENT	2003	GPS1769
46 54 38.81135	92 53 57.61026	387685.947	195439.740	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674822.551	477980.653	1665566.732	17044764.193	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674822.491	477980.663	1665566.671	17044764.203	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674822.548	477980.644	1665566.729	17044764.184	.033	C	ADJUSTMENT	2004	GPS1957
2674822.549	477980.644	1665566.730	17044764.184	.033	C	GPS - STATIC	2003	HGRAND
2674822.549	477980.644	1665566.730	17044764.184	.033	C	ADJUSTMENT	2003	GPS1769
2674822.549	477980.644	1665566.730	17044764.184	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DOOW-DE9551-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: DOOW MNDT RESET

NGS Name: DOOW RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9916](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	8	51 N	20 W	465438.81	925357.61	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 21 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: DOOW 1999 2017

0.9 MILE SOUTHEAST OF FLOODWOOD, 0.9 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 221.9, 67.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 68.0 FEET NORTHWEST OF CARLSON ROAD, 32.9 FEET WEST OF A CABLE PEDESTAL, 45.9 FEET WEST OF A POWER POLE WITH 3 GUY WIRES, 3.0 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1277.534	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1277.478	.262			1182.281	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.216 12B = -95.197 09 = -95.118 03 = -95.006

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 54 38.81096	92 53 57.61090	387685.903	195439.701	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2674822.504	477980.604	1665566.685	17044764.145	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DOOW_RESET-DQ9916-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DOOW_RESET-DQ9916-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/DOOW_RESET-DQ9916-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 159

NGS Name: E 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0498](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	53 N	17 W	470515.00	923126.50	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2007	GOOD	Horz=NO Vert=YES	YES		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: E 159 1935

4.2 MILES EAST OF PAYNE, 2.5 MILES WEST ON COUNTY ROAD 232 FROM TRUNK HIGHWAY 53, AT A RIGHT ANGLE TURN, 165.0 FEET NORTH OF THE EAST TANGENT, ON THE EAST SIDE OF LAKE NICHOLS, 21.0 FEET WEST OF COUNTY ROAD 232, 3.1 FEET NORTH-NORTHEAST OF A TELEPHONE PEDESTAL NUMBER A242, 0.90 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1325.171	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1325.168	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1325.109	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1324.551	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1324.551	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -96.755 12B = -96.755 09 = -96.621 03 = -96.437

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_159-SJ0498-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_159-SJ0498-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_159-SJ0498-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 165

NGS Name: E 165

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	17	54 N	17 W	471007.43	923210.36	2	3

NGS ACRN: [SJ0493](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1935	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935)

Stamping: E 165 1935

4.1 MILES NORTHEAST OF KELSEY, 3.1 MILES EAST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF A RAILROAD AND COUNTY ROAD 52, 1.2 MILES WEST OF A BRIDGE OVER THE WHITEFACE RIVER, 32.5 FEET SOUTH OF COUNTY ROAD 52, 103.8 FEET EAST OF A CROSSROAD, 1.0 FOOT SOUTH OF A CABLE PEDESTAL NUMBERED E W7, 16.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1314.531	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1313.892	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1313.892	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1314.538	.262			1217.042	.197	2011	GPS - OPUS	2020	GPSBM
1314.561	.262			1217.064	.197	2011	GPS - OPUS	2020	GPSBM
1314.528	.262			1217.028	.197	2011	GPS - RTRN	2020	RTRN2020

Geoid Separations(ft): GEOID18 = -97.497 12B = -97.500 09 = -97.385 03 = -97.195

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Latitude	Longitude			X	Y	Acc	Order	Determination Method	Year
47 10 07.43131	92 32 10.36349			478554.173	289218.881	.131	3	GPS - OPUS	2020
47 10 07.43142	92 32 10.36363			478554.164	289218.892	.131	3	GPS - OPUS	2020
47 10 07.43166	92 32 10.36234			478554.253	289218.916	.131	3	GPS - RTRN	2020

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone									
X	Y			X	Y	Acc	Order	Determination Method	Year
2764898.059	572510.402			1755733.227	17139136.225	.131	3	GPS - OPUS	2020
2764898.049	572510.413			1755733.218	17139136.236	.131	3	GPS - OPUS	2020
2764898.138	572510.438			1755733.306	17139136.261	.131	3	GPS - RTRN	2020

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_165-SJ0493-3S-12JUL2020.jpg	S	Jul 12, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_165-SJ0493-2-12JUL2020.jpg		Jul 12, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_165-SJ0493-1-12JUL2020.jpg		Jul 12, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 271

NGS Name: E 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0710](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	9	51 N	20 W	465529.00	925210.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: E 271 1948

2.2 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 33.0 FEET SOUTH OF COUNTY ROAD 8, 27.0 FEET WEST OF A CROSSROAD, 4.0 FEET WEST OF A FENCE CORNER, 1.5 FEET NORTH OF A FENCE LINE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1263.410	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1262.780	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1262.780	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.357 12B = -95.334 09 = -95.259 03 = -95.141

* No Horizontal Positions in the Database *



Mn/DOT Name: E 272

NGS Name: E 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0543](#)

[Get Map](#)

NGS Quad / Sta Num : 47092323/

USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	3	52 N	19 W	470044.61	924435.53	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2020	DISTURBED	Horz=YES Vert=YES	YES		PROJECTS 12 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1995)

Stamping: E 272 1948

4.5 MILES SOUTHWEST OF MEADOWLANDS, 4.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 44.0 FEET EAST OF COUNTY ROAD 5, 21.0 FEET NORTH OF AN ENTRANCE, 11.0 FEET EAST OF THE NORTH END OF A METAL CULVERT, 35.0 FEET NORTH OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

THE MARK LEANS TOWARDS THE WEST. DID NOT REMOVE AS SOMEONE MAY BE STILL USING IT FOR ELEVATIONS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1269.486	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1269.486	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1269.115	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1268.511	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1268.511	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1269.600	.262		1173.383	.197	2011	GPS - OPUS	2020	GPSBM
1269.545	.262		1173.328	.197	2011	GPS - OPUS	2020	GPSBM
1269.610	.262		1173.403	.197	2011	GPS - RTRN	2020	RTRN2020
			1173.295	.095	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1173.390	.099	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1269.502	.131		1173.420	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -96.217 12B = -96.207 09 = -96.115 03 = -95.955

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 00 44.61289	92 44 35.53685	426850.265	232317.669	.131	3	GPS - OPUS	2020	GPSBM
47 00 44.61304	92 44 35.53674	426850.272	232317.685	.131	3	GPS - OPUS	2020	GPSBM
47 00 44.61374	92 44 35.53712	426850.246	232317.756	.131	3	GPS - RTRN	2020	RTRN2020
47 00 44.61324	92 44 35.53273	426850.550	232317.704	.059		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 00 44.61329	92 44 35.53360	426850.490	232317.709	.062		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 00 44.61309	92 44 35.53346	426850.500	232317.689	.033	C	GPS - STATIC	1997	GPS805-C

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2713676.305	515182.475	1704453.589	17081899.031	.131	3	GPS - OPUS	2020	GPSBM
2713676.312	515182.490	1704453.597	17081899.046	.131	3	GPS - OPUS	2020	GPSBM
2713676.286	515182.561	1704453.570	17081899.117	.131	3	GPS - RTRN	2020	RTRN2020
2713676.590	515182.512	1704453.875	17081899.067	.059		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2713676.530	515182.517	1704453.814	17081899.072	.062		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2713676.539	515182.497	1704453.824	17081899.052	.033	C	GPS - STATIC	1997	GPS805-C

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_272-SJ0543-3E-07JUL2020.jpg	E	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_272-SJ0543-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_272-SJ0543-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 273

NGS Name: E 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0523](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	13	53 N	21 W	470411.59	925639.81	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: E 273 1948

9.95 MILES WEST ON TRUNK HIGHWAY 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.35 MILE EAST OF A TEE-JUNCTION AND THE END OF COUNTY ROAD 133, 47.0 FEET NORTH OF COUNTY ROAD 133, 11.0 FEET NORTH OF A FENCE, 14.5 FEET NORTHEAST OF THE EAST POST AT A FENCE GAP, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1267.284	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1266.612	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD	
1266.612	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN	

Geoid Separations(ft): GEOID18 = -96.621 12B = -96.604 09 = -96.571 03 = -96.381

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_273-SJ0523-3E-13JUL2017.jpg	E	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E 275

NGS Name: E 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0481](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	19 W	471001.00	924832.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	NGS

Description: (1947)

Stamping: E 275 1948

AT TOIVOLA, 320.0 FEET EAST OF THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5, IN THE SOUTH END OF THE EAST ABUTMENT OF A COUNTY ROAD 52 BRIDGE OVER SAND CREEK, 11.5 FEET SOUTH OF COUNTY ROAD 52.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.211	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.555	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.477 12B = -97.477 09 = -97.408 03 = -97.214

* No Horizontal Positions in the Database *



Mn/DOT Name: E 280

NGS Name: E 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1323](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	17	55 N	21 W	471425.00	930147.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1957	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1957) Stamping: E 280 1948

9.2 MILES SOUTH-SOUTHWEST OF HIBBING, 9.6 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.892	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.130	.007	1				VERTICAL CONTROL SURVEY	1948	L28 MINN

Geoid Separations(ft): GEOID18 = -97.162 12B = -97.182 09 = -97.080 03 = -96.985

* No Horizontal Positions in the Database *



Mn/DOT Name: E 280 RESET

NGS Name: E 280 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1324](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	17	55 N	21 W	471425.00	930147.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1957	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	MNDT

Description: (1957)

Stamping: E 280 RESET 1957

1.85 MILES SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND A RAILROAD AT SILICA, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND A PRIVATE ROAD EAST, 245.0 FEET EAST OF TRUNK HIGHWAY 73, 450.0 FEET NORTH OF A CULVERT, 20.0 FEET NORTH OF A ROAD EAST, 18.0 FEET NORTHEAST OF A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1345.962	.066	3				VERTICAL CONTROL SURVEY	1987	L24645	
1345.949	.007	1				VERTICAL CONTROL SURVEY	1957	L28 MINN	

Geoid Separations(ft): GEOID18 = -97.162 12B = -97.182 09 = -97.080 03 = -96.988

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_280_RESET-SJ1324-3E-11JUL2017.jpg	E	Jul 11, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: E LINDSTROM MN137

NGS Name: E LINDSTROM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9106](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	25	55 N	19 W	471305.53	924215.63		C	2001	2002	POOR	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 32 FT)	SURVEY DISK	MN-137

Description: (2002) Stamping: E. LINDSTROM 2001

5.0 MILES NORTHWEST OF KELSEY, 5.0 MILES NORTH ALONG COUNTY ROAD 7 FROM COUNTY ROAD 7 AND COUNTY ROAD 29 IN KELSEY, THEN 3.85 MILES WEST ON COUNTY ROAD 28 (SAX ROAD), THEN 1.50 MILES NORTH AND WEST ON COUNTY ROAD 28, 33.0 FEET SOUTH OF COUNTY ROAD 28, 226.0 FEET EAST OF DRIVEWAY NUMBER 9691, 3.0 FEET SOUTH OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1199.099	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1199.187	.010	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1296.913	.131		1199.227	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1931
1296.946	.131		1199.227	.066	1996	GPS - STATIC	2003 HSTLO

Geoid Separations(ft): GEOID18 = -97.808 12B = -97.805 09 = -97.733 03 = -97.572

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 13 05.53413	92 42 15.62822	436789.594	307355.888	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 13 05.53419	92 42 15.62912	436789.532	307355.894	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 13 05.53408	92 42 15.62888	436789.548	307355.883	.033	C	ADJUSTMENT	2003	GPS1931
47 13 05.53408	92 42 15.62888	436789.548	307355.883	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2722987.266	590295.056	1713861.236	17156970.858	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2722987.204	590295.062	1713861.174	17156970.864	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2722987.221	590295.051	1713861.191	17156970.853	.033	C	ADJUSTMENT	2003	GPS1931
2722987.220	590295.051	1713861.191	17156970.853	.033	C	GPS - STATIC	2003	HSTLO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/E_LINDSTROM-DF9106-1-03JUN2003.jpg		Jun 3, 2003
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: EAST SWAN MN137

NGS Name: EAST SWAN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9107](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	55 N	20 W	471657.37	924951.34		C	2001	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 31 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: EAST SWAN 2001

8.0 MILES SOUTHEAST OF HIBBING, 5.15 MILES EAST ALONG TRUNK HIGHWAY 37 FROM THE JUNCTION OF TRUNK HIGHWAY 37 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 37 MILEPOINT 6.4, THEN 7.70 MILES SOUTH ON COUNTY ROAD 5, THEN 0.95 MILE WEST ON SOUTH TOWN LINE ROAD, 30.0 FEET SOUTH OF THE SOUTH TOWN LINE ROAD (COUNTY ROAD 442), 48.0 FEET WEST OF COUNTY ROAD 444, 8.0 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1291.822	.262		1193.971	.197	2011	GPS - OPUS	2020	GPSBM
1291.828	.262		1193.977	.197	2011	GPS - OPUS	2020	GPSBM
1291.900	.262		1194.046	.197	2011	GPS - RTRN	2020	RTRN2020
			1193.967	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1194.056	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1291.861	.131		1194.109	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1291.861	.131		1194.109	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -97.851 12B = -97.854 09 = -97.775 03 = -97.667

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 16 57.36760	92 49 51.33479	405444.011	112124.453	.131	3	GPS - OPUS	2020	GPSBM
47 16 57.36767	92 49 51.33493	405444.001	112124.460	.131	3	GPS - OPUS	2020	GPSBM
47 16 57.36744	92 49 51.33464	405444.021	112124.437	.131	3	GPS - RTRN	2020	RTRN2020
47 16 57.36778	92 49 51.33527	405443.978	112124.472	.007		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 16 57.36783	92 49 51.33621	405443.913	112124.477	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 16 57.36774	92 49 51.33596	405443.930	112124.468	.033	C	ADJUSTMENT	2003	GPS1931
47 16 57.36774	92 49 51.33596	405443.930	112124.468	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2691449.449	613647.771	1682365.365	17180357.032	.131	3	GPS - OPUS	2020	GPSBM
2691449.439	613647.778	1682365.355	17180357.039	.131	3	GPS - OPUS	2020	GPSBM
2691449.459	613647.754	1682365.375	17180357.016	.131	3	GPS - RTRN	2020	RTRN2020
2691449.416	613647.789	1682365.332	17180357.050	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2691449.351	613647.794	1682365.267	17180357.055	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2691449.368	613647.785	1682365.284	17180357.046	.033	C	ADJUSTMENT	2003	GPS1931
2691449.368	613647.785	1682365.284	17180357.046	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EAST_SWAN-DF9107-3S-13JUL2020.jpg	S	Jul 13, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EAST_SWAN-DF9107-2-13JUL2020.jpg		Jul 13, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EAST_SWAN-DF9107-1-13JUL2020.jpg		Jul 13, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ECK MNDT

NGS Name: ECK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1581](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	35	52 N	17 W	465654.73	922802.42		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	MARK IS STEEL PIPE

Monument Type	Disk Type	Mon. Agency
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1978) **Stamping:** ECK 1978

0.75 MILE SOUTH-SOUTHWEST ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 18.6, 36.3 FEET NORTHWEST OF TRUNK HIGHWAY 33, 30.9 FEET NORTH OF A CURVE SIGN, 7.3 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

FOUND THE PIN LAYING ON THE GROUND.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1352.031	.197		1256.950	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1351.703						RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -95.305 12B = -95.302 09 = -95.177 03 = -94.980

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 56 54.72590	92 28 02.42350	495668.829	208889.129	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 56 54.71995	92 28 02.42456	495668.755	208888.526	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 56 54.93436	92 28 01.73834			.100	2	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2782685.655	492332.547	1773404.011	17058964.245	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2782685.587	492331.943	1773403.942	17058963.642	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2158071.220	164269.978			.100	2	CLASSICAL SURVEY	1980	16254



Mn/DOT Name: ELBURG MNDT

NGS Name: ELBURG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AC5015](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	34	55 N	17 W	471217.09	922915.31	2	B	1992	2015	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	HORIZONTAL CONTROL DISK	MNDT

Description: (2015)

Stamping: ELBURG 1992

2.5 MILES NORTH OF COTTON, 2.5 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 41.50, 96.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 109.0 FEET SOUTH OF A DRIVEWAY, 72.5 FEET SOUTH OF A POWER POLE, 4.2 FEET WEST OF A RIGHT-OF-WAY POST, 4.5 FEET WEST-NORTHWEST OF A RIGHT-OF-WAY MONUMENT, 2.9 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1338.987	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1338.987	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1338.941	.262		1241.274	.197	2011	GPS - RTRN	2015	RTRN2015
			1241.313	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1338.974	.098		1241.405	.049	2007	HORIZONTAL ADJUSTMENT	2009	GPS2546
1338.974	.098		1241.405	.049	2007	GPS - STATIC	2009	HBMN1
1338.875	.098		1241.457	.049	1996	GPS - STATIC	2008	HBMN1
			1241.405	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1338.875	.098		1241.457	.049	1996	GPS - STATIC	2004	GPS1954
1338.974	.098		1241.457	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1338.744	.131		1241.457	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1338.974	.131		1241.457	.066	1996	GPS - STATIC	2003	HSTLO
1338.744	.131		1241.457	.066	1996	GPS - STATIC	2002	HTWIB
1338.954	.098		1241.457	.049	1996	GPS - STATIC	1997	GPS805-B
1338.954	.131		1241.457	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -97.667 12B = -97.667 09 = -97.585 03 = -97.388

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 17.08725	92 29 15.30511	490656.841	302346.689	.131	3	GPS - RTRN	2015	RTRN2015
47 12 17.08776	92 29 15.30566	490656.802	302346.741	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 17.08787	92 29 15.30657	490656.740	302346.752	.016	B	ADJUSTMENT	2009	GPS2546
47 12 17.08787	92 29 15.30657	490656.740	302346.752	.016	B	GPS - STATIC	2009	HBMN1
47 12 17.08787	92 29 15.30657	490656.740	302346.752	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.016	B	GPS - STATIC	2008	HBMN1
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.016	B	GPS - STATIC	2004	GPS1954
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.016	B	ADJUSTMENT	2003	GPS1931
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.033	C	ADJUSTMENT	2003	GPS1848
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.033	C	GPS - STATIC	2003	HSTLO
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.033	C	GPS - STATIC	2002	HTWIB
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.016	B	GPS - STATIC	1997	GPS805-B
47 12 17.08760	92 29 15.30625	490656.762	302346.725	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 17.08704	92 29 15.30841	490656.614	302346.669	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.856	585738.056	1767737.787	17152342.955	.131	3	GPS - RTRN	2015	RTRN2015
2776888.818	585738.107	1767737.749	17152343.007	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.755	585738.118	1767737.686	17152343.017	.016	B	ADJUSTMENT	2009	GPS2546
2776888.755	585738.118	1767737.686	17152343.017	.016	B	GPS - STATIC	2009	HBMN1
2776888.755	585738.118	1767737.686	17152343.017	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.778	585738.090	1767737.709	17152342.990	.016	B	GPS - STATIC	2008	HBMN1
2776888.778	585738.090	1767737.709	17152342.990	.016	B	GPS - STATIC	2004	GPS1954
2776888.778	585738.090	1767737.709	17152342.990	.016	B	ADJUSTMENT	2003	GPS1931
2776888.778	585738.090	1767737.709	17152342.990	.033	C	ADJUSTMENT	2003	GPS1848
2776888.778	585738.090	1767737.709	17152342.990	.033	C	GPS - STATIC	2003	HSTLO
2776888.778	585738.090	1767737.709	17152342.990	.033	C	GPS - STATIC	2002	HTWIB
2776888.778	585738.090	1767737.709	17152342.990	.016	B	GPS - STATIC	1997	GPS805-B
2776888.778	585738.090	1767737.709	17152342.990	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2776888.629	585738.033	1767737.560	17152342.932	.033	C	GPS - STATIC	1993	H1993

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG-AC5015-3E-18DEC2008.jpg	E	Dec 18, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG-AC5015-2-18DEC2008.jpg		Dec 18, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG-AC5015-1-18DEC2008.jpg		Dec 18, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ELBURG MNDT RESET

NGS Name: ELBURG RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ6747](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	34	55 N	17 W	471217.09	922915.31	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2015	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019)

Stamping: ELBURG 1992 2015

2.5 MILES NORTH OF COTTON, 2.5 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 41.50, 96.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 109.0 FEET SOUTH OF DRIVEWAY NUMBER 1204, 72.5 FEET SOUTH OF A POWER POLE, 4.5 FEET WEST-NORTHWEST OF A RIGHT-OF-WAY MONUMENT, 4.2 FEET WEST OF A RIGHT-OF-WAY POST, 2.9 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.816	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1338.790				1241.110	.023	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119
1338.721	.131			1241.290	.066	1996	GPS - STATIC	2017	HMNCORS07
1338.790				1241.110	.023	2011	GPS - STATIC	2017	HMNPH
1338.829	.262			1241.162	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.667 12B = -97.667 09 = -97.585 03 = -97.388

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 12 17.08757	92 29 15.30588	490656.787	302346.722	.013		ADJUSTMENT	2018	GPS3119	
47 12 17.08757	92 29 15.30588	490656.787	302346.722	.013	C	GPS - STATIC	2017	HMNPH	
47 12 17.08748	92 29 15.30611	490656.771	302346.713	.131	3	GPS - RTRN	2017	RTRN2017	

NAD83(1996)		St Louis County - South Zone				Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 12 17.08744	92 29 15.30645	490656.748	302346.709	.033	C	GPS - STATIC	2017	HMNCORS07	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15				Project Info			
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference	
2776888.803	585738.088	1767737.734	17152342.987	.013		ADJUSTMENT	2018	GPS3119	
2776888.803	585738.088	1767737.734	17152342.987	.013	C	GPS - STATIC	2017	HMNPH	
2776888.787	585738.079	1767737.718	17152342.978	.131	3	GPS - RTRN	2017	RTRN2017	

NAD83(1996)		UTM - Zone 15				Project Info			
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference	
2776888.764	585738.074	1767737.695	17152342.974	.033	C	GPS - STATIC	2017	HMNCORS07	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG_RESET-DQ6747-3E-14SEP2017.jpg	E	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG_RESET-DQ6747-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ELBURG_RESET-DQ6747-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ELMER

NGS Name: ELMER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2200](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/1003
USGS Quad: ELMER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	14	53 N	20 W	470429.75	925028.88		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1995	GOOD	Horz=YES Vert=YES	NO		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	MNDT

Description: (1975) **Stamping:** ELMER 1952

5.0 MILES WEST-NORTHWEST OF MEADOWLANDS, 11.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD THEN 6.7 MILES EAST ON COUNTY ROAD 133 THEN 0.45 MILE NORTH ON A ROAD THEN 0.15 MILE WEST ON A DRIVEWAY, 60.0 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A GRANARY, 23.0 FEET SOUTH OF A FARM DRIVEWAY, 21.3 FEET NORTH-NORTHWEST OF THE NORTHEAST CORNER OF A SHED, 60.2 FEET SOUTH-SOUTHWEST OF A POWER POLE, 113.48 FEET SOUTHWEST OF ELMER RM 1, 116.52 FEET SOUTHEAST OF ELMER RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
			1178.610	.069	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1178.708	.072	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1275.424	.131		1178.823	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648
1275.408	.131		1178.764	.066	1996	GPS - STATIC	1997	GPS805-C

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1272.996						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -96.762 12B = -96.742 09 = -96.696 03 = -96.506

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 29.74799	92 50 28.87751	402477.463	255235.336	.033		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 29.74801	92 50 28.87835	402477.405	255235.339	.036		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 29.74780	92 50 28.87807	402477.425	255235.317	.033	C	ADJUSTMENT	1999	17648
47 04 29.74780	92 50 28.87807	402477.425	255235.317	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 29.74446	92 50 28.88170	402477.172	255234.980	.033	1	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 04 29.95700	92 50 28.17400			.100	1	CLASSICAL SURVEY	1954	10724



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2689114.591	537894.493	1679931.727	17104634.667	.033		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2689114.533	537894.495	1679931.669	17104634.669	.036		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2689114.552	537894.473	1679931.688	17104634.647	.033	C	ADJUSTMENT	1999	17648
2689114.552	537894.473	1679931.688	17104634.647	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2689114.302	537894.134	1679931.438	17104634.309	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2064498.537	209831.545			.100	1	CLASSICAL SURVEY	1954	10724



Mn/DOT Name: ELMER RM 1

NGS Name: ELMER RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2475](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	53 N	20 W	470430.09	925027.32		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1996	GOOD	Horz=YES Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	MNDT

Description: Stamping: ELMER NO 1 1952

68.0 FEET WEST-NORTHWEST OF A WELL 11.0 FEET NORTH OF THE CENTER OF A DRIVEWAY AND 3.5 FEET SOUTH OF THE SOUTHWEST CORNER OF A FARM SHED.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.762 12B = -96.739 09 = -96.696 03 = -96.506



Mn/DOT Name: ELMER RM 2

NGS Name: ELMER RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2476](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	53 N	20 W	470430.19	925030.43		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1996	GOOD	Horz=YES Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

MNDT

Description:

Stamping: ELMER NO 2 1952

11.0 FEET NORTH OF THE CENTER OF A DRIVEWAY AND 4.5 FEET EAST OF THE SOUTHWEST CORNER OF THE GRANARY.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.762 12B = -96.739 09 = -96.696 03 = -96.506



Mn/DOT Name: EMIL MNDT

NGS Name: EMIL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0778](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1051
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	6	50 N	17 W	465049.00	923230.00	2	2	1974	1979	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: EMIL 1974

3.25 MILES EAST-SOUTHEAST OF BROOKSTON, AT TRUNK HIGHWAY 2 MILEPOINT 240.85, 4.05 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 43.0 FEET NORTH OF TRUNK HIGHWAY 2, 63.3 FEET SOUTH-SOUTHEAST OF A RIGHT-OF-WAY POST, 61.80 FEET SOUTH-SOUTHWEST OF STATION 6907 AE, 64.06 FEET SOUTHEAST OF EMIL MNDT RM 2, 43.7 FEET SOUTH-SOUTHWEST OF A POWER POLE, 9.0 FEET WEST OF A FARM ENTRANCE, 62.4 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1316.060	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1315.631	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1316.073	.197			1221.756	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.491 12B = -94.485 09 = -94.390 03 = -94.219

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 48.65195	92 32 29.55166			477091.191	171811.809	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 48.64626	92 32 29.55375			477091.044	171811.231	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 50 48.85225	92 32 28.85208					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2764420.515	455101.384			1755094.821	17021774.051	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2764420.374	455100.806			1755094.679	17021773.474	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2139806.626	127038.104					.100	2	CLASSICAL SURVEY	1977 15924



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EMIL-RN0778-1-25JUL2017.jpg		Jul 25, 2017
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: EMILY

NGS Name: EMILY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9918](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	8	51 N	20 W	465511.90	925439.49	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: EMILY 2017

0.6 MILE SOUTHEAST OF FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 221.1, 76.4 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 136.9 FEET EAST OF TRUNK HIGHWAY 73, 1.5 FEET NORTHEAST OF A WITNESS POST.

Station Pair: RAEHELLE - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1249.056	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.990	.262		1153.715	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.292 12B = -95.275 09 = -95.200 03 = -95.085

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 55 11.90280	92 54 39.49497	384797.553	198809.366	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2671906.280	481326.007	1662656.103	17048111.930	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EMILY-DQ9918-3SW-01AUG2017.jpg	SW	Aug 1, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EMILY-DQ9918-2-01AUG2017.jpg		Aug 1, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/EMILY-DQ9918-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ENG MNDT

NGS Name: ENG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0756](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1059
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	36	51 N	19 W	465118.38	924153.51	2	2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	NOT FOUND	Horz=NO Vert=NO	NO		RECESSED 12 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: ENG 1974

4.7 MILES WEST-SOUTHWEST OF BROOKSTON, 4.6 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 233.35, STATION ENG MNDT IS BURIED 1.0 FOOT BELOW THE NORTH SHOULDER OF TRUNK HIGHWAY 2, NEAR THE EAST EDGE OF A BITUMINOUS ENTRANCE, AT THE NORTH EDGE OF A BITUMINOUS ROADWAY, 52.7 FEET SOUTH-SOUTHWEST OF A WITNESS POST, 51.77 FEET SOUTH-SOUTHWEST OF ENG MNDT RM 1, 175.10 FEET SOUTHEAST OF STATION 6907 K.

Station Notes

TIES 51.77 AND 175.10 PUT THE MARK UNDER THE BITUMINOUS. LOOKS LIKE THE SHOULDER HAS BEEN EXTENDED BY AN ENTRANCE OR PATCHED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1360.424	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1359.794	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1360.430	.197		1265.910	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.586 03 = -94.452

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 51 18.38098	92 41 53.51064	437897.166	174908.833	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 51 18.37422	92 41 53.51238	437897.042	174908.149	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
46 51 18.57170	92 41 52.80972			.100	2	CLASSICAL SURVEY	1977	15924



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725202.365	457869.899	1715897.700	17024595.090	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725202.247	457869.213	1715897.582	17024594.404	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2100587.403	129805.529			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: ENG MNDT RM 1

NGS Name: ENG RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0755](#)

[Get Map](#)

NGS Quad / Sta Num : 46092413/

USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	36	51 N	19 W	465118.89	924153.49	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: ENG NO 1 1974

4.4 MILES WEST-SOUTHWEST OF BROOKSTON, AT TRUNK HIGHWAY 2 MILEPOINT 233.35, 75.8 FEET NORTH OF TRUNK HIGHWAY 2, 166.0 FEET EAST-SOUTHEAST OF THE SOUTHEAST CORNER OF A TOWN HALL, 43.0 FEET EAST-SOUTHEAST OF A CABLE MARKER POST, 162.4 FEET EAST-SOUTHEAST OF STATION 6907 K, 51.8 FEET NORTH-NORTHEAST OF STATION ENG MNDT, 1.3 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1358.659	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1358.669	.016	2/1				VERTICAL ADJUSTMENT	2011 00000672
1358.688	.016	2/1				VERTICAL CONTROL SURVEY	2007 VBROO
1358.688	.016	2				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1358.081	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1358.695	.262		1264.017	.197	2011	GPS - OPUS	2021 GPSBM
1358.754	.262		1264.076	.197	2011	GPS - RTRN	2021 RTRN2021
1358.839	.262		1264.167	.197	2011	GPS - RTRN	2017 RTRN2017
			1263.971	.012	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1264.059	.013	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1358.692	.131		1264.138	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1358.692	.131		1264.138	.066	1996	GPS - STATIC	2003 HGRAND
			1264.138	.066	1996	GPS - STATIC	2000 SLC

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.586 03 = -94.452

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>			<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u> <u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>						
46 51 18.89107	92 41 53.48746		437898.940	174960.509	.131 3	GPS - OPUS	2021 GPSBM
46 51 18.89120	92 41 53.48661		437898.999	174960.522	.131 3	GPS - RTRN	2021 RTRN2021
46 51 18.89099	92 41 53.48798		437898.904	174960.501	.131 3	GPS - RTRN	2017 RTRN2017
46 51 18.89155	92 41 53.48678		437898.988	174960.558	.010	ADJUSTMENT	2012 GPS2800
<u>NAD83(2007)</u>			<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u> <u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>						
46 51 18.89168	92 41 53.48763		437898.929	174960.571	.013	ADJUSTMENT	2007 GPS2300
<u>NAD83(1996)</u>			<u>St Louis County - South Zone</u>			<u>Project Info</u>	
<u>Geodetic Position</u>			<u>X</u>	<u>Y</u>	<u>Acc</u> <u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>						
46 51 18.89159	92 41 53.48770		437898.924	174960.562	.033 C	ADJUSTMENT	2004 GPS1957
46 51 18.89159	92 41 53.48770		437898.924	174960.562	.033 C	GPS - STATIC	2003 HGRAND
46 51 18.89159	92 41 53.48770		437898.924	174960.562	.033 C	GPS - STATIC	2000 SLC

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725203.707	457921.587	1715899.112	17024646.753	.131	3	GPS - OPUS	2021	GPSBM
2725203.766	457921.601	1715899.171	17024646.767	.131	3	GPS - RTRN	2021	RTRN2021
2725203.671	457921.579	1715899.075	17024646.745	.131	3	GPS - RTRN	2017	RTRN2017
2725203.754	457921.636	1715899.159	17024646.802	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725203.695	457921.649	1715899.100	17024646.815	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2725203.690	457921.640	1715899.095	17024646.806	.033	C	ADJUSTMENT	2004	GPS1957
2725203.690	457921.640	1715899.095	17024646.806	.033	C	GPS - STATIC	2003	HGRAND
2725203.690	457921.640	1715899.095	17024646.806	.033	C	GPS - STATIC	2000	SLC

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ENG_RM_1-RN0755-3N-25JUL2021.jpg	N	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ENG_RM_1-RN0755-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ENG_RM_1-RN0755-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: F 159

NGS Name: F 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0298](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	9	53 N	17 W	470513.00	922958.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	BENCH MARK DISK	NGS

Description: (1978)

Stamping: F 159 1935

5.4 MILES EAST OF PAYNE, 1.3 MILES WEST ON COUNTY ROAD 232 FROM TRUNK HIGHWAY 53, 1.2 MILES EAST OF LAKE NICHOLS, AT A HIGH POINT, 108.0 FEET EAST OF A DRIVEWAY, 21.0 FEET SOUTH OF A ROAD, 3.0 FEET SOUTH OF A POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1359.207	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1358.649	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1358.649	.007	1				VERTICAL CONTROL SURVEY	1958 L63 MINN

Geoid Separations(ft): GEOID18 = -96.696 12B = -96.703 09 = -96.558 03 = -96.374

* No Horizontal Positions in the Database *



Mn/DOT Name: F 165

NGS Name: F 165

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0281](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	10	54 N	17 W	471009.44	922920.65	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	NGS

Description: (2006) **Stamping:** F 165 1935

0.6 MILE WEST OF COTTON, 0.6 MILE WEST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 (ARKOLA ROAD) AND TRUNK HIGHWAY 53 IN COTTON, 45.0 FEET NORTH OF COUNTY ROAD 52, 9.0 FEET NORTH OF THE LARGEST BOULDER, 0.6 FOOT SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1327.241	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1327.127	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1327.127	.016	2/1				VERTICAL CONTROL SURVEY	2007	VCOTT
1327.012	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1326.930	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1326.310	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1326.310	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.411 12B = -97.411 09 = -97.310 03 = -97.113

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165-SJ0281-3N-19SEP2017.jpg	N	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165-SJ0281-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165-SJ0281-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: F 165 A

NGS Name: F 165 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DM4454](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	54 N	17 W	471001.50	922909.40	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2006	2017	DESTROYED	Horz=NO Vert=NO	NO		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	SURVEY DISK	MNDT

Description: (2006)

Stamping: F 165 A 2006

0.50 MILE WEST OF COTTON, 0.50 MILE WEST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 0.15 MILE SOUTH ON AN ENTRANCE TO THE ST. LOUIS COUNTY PUBLIC WORKS 6TH DISTRICT SHOP, 92.6 FEET EAST OF THE NORTHEAST CORNER OF THE 6TH DISTRICT SHOP, 63.8 FEET NORTHEAST OF THE SOUTHEAST CORNER OF THE 6TH DISTRICT SHOP, 1.4 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1335.683	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1335.683	.016	2/1				VERTICAL CONTROL SURVEY	2007	VCOTT

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.385 09 = -97.283 03 = -97.086

* No Horizontal Positions in the Database *



Mn/DOT Name: F 165 A RESET

NGS Name: F 165 A RESET

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	15	54 N	17 W	471001.57	922909.01	2	3

NGS ACRN: DR1851	Get Map
NGS Quad / Sta Num : 47092234/	
USGS Quad: COTTON	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) **Stamping:** F 165 A RESET 2017

0.5 MILE WEST OF COTTON, 0.5 MILE WEST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 0.15 MILE SOUTH ON A DRIVEWAY NUMBER 7628 TO THE ST. LOUIS COUNTY PUBLIC WORKS 6TH DISTRICT SHOP, 92.6 FEET EAST OF THE NORTHEAST CORNER OF THE 6TH DISTRICT SHOP, 63.8 FEET NORTHEAST OF THE SOUTHEAST CORNER OF THE 6TH DISTRICT SHOP, 1.4 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Year	Reference
1335.611	.016	2/1				2021	00000963
Determination Method: VERTICAL ADJUSTMENT							

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj	Year	Reference
1335.650	.262		1238.262	.197	2011	2017	RTRN2017
Determination Method: GPS - RTRN							

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.385 09 = -97.283 03 = -97.086

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Project Info		
Latitude	Longitude	X	Y	Year	Reference	
47 10 01.57261	92 29 09.00749	491085.430	288615.497	2017	RTRN2017	
		Acc	Order	Determination Method: GPS - RTRN		

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info		
MN State Plane - North Zone		X	Y	Year	Reference	
X	Y			2017	RTRN2017	
2777432.748	572012.321	1768262.799	17138621.270			
		Acc	Order	Determination Method: GPS - RTRN		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165_A_RESET-DR1851-3S-19SEP2017.jpg	S	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165_A_RESET-DR1851-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_165_A_RESET-DR1851-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: F 271

NGS Name: F 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0711](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	8	51 N	20 W	465530.00	925340.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** F 271 1948

1.05 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 0.55 MILE EAST OF A COUNTY ROAD 8 BRIDGE OVER THE SAVANNA RIVER, ON THE OUTSIDE EDGE OF A CURVE, 10.0 FEET SOUTHWEST OF THE NORTHWEST TANGENT EXTENDED, 36.0 FEET SOUTH-SOUTHWEST OF COUNTY ROAD 8, 46.0 FEET EAST OF A POWER POLE, 121.0 FEET WEST OF FARM DRIVE SOUTH, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1255.988	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1255.352	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1255.352	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.348 12B = -95.331 09 = -95.256 03 = -95.138

* No Horizontal Positions in the Database *



Mn/DOT Name: F 272

NGS Name: F 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0542](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	4	52 N	19 W	470133.61	924434.94	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=YES Vert=YES	NO		PROJECTS 2 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007) Stamping: F 272 1948

3.5 MILES SOUTHWEST OF MEADOWLANDS, 3.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 0.9 MILE SOUTH OF A COUNTY ROAD 5 BRIDGE OVER THE WHITEFACE RIVER, 30.0 FEET WEST OF COUNTY ROAD 5, 32.0 FEET SOUTH OF A CROSSROAD (COUNTY ROAD 725 WEST), 10.0 FEET NORTHWEST OF A TELEPHONE PEDESTAL, 0.5 FOOT EAST OF A WITNESS POST.

Station Notes

THE MARK HAS BEEN HIT BUT APPEARS STABLE. THE CONCRETE IS CHIPPED OFF.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1267.422	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1267.425	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1267.425	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1266.822	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1266.822	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.348 12B = -96.342 09 = -96.250 03 = -96.082

* No Horizontal Positions in the Database *



Mn/DOT Name: F 273

NGS Name: F 273

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	24	53 N	21 W	470336.68	925708.48	2	

NGS ACRN: [SJ0524](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** F 273 1948

9.7 MILES NORTHWEST ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, THEN 0.55 MILE NORTH ON COUNTY ROAD 186, 0.3 MILE NORTH OF A CROSSROAD, 23.0 FEET EAST OF A GRAVEL ROAD, 37.0 FEET NORTH OF A FARM ROAD EAST, 30.5 FEET NORTH OF THE NORTH GATE POST, 1.5 FEET WEST OF A FENCE LINE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1267.616	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1266.936	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1266.936	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.539 12B = -96.525 09 = -96.486 03 = -96.299

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_273-SJ0524-3S-13JUL2017.jpg	S	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: F 275

NGS Name: F 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	13	54 N	20 W	471001.05	924955.75	2	

NGS ACRN: SJ0482	Get Map
NGS Quad / Sta Num : 47092331/	
USGS Quad: TOIVOLA	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** F 275 1948

1.0 MILE WEST ON COUNTY ROAD 317 FROM THE JUNCTION OF COUNTY ROAD 317 AND COUNTY ROAD 5 AT TOIVOLA, 0.7 MILE WEST OF A RANGER STATION AND A FIRE TOWER, 23.0 FEET SOUTH OF A ROAD, 33.0 FEET EAST OF A ROAD SOUTH, 14.0 FEET EAST OF A FENCE CORNER, 1.0 FOOT NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

THE PIPE HAS BEEN REPLACED, AND A DRIVEWAY WAS REGRADED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1278.419	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1277.763	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1277.763	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.441 12B = -97.441 09 = -97.375 03 = -97.182

* No Horizontal Positions in the Database *



Mn/DOT Name: F 276

NGS Name: F 276

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0484](#) [Get Map](#)
NGS Quad / Sta Num : 47092334/
USGS Quad: UPSTEAD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	16	54 N	20 W	471000.16	925232.75	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: F 276 1948

3.1 MILES WEST ON COUNTY ROAD 317 FROM THE JUNCTION OF COUNTY ROAD 317 AND COUNTY ROAD 5 AT TOIVOLA, AT THE TOIVOLA RAILROAD STATION, 297.0 FEET SOUTHEAST OF THE STATION, 162.0 FEET SOUTH OF AN EAST-WEST GRAVEL ROAD, 49.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST MAIN RAILROAD TRACK, 6.0 FEET NORTH OF A FENCE CORNER, 40.5 FEET NORTHWEST OF A TELEPHONE POLE, 5.0 FEET FROM AND IN LINE WITH THE POLES, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.591	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1288.938	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1288.938	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1288.938	.033	3				VERTICAL CONTROL SURVEY	1958	USGS-VERT

Geoid Separations(ft): GEOID18 = -97.359 12B = -97.355 09 = -97.300 03 = -97.106

* No Horizontal Positions in the Database *



Mn/DOT Name: F 280

NGS Name: F 280

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: SJ1322	Get Map
NW	16	55 N	21 W	471507.07	930126.07	2	3	NGS Quad / Sta Num : 47093212/ USGS Quad: SILICA	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	POOR	Horz=NO Vert=NO	YES		PROJECTS 16 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: F 280 1948

1.2 MILES SOUTH OF HIBBING, 2.4 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING TO ABOUT TRUNK HIGHWAY 73 MILEPOINT 68.2, THEN 0.30 MILE SOUTH ON SILICA DRIVE, 34.2 FEET WEST OF SILICA DRIVE, 20.3 FEET NORTH OF A DRIVEWAY.

Station Notes

THE STATION IS UNSTABLE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1338.767	.016	2/0				VERTICAL ADJUSTMENT			1991	00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1338.009	.016	2/0				UNKNOWN/APPROXIMATE			1992	UNCHECKD
1338.009	.007	1				VERTICAL CONTROL SURVEY			1960	L28 MINN
1338.009	.007	1				VERTICAL CONTROL SURVEY			1952	Q470932

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1339.597	.262		1242.366	.197	2011	GPS - RTRN			2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.208 12B = -97.231 09 = -97.126 03 = -97.037

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - Central Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
47 15 07.05078	93 01 26.04274	357460.775	101241.110	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
2643565.168	602364.138	1634483.249	17169139.696	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_280-SJ1322-3W-11JUL2017.jpg	W	Jul 11, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_280-SJ1322-2-11JUL2017.jpg		Jul 11, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/F_280-SJ1322-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: F 30

NGS Name: F 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0690](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	1	51 N	18 W	465534.00	923432.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2021	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: F 30 1934

0.8 MILE WEST OF CULVER, 50.0 FEET NORTHEAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND COUNTY ROAD 31, 150.0 FEET SOUTHEAST OF THE C T JOHNSONS FARMHOUSE, 10.0 FEET NORTH OF COUNTY ROAD 8 IN LINE WITH A FENCE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1326.457	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1325.932	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1325.932	.007	1				VERTICAL CONTROL SURVEY	1960 L13 MINN

Geoid Separations(ft): GEOID18 = -95.289 12B = -95.285 09 = -95.170 03 = -950000

* No Horizontal Positions in the Database *



Mn/DOT Name: FALBO

NGS Name: FALBO

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5178](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	31	51 N	20 W	465144.16	925443.39	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 59 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: FALBO 2017

4.0 MILES SOUTH OF FLOODWOOD, 4.05 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 38.9, 70.6 FEET WEST OF TRUNK HIGHWAY 73, 63.5 FEET SOUTH OF DRIVEWAY NUMBER 4835, 19.7 FEET EAST-NORTHEAST OF A RIGHT-OF-WAY POST, 1.5 FEET EAST OF A WITNESS POST.

Station Pair: 6927 E RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.683	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.634	.262		1170.880	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.764 12B = -94.754 09 = -94.659 03 = -94.557

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 44.15652	92 54 43.38958	384403.134	177762.718	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2671687.099	460277.268	1662409.438	17027072.691	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FALBO-DR5178-3W-10OCT2017.jpg	W	Oct 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FALBO-DR5178-2-10OCT2017.jpg		Oct 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FALBO-DR5178-1-10OCT2017.jpg		Oct 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FELTY

NGS Name: FELTY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1842](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	22	55 N	17 W	471347.42	922912.19	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: FELTY 2017

4.2 MILES NORTH OF COTTON, 4.35 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 43.30, 27.4 FEET WEST-NORTHWEST OF NORTHBOUND TRUNK HIGHWAY 53, 56.5 FEET EAST-SOUTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53, 5.0 FEET EAST-SOUTHEAST OF A WITNESS POST.

Station Notes

THIS STATION MAY HAVE BEEN REMOVED.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1345.007	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1345.027	.262		1247.222	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.808 12B = -97.805 09 = -97.733 03 = -97.542

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
47 13 47.42418	92 29 12.18951	490876.268	311500.027	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2777031.354	594891.922	1767892.670	17161493.488	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FELTY-DR1842-3W-18OCT2017.jpg	W	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FELTY-DR1842-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FELTY-DR1842-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FINE MNDT

NGS Name: FINE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9553](#)

[Get Map](#)

NGS Quad / Sta Num : 46092443/

USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	33	50 N	20 W	464648.01	925255.24	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: FINE 1999

7.0 MILES NORTH OF CROMWELL, 7.0 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT TRUNK HIGHWAY 73 MILEPOINT 32.20, 66.0 FEET EAST OF TRUNK HIGHWAY 73, 151.2 FEET NORTH-NORTHWEST OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1330.381	.016	2/1				VERTICAL ADJUSTMENT	2004 00000464
1330.371	.016	2/1				VERTICAL CONTROL SURVEY	2002 VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1236.461	.017	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1236.553	.018	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1330.378	.131		1236.651	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1769
1330.378	.131		1236.651	.066	1996	GPS - STATIC	2002 HFLOO

Geoid Separations(ft): GEOID18 = -93.924 12B = -93.914 09 = -93.825 03 = -93.720

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 48.00669	92 52 55.24462	391753.215	147715.073	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 48.00682	92 52 55.24547	391753.156	147715.086	.016		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 46 48.00652	92 52 55.24511	391753.181	147715.056	.033	C	ADJUSTMENT	2003	GPS1769
46 46 48.00652	92 52 55.24511	391753.180	147715.056	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2679287.133	430291.981	1669966.568	16997091.151	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2679287.074	430291.994	1669966.509	16997091.165	.016		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2679287.099	430291.964	1669966.534	16997091.134	.033	C	ADJUSTMENT	2003	GPS1769
2679287.099	430291.964	1669966.534	16997091.134	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: FINE MNDT RESET

NGS Name: FINE RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5190](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	33	50 N	20 W	464648.01	925255.25	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: FINE 1999 2017

7.0 MILES NORTH OF CROMWELL, 7.0 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT TRUNK HIGHWAY 73 MILEPOINT 32.20, 66.0 FEET EAST OF TRUNK HIGHWAY 73, 240.1 FEET SOUTH OF WILSON ROAD, 13.2 FEET NORTHWEST OF A POWER POLE, 1.0 FOOT WEST OF A WITNESS POST.

Station Pair: POINET MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1330.099	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963			

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1330.388	.262		1236.477	.197	2011	GPS - RTRN			2017	RTRN2017			

Geoid Separations(ft): GEOID18 = -93.924 12B = -93.914 09 = -93.825 03 = -93.720

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - South Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
46 46 48.00535	92 52 55.24517	391753.176	147714.938	.131	3	GPS - RTRN		2017	RTRN2017				

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Acc		Order		Determination Method		Project Info	
X	Y	X	Y							Year	Reference		
2679287.095	430291.845	1669966.530	16997091.016	.131	3	GPS - RTRN		2017	RTRN2017				

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FINE_RESET-DR5190-3E-06SEP2017.jpg	E	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FINE_RESET-DR5190-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FINE_RESET-DR5190-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOOD MNDT

NGS Name: FLOOD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0653](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1073
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	17	51 N	20 W	465438.24	925359.81	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (1999) **Stamping:** FLOOD 1974

1.5 MILES SOUTHEAST OF FLOODWOOD, 0.9 MILE SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 221.9, 89.7 FEET NORTHWEST OF TRUNK HIGHWAY 2, 54.0 FEET EAST-SOUTHEAST OF A POWER POLE NUMBER 12801, 3.6 FEET EAST OF A WITNESS POST, 109.90 FEET NORTHWEST OF FLOOD MNDT RM 1, 61.56 FEET NORTH-NORTHEAST OF FLOOD MNDT RM 2, THE MONUMENT WAS BROKEN, THE DISK WAS REMOVED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1279.925	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025	

NGVD29				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1279.361	.016	2						VERTICAL CONTROL SURVEY	1974	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj			Year	Reference	
1279.919	.197			1184.876	.131	1996		HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -95.213 12B = -95.197 09 = -95.115 03 = -95.003

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 54 38.24359	92 53 59.81371	387532.629	195383.093	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 54 38.23681	92 53 59.81635	387532.442	195382.408	.066	2	ADJUSTMENT	1986	17289

NAD27		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Reference
46 54 38.43891	92 53 59.09723			.100	2	CLASSICAL SURVEY 1777 15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference		
2674669.711	477922.724	1665413.882	17044706.490	.066	2	ADJUSTMENT	1999	17648		

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference		
2674669.530	477922.037	1665413.700	17044705.803	.066	2	ADJUSTMENT	1986	17289		

NAD27		Determination Method			Project Info	
X	Y	X	Y	Acc	Order	Reference
2050054.279	149858.602			.100	2	CLASSICAL SURVEY 1777 15924



Mn/DOT Name: FLOOD MNDT RM 1

NGS Name: FLOOD RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0655](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	17	51 N	20 W	465437.41	925358.80	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 12 IN.	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
ROCK (0 TO 1 METERS)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: FLOOD NO 1 1974

1.5 MILES SOUTHEAST OF FLOODWOOD, 0.9 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 121.95, 80.6 FEET EAST OF FLOOD MNDT RM 2, 86.9 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 31.4 FEET NORTH OF A TELEPHONE PEDESTAL NUMBER E 200 5, 2.1 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1281.218	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1281.198	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1280.634	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1281.156	.262			1185.962	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.210 12B = -95.193 09 = -95.115 03 = -95.003

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 54 37.41022	92 53 58.79818	387602.655	195298.254	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2674740.439	477838.473	1665484.469	17044622.182	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_1-RN0655-3SW-24JUL2017.jpg	SW	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_1-RN0655-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_1-RN0655-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOOD MNDT RM 2

NGS Name: FLOOD RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0654](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	17	51 N	20 W	465437.64	925359.92	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 7 IN.	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
ROCK (0 TO 1 METERS)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: FLOOD NO 2 1974

1.5 MILES SOUTHEAST OF FLOODWOOD, 0.9 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), 80.6 FEET WEST OF FLOOD MNDT RM 1, 132.5 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 28.2 FEET SOUTHWEST OF A SOUTHEAST/NORTHWEST FENCE, 3.1 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1280.244	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1280.214	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1279.650	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.213 12B = -95.193 09 = -95.115 03 = -95.003

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_2-RN0654-3SW-24JUL2017.jpg	SW	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_2-RN0654-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOOD_RM_2-RN0654-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD

NGS Name: FLOODWOOD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0647](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1011
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	6	51 N	20 W	465544.42	925510.98	2	1

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 2 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2001) Stamping: FLOODWOOD 1952

IN FLOODWOOD, 0.2 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND THE WEST JUNCTION OF TRUNK HIGHWAY 73, ACROSS FROM A HIGHWAY GARAGE, JUST NORTH OF A FLOODWOOD LOOKOUT TOWER, 58.6 FEET NORTHWEST OF THE NORTHWEST CORNER OF A TOWER, 79.1 FEET SOUTHWEST OF A RAILROAD STATION, 114.2 FEET SOUTH-SOUTHWEST OF FLOODWOOD RM 1, 76.76 FEET NORTH-NORTHWEST OF STATION C 271, 3.1 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1250.506	.016	2/1						VERTICAL ADJUSTMENT	2021	00000963
1250.499	.016	2/1						VERTICAL ADJUSTMENT	2011	00000675
1250.503	.016	2/1						VERTICAL CONTROL SURVEY	2003	VGRAND
1250.454	.016	2						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1249.906	.016	2						VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1250.457	.131			1155.240	.066	1996		HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.374 12B = -95.354 09 = -95.279 03 = -95.164

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u>	<u>Order</u>			
46 55 44.41955	92 55 10.97664			382631.855	202116.855	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u>	<u>Order</u>			
46 55 44.41290	92 55 10.97934			382631.664	202116.182	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Determination Method</u>		<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>					<u>Acc</u>	<u>Order</u>			
46 55 44.61700	92 55 10.25700					.100	1	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2669713.191	484615.252	1660468.259	17051402.637	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2669713.005	484614.578	1660468.073	17051401.963	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2045097.813	156551.305			.100	1	CLASSICAL SURVEY	1954	10724

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD-RN0647-3SW-10JUL2017.jpg	SW	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD-RN0647-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD-RN0647-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD AZ MK

NGS Name: FLOODWOOD AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0650](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1011
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	6	51 N	20 W	465542.01	925500.38	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=NO	YES		RECESSED 2 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2001)

Stamping: FLOODWOOD 1952

IN FLOODWOOD, 0.05 MILE NORTH OF THE JUNCTION OF PINE STREET AND 6TH AVENUE, 175.7 FEET NORTH-NORTHWEST OF THE JUNCTION OF 6TH AVENUE AND PINE STREET, 24.0 FEET SOUTH OF A DRIVEWAY, 5.6 FEET SOUTH OF THE WEST END OF A METAL CULVERT, 46.6 FEET WEST-NORTHWEST OF THE NORTHWEST CORNER OF A MINNESOTA HIGHWAY DEPARTMENT GARAGE, 96.0 FEET EAST OF A SMALL CREEK, 4.7 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1242.517	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1241.966	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1242.517	.262			1147.307	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.371 12B = -95.351 09 = -95.275 03 = -95.161

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								
46 55 42.02249	92 55 00.38378			383365.635	201869.599	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								
46 55 42.01580	92 55 00.38653			383365.440	201868.922	.131	3	ADJUSTMENT	1986 17289

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								
46 55 42.21967	92 54 59.66464					.100	3	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								
2670448.980	484374.121			1661203.419	17051160.645	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								
2670448.791	484373.442			1661203.228	17051159.967	.131	3	ADJUSTMENT	1986 17289

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								
2045833.590	156310.149					.100	3	CLASSICAL SURVEY	1977 15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_AZ_MK-RN0650-3W-10JUL2017.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_AZ_MK-RN0650-2-10JUL2017.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_AZ_MK-RN0650-1-10JUL2017.jpg

<u>Dir</u>	<u>Date</u>
W	Jul 10, 2017
	Jul 10, 2017
	Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD CREAMERY STACK

NGS Name: FLOODWOOD CREAMERY STACK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1685](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1025
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	6	51 N	20 W	465532.48	925444.27		4

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	STACK	NGS

Description: (1952)

Stamping:

AT SOUTHEAST EDGE OF FLOODWOOD, 0.05 MILE EAST OF TRUNK HIGHWAY 73.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.348 12B = -95.328 09 = -95.252 03 = -95.138

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>			St Louis County - South Zone				Project Info		
Geodetic Position			X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude								
46 55 32.47605	92 54 44.27243		384478.197	200895.750	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>			St Louis County - South Zone				Project Info		
Geodetic Position			X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude								
46 55 32.46976	92 54 44.27551		384477.979	200895.114	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							Project Info		
Geodetic Position			X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude								
46 55 32.67100	92 54 43.55600				.100	4	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>			UTM - Zone 15				Project Info		
MN State Plane - North Zone			X	Y	Acc	Order	Determination Method	Year	Reference
X	Y								
2671569.575	483409.597		1662322.271	17050195.068	.328	4	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>			UTM - Zone 15				Project Info		
MN State Plane - North Zone			X	Y	Acc	Order	Determination Method	Year	Reference
X	Y								
2671569.363	483408.960		1662322.059	17050194.430	.328	4	ADJUSTMENT	1986	17289
<u>NAD27</u>							Project Info		
MN State Plane - North Zone			X	Y	Acc	Order	Determination Method	Year	Reference
X	Y								
2046954.033	155345.406				.100	4	CLASSICAL SURVEY	1954	10724

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_CREAMERY_STACK-RN1685-3NW-10JUL2017.jpg	NW	Jul 10, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD GRAVITY

NGS Name: FLOODWOOD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	6	51 N	20 W	465540.80	925506.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1973	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SEE DESCRIPTION

Mon. Agency

UNK

Description: (2019)

Stamping:

AT FLOODWOOD, ST. LOUIS COUNTY, AT THE GREAT NORTHERN RAILROAD DEPOT, ON THE SOUTHEAST SIDE, AT TRACK LEVEL.

Station Notes

GRAVITY VALUE: G=980 668.70 +/-0.1 MGAL

NOAA 07-01-1973.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.364 12B = -95.348 09 = -95.272 03 = -95.157



Mn/DOT Name: FLOODWOOD LOOKOUT TOWER

NGS Name: FLOODWOOD LOOKOUT TOWER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1686](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1026
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	6	51 N	20 W	465543.81	925510.38		4

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	LOOKOUT TOWER	NGS

Description: (1952)

Stamping:

IN THE NORTHWEST PART OF FLOODWOOD, NEAR A RAILROAD.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.374 12B = -95.354 09 = -95.279 03 = -95.164

Lat/Lon and County Coordinates (Feet)

NAD83(1996)								Project Info	
Geodetic Position				St Louis County - South Zone				Year	Reference
Latitude	Longitude	X	Y	Acc	Order	Determination Method			
46 55 43.80683	92 55 10.38262	382672.713	202054.528	.328	4	ADJUSTMENT		1999	17648
NAD83(1986)								Project Info	
Geodetic Position				St Louis County - South Zone				Year	Reference
Latitude	Longitude	X	Y	Acc	Order	Determination Method			
46 55 43.80066	92 55 10.38564	382672.500	202053.905	.328	4	ADJUSTMENT		1986	17289
NAD27								Project Info	
Geodetic Position								Year	Reference
Latitude	Longitude	X	Y	Acc	Order	Determination Method			
46 55 44.00800	92 55 09.66000			.100	4	CLASSICAL SURVEY		1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)								Project Info	
MN State Plane - North Zone				UTM - Zone 15				Year	Reference
X	Y	X	Y	Acc	Order	Determination Method			
2669754.565	484553.270	1660509.535	17051340.627	.328	4	ADJUSTMENT		1999	17648
NAD83(1986)								Project Info	
MN State Plane - North Zone				UTM - Zone 15				Year	Reference
X	Y	X	Y	Acc	Order	Determination Method			
2669754.356	484552.644	1660509.326	17051340.002	.328	4	ADJUSTMENT		1986	17289
NAD27								Project Info	
MN State Plane - North Zone								Year	Reference
X	Y	X	Y	Acc	Order	Determination Method			
2045139.394	156489.700			.100	4	CLASSICAL SURVEY		1954	10724

Station Photos

Type	File Name	Dir	Date
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_LOOKOUT_TOWER-RN1686-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD MUNICIPAL TANK

NGS Name: FLOODWOOD MUNICIPAL TANK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1684](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1027
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	7	51 N	20 W	465530.24	925454.59		4

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	LOOKOUT TOWER	NGS

Description: (1952)

Stamping:

IN THE SOUTHEAST PART OF FLOODWOOD, 50.0 FEET EAST OF A RAILROAD.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.338 12B = -95.321 09 = -95.246 03 = -95.131

Lat/Lon and County Coordinates (Feet)

Geodetic Position			St Louis County - South Zone				Project Info		
Latitude	Longitude		X	Y	Acc	Order	Determination Method	Year	Reference
46 55 30.23548	92 54 54.59005		383760.684	200672.977	.328	4	ADJUSTMENT	1999	17648
Geodetic Position			St Louis County - South Zone				Project Info		
Latitude	Longitude		X	Y	Acc	Order	Determination Method	Year	Reference
46 55 30.22926	92 54 54.59308		383760.469	200672.348	.328	4	ADJUSTMENT	1986	17289
Geodetic Position							Project Info		
Latitude	Longitude		X	Y	Acc	Order	Determination Method	Year	Reference
46 55 30.43600	92 54 53.87600				.100	4	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone			UTM - Zone 15				Project Info		
X	Y		X	Y	Acc	Order	Determination Method	Year	Reference
2670853.963	483180.866		1661606.667	17049967.371	.328	4	ADJUSTMENT	1999	17648
MN State Plane - North Zone			UTM - Zone 15				Project Info		
X	Y		X	Y	Acc	Order	Determination Method	Year	Reference
2670853.754	483180.236		1661606.457	17049966.741	.328	4	ADJUSTMENT	1986	17289
MN State Plane - North Zone							Project Info		
X	Y		X	Y	Acc	Order	Determination Method	Year	Reference
2046238.234	155117.238				.100	4	CLASSICAL SURVEY	1954	10724

Station Photos

Type	File Name	Dir	Date
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_MUNICIPAL_TANK-RN1684-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLOODWOOD RM 1

NGS Name: FLOODWOOD RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0649](#)

[Get Map](#)

NGS Quad / Sta Num : 46092444/

USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	6	51 N	20 W	465545.52	925510.68	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1999)

Stamping: FLOODWOOD NO 1 1952

IN FLOODWOOD, ACROSS THE STREET FROM A HIGHWAY GARAGE, NORTH OF THE FLOODWOOD LOOKOUT TOWER, 114.2 FEET NORTH-NORTHEAST OF STATION FLOODWOOD, 40.0 FEET SOUTH OF THE SOUTHWEST CORNER OF A GARAGE, 19.0 FEET NORTHEAST OF STATION FLOODWOOD, 3.5 FEET NORTHWEST OF A POWER POLE, 1.6 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.835	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1247.819	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1247.819	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND
1247.806	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.255	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1247.711	.262		1152.353	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.377 12B = -95.357 09 = -95.282 03 = -95.167

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 55 45.52490	92 55 10.68223	382652.961	202228.723	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2669733.364	484727.289	1660488.570	17051514.599	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_RM_1-RN0649-3W-10JUL2017.jpg	W	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_RM_1-RN0649-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLOODWOOD_RM_1-RN0649-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FLYNN

NGS Name: FLYNN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9928](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	21	52 N	21 W	465845.74	930003.60	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 1 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** FLYNN 2017

5.5 MILES NORTHWEST OF FLOODWOOD, 5.65 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 215.05, 45.4 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Station Pair: WALLIN - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1264.302	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1264.243	.262		1168.475	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.777 12B = -95.768 09 = -95.699 03 = -95.561

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
46 58 45.73913	93 00 03.59521	362451.072	220619.895	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2649380.010	502949.112	1640167.476	17069755.223	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLYNN-DQ9928-3NE-07AUG2017.jpg	NE	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLYNN-DQ9928-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FLYNN-DQ9928-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FOSTER

NGS Name: FOSTER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1850](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	54 N	17 W	471008.28	922835.92	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** FOSTER 2017

IN COTTON, AT THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 38.95, 53.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 76.7 FEET SOUTH OF COUNTY ROAD 52, 22.5 FEET EAST OF OLD TRUNK HIGHWAY 53, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: GRYTAL MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1329.633	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1329.666	.262		1232.288	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.382 12B = -97.378 09 = -97.277 03 = -97.080

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 10 08.27935	92 28 35.92121	493371.962	289294.142	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
2779713.279	572710.089	1770543.479	17139315.681	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FOSTER-DR1850-3W-17OCT2017.jpg	W	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FOSTER-DR1850-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FOSTER-DR1850-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: FUNDY

NGS Name: FUNDY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9904](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	34	51 N	19 W	465115.75	924329.96	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 31 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: FUNDY 2017

10.2 MILES EAST-SOUTHEAST OF FLOODWOOD, 11.0 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 232.10, 72.8 FEET NORTH OF TRUNK HIGHWAY 2, 33.1 FEET EAST-SOUTHEAST OF A POWER POLE NUMBER GL90, 29.4 FEET SOUTH OF A FENCE LINE, 1.5 FEET SOUTH OF A WITNESS POST.

Station Pair: SAHA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1363.140	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1363.127	.262		1268.462	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.662 09 = -94.583 03 = -94.455

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
46 51 15.75167	92 43 29.95997	431192.614	174664.807	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2718500.170	457569.825	1709198.068	17024304.206	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FUNDY-DQ9904-3N-07AUG2017.jpg	N	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FUNDY-DQ9904-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/FUNDY-DQ9904-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: G 159

NGS Name: G 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0299](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	53 N	17 W	470512.00	922823.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1978)

Stamping: G 159 1935

3.25 MILES NORTH OF CANYON, 3.23 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.548	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.997	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -96.630 12B = -96.640 09 = -96.496 03 = -96.302

* No Horizontal Positions in the Database *



Mn/DOT Name: G 165

NGS Name: G 165

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0165](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	54 N	17 W	471006.67	922836.59	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1963	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1963) Stamping: G 165 1935

9.0 MILES NORTH OF CANYON, 9.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 152 IN CANYON.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1329.223	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1328.603	.007	1					VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -97.378 12B = -97.375 09 = -97.273 03 = -97.378

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 10 06.66634	92 28 36.59212			493325.547	289130.721	.131	3	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 10 06.66513	92 28 36.59488			493325.357	289130.598	.131	3	ADJUSTMENT	1986	17289

<u>NAD27</u>								<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 10 06.89600	92 28 35.91500					.100	3	CLASSICAL SURVEY	1986	10744
47 10 09.02400	92 28 35.05800					.100	3	CLASSICAL SURVEY	1963	USGS-HORZ

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>MN State Plane - North Zone</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>X</u>	<u>Y</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>			
2779668.244	572546.299			1770498.236	17139152.010	.131	3	ADJUSTMENT	1999	17648			

<u>NAD83(1986)</u>				<u>MN State Plane - North Zone</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>X</u>	<u>Y</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>			
2779668.054	572546.175			1770498.046	17139151.886	.131	3	ADJUSTMENT	1986	17289			

<u>NAD27</u>				<u>MN State Plane - North Zone</u>				<u>Project Info</u>			
<u>X</u>	<u>Y</u>			<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2155052.967	244485.542					.100	3	CLASSICAL SURVEY	1986	10744	
2155110.440	244701.609					.100	3	CLASSICAL SURVEY	1963	USGS-HORZ	



Mn/DOT Name: G 165 RESET

NGS Name: G 165 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0166](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/1004
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	54 N	17 W	471009.00	922835.00	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1963	2017	NOT FOUND	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1963) **Stamping:** G 165 RESET 1963

IN COTTON, IN THE SOUTHWEST QUADRANT OF THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52, AT THE NORTHEAST CORNER OF A SCHOOLYARD, 43.0 FEET WEST OF OLD TRUNK HIGHWAY 53, 91.20 FEET SOUTH OF STATION COTTON 2.

Station Notes

THE MARK IS ASSUMED REMOVED DUE TO DITCH WORK.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1329.643	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1329.640	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1328.757	.007	1					VERTICAL CONTROL SURVEY	1963	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1329.230	.262			1232.074	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.378 12B = -97.375 09 = -97.273 03 = -97.077

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
47 10 06.66634	92 28 36.59212			493325.547	289130.721	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
47 10 06.66513	92 28 36.59488			493325.355	289130.600	3.281		CLASSICAL SURVEY	1991 H1991

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
47 10 06.89600	92 28 35.91500					.100		CLASSICAL SURVEY	1950 UNK

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2779668.244	572546.299			1770498.236	17139152.010	.131	3	ADJUSTMENT	1999 17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2779668.054	572546.175			1770498.046	17139151.887	3.281		CLASSICAL SURVEY	1991 H1991

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2155052.980	244485.570					.100		CLASSICAL SURVEY	1950 UNK



Mn/DOT Name: G 271

NGS Name: G 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0691](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	52 N	18 W	465837.19	923548.49	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: G 271 1948

1.15 MILES WEST ON COUNTY ROAD 47 FROM THE POST OFFICE AT ALBORN, 29.0 FEET NORTH OF COUNTY ROAD 47, AT THE EAST END OF A SMALL S-CURVE, 5.0 FEET WEST OF A DIM FARM ROAD SOUTH EXTENDED, 15.5 FEET EAST OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1355.503	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1354.968	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1354.968	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1360.053	.262			1264.256	.197	2011	GPS - RTRN	2021	RTRN2021

Geoid Separations(ft): GEOID18 = -95.800 12B = -95.790 09 = -95.676 03 = -95.508

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 58 37.19237	92 35 48.49373			463350.628	219304.868	.131	3	GPS - RTRN	2021 RTRN2021

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2750282.489	502476.228			1741027.877	17069148.467	.131	3	GPS - RTRN	2021 RTRN2021



Mn/DOT Name: G 272

NGS Name: G 272

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	53 N	19 W	470222.89	924435.94	2	

NGS ACRN: SJ0541	Get Map
NGS Quad / Sta Num : 47092323/	
USGS Quad: MEADOWLANDS	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: G 272 1948

2.55 MILES SOUTHWEST OF MEADOWLANDS, 2.05 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 317.0 FEET SOUTH OF COUNTY ROAD 29 WEST, 220.0 FEET NORTH OF THE NORTHEAST CORNER OF A COUNTY ROAD 5 BRIDGE OVER THE WHITEFACE RIVER, 44.0 FEET EAST OF COUNTY ROAD 5, 28.0 FEET SOUTH OF A FENCE CORNER, 64.0 FEET SOUTH OF A POWER POLE, 19.0 FEET SOUTH OF A DIM ROAD EAST, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.696	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.086	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1265.086	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.483 12B = -96.476 09 = -96.384 03 = -96.214

* No Horizontal Positions in the Database *



Mn/DOT Name: G 273

NGS Name: G 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0716](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	32	52 N	20 W	465639.77	925430.47	2	C	1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 6 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001) Stamping: G 273 1948

0.9 MILE NORTH OF FLOODWOOD, 1.5 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, 0.4 MILE SOUTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 29, AT TRUNK HIGHWAY 73 MILEPOINT 44.6, 39.0 FEET WEST OF TRUNK HIGHWAY 73, 18.0 FEET NORTHWEST OF THE NORTH END OF A METAL CULVERT, 4.6 FEET WEST-NORTHWEST OF A POWER POLE, 25.0 FEET NORTH OF AN ENTRANCE, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1251.510	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1251.192	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1250.552	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1250.552	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1251.536	.262			1156.031	.197	2011	GPS - RTRN	2017	RTRN2017
				1155.906	.013	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1155.998	.013	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1251.441	.131			1156.054	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1251.441	.131			1156.054	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.521 12B = -95.505 09 = -95.433 03 = -95.311

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 39.77029	92 54 30.47386			385475.857	207708.229	.131	3	GPS - RTRN	2017	RTRN2017
46 56 39.76971	92 54 30.47432			385475.825	207708.170	.010		ADJUSTMENT	2012	GPS2800

<u>NAD83(2007)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 39.76979	92 54 30.47518			385475.765	207708.178	.010		ADJUSTMENT	2007	GPS2300

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 39.76958	92 54 30.47467			385475.800	207708.157	.033	C	ADJUSTMENT	2003	GPS1769
46 56 39.76958	92 54 30.47467			385475.801	207708.157	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672510.451	490229.918	1663271.681	17057011.253	.131	3	GPS - RTRN	2017	RTRN2017
2672510.419	490229.859	1663271.649	17057011.195	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672510.360	490229.867	1663271.589	17057011.203	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2672510.395	490229.845	1663271.625	17057011.182	.033	C	ADJUSTMENT	2003	GPS1769
2672510.395	490229.845	1663271.625	17057011.182	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_273-RN0716-3W-10JUL2017.jpg	W	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_273-RN0716-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_273-RN0716-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: G 275

NGS Name: G 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0483](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	11	54 N	20 W	471002.21	925107.57	2	3	1948	2020	POOR	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: G 275 1948

2.0 MILES WEST ON COUNTY ROAD 317 FROM THE JUNCTION OF COUNTY ROAD 317 AND COUNTY ROAD 5 AT TOIVOLA,
1.1 MILES EAST OF THE RAILROAD STATION, AT THE CROSSROADS, 33.0 FEET NORTH OF AN EAST-WEST ROAD, EAST OF A
CROSSROAD, 166.0 FEET WEST OF A FARM ROAD SOUTH, 1.5 FEET SOUTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1286.349	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1285.696	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1285.696	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1286.493	.262			1189.086	.197	2011	GPS - RTRN	2020	RTRN2020

Geoid Separations(ft): GEOID18 = -97.408 12B = -97.408 09 = -97.346 03 = -97.152

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
47 10 02.21018	92 51 07.57122			399971.889	288934.593	.131	3	GPS - RTRN	2020 RTRN2020

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2686328.382	571568.902			1677190.882	17138299.971	.131	3	GPS - RTRN	2020 RTRN2020



Mn/DOT Name: G 276

NGS Name: G 276

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0387](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	1	54 N	20 W	471053.70	924839.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=YES Vert=YES	YES		PROJECTS 1 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: G 276 1948

1.25 MILES NORTH OF THE HIGH SCHOOL AT TOIVOLA, AT THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 743,
85.8 FEET EAST OF A GUYED POWER POLE, 33.0 FEET WEST OF COUNTY ROAD 5, 34.0 FEET NORTH OF COUNTY ROAD 743,
9.9 FEET SOUTH OF A TELEPHONE PEDESTAL NUMBER B58, 0.2 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1290.572	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1290.572	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1290.572	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.899	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1289.899	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.549 12B = -97.546 09 = -97.480 03 = -97.293

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_276-SJ0387-3W-23MAY2007.jpg	W	May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_276-SJ0387-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_276-SJ0387-1-23MAY2007.jpg		May 23, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: G 279

NGS Name: G 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1319](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	6	55 N	21 W	471651.49	930249.50	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** G 279 1948

1.65 MILES NORTHWEST ON A RAILROAD FROM THE RAILROAD STATION AT SILICA, AT A ROAD CROSSING, 0.35 MILE SOUTHEAST OF RAILROAD MILEPOST 32, 50.0 FEET SOUTHEAST OF A GRAVEL ROAD, 69.0 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 4.0 FEET NORTH OF A RIGHT-OF-WAY FENCE, 59.0 FEET SOUTH OF A RAILROAD CROSSING SIGN, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

FOUND THE CONCRETE BASE BUT NO DISK.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1373.892	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1373.127	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT
1373.127	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1373.127	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.260 12B = -97.283 09 = -97.165 03 = -97.103

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/G_279-SJ1319-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: G 30

NGS Name: G 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0689](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	
NE	23	51 N	18 W	
	465351.00	923459.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974) Stamping: G 30 1934

2.8 MILES SOUTHWEST OF CULVER, AT THE JUNCTION OF COUNTY ROAD 31 AND COUNTY ROAD 866, IN A DITCH
BOTTOM, 20.0 FEET SOUTH OF A HIGHWAY.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1270.083	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1269.538	.016	2/0				UNKNOWN/APPROXIMATE		1992	UNCHECKD
1269.538	.007	1				VERTICAL CONTROL SURVEY		1960	L13 MINN

Geoid Separations(ft): GEOID18 = -95.019 12B = -95.016 09 = -94.911 03 = -94.744

* No Horizontal Positions in the Database *



Mn/DOT Name: GAIL MNDT

NGS Name: GAIL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1045](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	26	52 N	17 W	465721.29	922723.16	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999) Stamping: GAIL 1978

16.5 MILES NORTH OF CLOQUET, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 (THE JUNCTION IS 16.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 19.35, NEAR THE NORTHWEST CORNER OF A TRUNK HIGHWAY 33 BRIDGE OVER TRUNK HIGHWAY 53, 82.5 FEET NORTH-NORTHWEST OF TRUNK HIGHWAY 33, ON A CURVE, 142.5 FEET EAST-SOUTHEAST OF SOUTHBOUND TRUNK HIGHWAY 53, 56.93 FEET SOUTH-SOUTHWEST OF GAIL RM 1, 47.00 FEET EAST-SOUTHEAST OF GAIL RM 2, 1.0 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1348.984	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1348.951	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1348.947	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1348.862	.016	2				VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1348.603	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1349.059	.262		1253.721	.197	2011	GPS - RTRN	2017	RTRN2017
			1253.636	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1253.725	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1348.849	.131		1253.833	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1348.849	.131		1253.833	.066	1996	GPS - STATIC	2002	HTWIB
1348.849	.197		1253.741	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.344 12B = -95.338 09 = -95.213 03 = -95.016

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 21.29095	92 27 23.16246	498393.124	211580.282	.131	3	GPS - RTRN	2017	RTRN2017
46 57 21.29141	92 27 23.16207	498393.152	211580.328	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 21.29150	92 27 23.16295	498393.090	211580.338	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 21.29118	92 27 23.16281	498393.100	211580.305	.033	C	ADJUSTMENT	2003	GPS1848
46 57 21.29118	92 27 23.16281	498393.101	211580.305	.033	C	GPS - STATIC	2002	HTWIB
46 57 21.29243	92 27 23.15977	498393.311	211580.432	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 57 21.28635	92 27 23.16079	498393.240	211579.816	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 57 21.50159	92 27 22.47569			.100	2	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2785387.129	495046.403	1776108.176	17061673.256	.131	3	GPS - RTRN	2017	RTRN2017
2785387.155	495046.450	1776108.203	17061673.302	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2785387.094	495046.458	1776108.142	17061673.311	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2785387.104	495046.426	1776108.152	17061673.279	.033	C	ADJUSTMENT	2003	GPS1848
2785387.104	495046.426	1776108.152	17061673.279	.033	C	GPS - STATIC	2002	HTWIB
2785387.314	495046.555	1776108.362	17061673.407	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2785387.248	495045.938	1776108.296	17061672.791	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2160772.874	166984.050			.100	2	CLASSICAL SURVEY	1980	16254

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL-RN1045-3N-02AUG2017.jpg	N	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL-RN1045-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL-RN1045-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GAIL MNDT AZ MK

NGS Name: GAIL AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1050](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	35	52 N	17 W	465709.43	922711.71	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	STEEL ROD IMBED IN MON

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

AZIMUTH MARK DISK

Mon. Agency

MNDT

Description: (1978)

Stamping: GAIL 1978

6.2 MILES SOUTH OF THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 AT CANYON, 0.3 MILE SOUTHEAST ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 IN INDEPENDENCE, 62.2 FEET SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 23.8, 92.8 FEET SOUTHEAST OF A TELEPHONE CABLE MARKER NUMBER B 153 LP7, 4.6 FEET NORTHWEST OF A POWER POLE WITH A GUY WIRE, 3.2 FEET NORTHEAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1360.840	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1360.831	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1360.525	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1360.266	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1360.529	.262		1265.447	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.302 12B = -95.298 09 = -95.174 03 = -94.977

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 57 09.42903	92 27 11.71150	499187.475	210378.385	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 57 09.42305	92 27 11.71270	499187.392	210377.779	.131	3	ADJUSTMENT	1986	17289
46 57 09.42305	92 27 11.71270	499187.391	210377.778	.131	3	CLASSICAL SURVEY	1978	6911-18

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 57 09.63835	92 27 11.02781			.100	3	CLASSICAL SURVEY	1980	16254
46 57 09.63835	92 27 11.02781			.100	3	CLASSICAL SURVEY	1978	H1978



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2786191.525	493851.273	1776910.588	17060477.484	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2786191.447	493850.667	1776910.509	17060476.878	.131	3	ADJUSTMENT	1986	17289
2786191.447	493850.667	1776910.509	17060476.878	.131	3	CLASSICAL SURVEY	1978	6911-18

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2161577.086	165788.796			.100	3	CLASSICAL SURVEY	1980	16254
2161577.085	165788.791			.100	3	CLASSICAL SURVEY	1978	H1978



Mn/DOT Name: GAIL RM 1

NGS Name: GAIL RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1047](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	26	52 N	17 W	465721.72	922722.63	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: GAIL NO 1 1978

16.5 MILES NORTH OF CLOQUET, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 (THE JUNCTION IS 16.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 19.35, 58.0 FEET NORTHWEST OF NORTHBOUND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 19.35, 57.0 FEET NORTH-NORTHEAST OF STATION GAIL MNDT, 72.6 FEET EAST-NORTHEAST OF GAIL RM 2, 1.0 FOOT EAST-SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1350.027	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1349.987	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1349.974	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1349.974	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1349.715	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1349.938	.262		1254.601	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.344 12B = -95.341 09 = -95.213 03 = -95.019

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Determination Method	Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 57 21.71747	92 27 22.62873	498430.155	211623.494	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Determination Method	Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2785423.793	495089.923	1776144.887	17061716.708	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_1-RN1047-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_1-RN1047-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_1-RN1047-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GAIL RM 2

NGS Name: GAIL RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1046](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	52 N	17 W	465721.35	922723.79	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

REFERENCE MARK DISK

Mon. Agency

MNDT

Description: (1978)

Stamping: GAIL NO 2 1978

16.5 MILES NORTH OF CLOQUET, AT THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 (THE JUNCTION IS 16.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 19.35, 122.0 FEET NORTH-NORTHWEST OF NORTHBOUND TRUNK HIGHWAY 33, 47.0 FEET WEST-SOUTHWEST OF STATION GAIL MNDT, 72.6 FEET WEST-SOUTHWEST OF GAIL RM 1, 1.0 FEET SOUTH-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1347.829	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1347.753	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1347.753	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1347.753	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1347.494	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.344 12B = -95.341 09 = -95.213 03 = -95.019

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_2-RN1046-3N-02AUG2017.jpg	N	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_2-RN1046-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GAIL_RM_2-RN1046-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GARG MNDT

NGS Name: GARG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9115](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	54 N	21 W	471133.64	930120.34		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 70 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: GARG 2001

15.0 MILES SOUTH OF HIBBING, 15.2 FEET SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 63.5, 62.4 FEET WEST OF TRUNK HIGHWAY 73, 54.3 FEET NORTH OF COUNTY ROAD 18, 2.9 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1319.059	.131		1221.946	.009	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
1319.026	.131		1222.035	.066	2007	HORIZONTAL ADJUSTMENT		2011	GPS2802
1319.059	.131		1222.081	.066	1996	GPS - STATIC		2010	HASCA
			1222.035	.066	2007	GPS - STATIC		2010	HASCA
			1222.035	.010	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1319.059	.131		1222.081	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1931
1319.059	.131		1222.081	.066	1996	GPS - STATIC		2003	HSTLO

Geoid Separations(ft): GEOID18 = -97.073 12B = -97.077 09 = -97.011 03 = -96.873

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 11 33.63950	93 01 20.33897	357697.510	298461.538	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 11 33.63932	93 01 20.33979	357697.454	298461.520	.033	C	ADJUSTMENT	2011	GPS2802
47 11 33.63932	93 01 20.33979	357697.454	298461.520	.033	C	GPS - STATIC	2010	HASCA
47 11 33.63932	93 01 20.33979	357697.454	298461.520	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 11 33.63915	93 01 20.33951	357697.473	298461.503	.033	C	GPS - STATIC	2010	HASCA
47 11 33.63915	93 01 20.33951	357697.473	298461.503	.033	C	ADJUSTMENT	2003	GPS1931
47 11 33.63915	93 01 20.33951	357697.473	298461.503	.033	C	GPS - STATIC	2003	HSTLO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2643980.362	580742.864	1634870.396	17147525.681	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2643980.306	580742.845	1634870.339	17147525.663	.033	C	ADJUSTMENT	2011	GPS2802
2643980.306	580742.845	1634870.339	17147525.663	.033	C	GPS - STATIC	2010	HASCA
2643980.306	580742.845	1634870.339	17147525.663	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2643980.325	580742.828	1634870.359	17147525.645	.033	C	GPS - STATIC	2010	HASCA
2643980.325	580742.828	1634870.359	17147525.645	.033	C	ADJUSTMENT	2003	GPS1931
2643980.325	580742.828	1634870.358	17147525.645	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG-DF9115-3W-19NOV2009.jpg	W	Nov 19, 2009
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG-DF9115-2-19NOV2009.jpg		Nov 19, 2009
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG-DF9115-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GARG MNDT RESET

NGS Name: GARG RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5147](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	4	54 N	21 W	471133.64	930120.34	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 70 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: GARG 2001 2017

15.0 MILES SOUTH OF HIBBING, 15.2 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 63.5, 62.4 FEET WEST OF TRUNK HIGHWAY 73, 54.3 FEET NORTH OF COUNTY ROAD 18, 2.9 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj		Year	Reference	
1318.892	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj		Year	Reference	
1318.954	.262			1221.877	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.073 12B = -97.077 09 = -97.011 03 = -96.873

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 11 33.63925	93 01 20.33801	357697.577	298461.512	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2643980.429	580742.839	1634870.462	17147525.655	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG_RESET-DR5147-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG_RESET-DR5147-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GARG_RESET-DR5147-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOW 2 MNDT

NGS Name: GOW 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4244](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	51 N	20 W	465200.92	925100.81	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1977	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2003)

Stamping: GOW 2 1977

4.75 MILES SOUTHEAST OF FLOODWOOD, 4.65 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 225.75, 77.0 FEET NORTHWEST OF TRUNK HIGHWAY 2, 59.4 FEET NORTHWEST OF A CABLE MARKER POST, 67.6 FEET SOUTH OF STATION 6907 T, 2.7 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1253.455	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1253.439	.262		1158.630	.197	2011	GPS - RTRN	2017	RTRN2017
			1158.646	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1158.735	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1253.311	.131		1158.833	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1253.311	.131		1158.833	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.826 12B = -94.810 09 = -94.724 03 = -94.609

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 00.92198	92 51 00.80759	399879.944	179376.276	.131	3	GPS - RTRN	2017	RTRN2017
46 52 00.92184	92 51 00.80807	399879.911	179376.262	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 00.92195	92 51 00.80891	399879.852	179376.274	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 00.92155	92 51 00.80853	399879.879	179376.233	.033	C	ADJUSTMENT	2004	GPS1957
46 52 00.92155	92 51 00.80853	399879.879	179376.233	.033	C	GPS - STATIC	2003	HGRAND



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687149.699	462019.679	1677867.453	17028793.964	.131	3	GPS - RTRN	2017	RTRN2017
2687149.665	462019.664	1677867.420	17028793.950	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687149.607	462019.675	1677867.361	17028793.961	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687149.633	462019.635	1677867.387	17028793.921	.033	C	ADJUSTMENT	2004	GPS1957
2687149.633	462019.635	1677867.387	17028793.921	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOW_2-DG4244-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOW_2-DG4244-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOW_2-DG4244-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOW MNDT

NGS Name: GOW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0668](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1068
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>					
NE	34	51 N	20 W	465200.55	925100.75	2	2					
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>					
1974	2017	NOT FOUND	Horz=NO Vert=NO	YES		FLUSH	STEEL ROD IMBED IN MON					

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1974) Stamping: GOW 1974

5.2 MILES SOUTHEAST OF FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 225.75, 4.8 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, 51.3 FEET NORTHEAST OF TRUNK HIGHWAY 2, 107.5 FEET SOUTH OF A WITNESS POST, 6.4 FEET SOUTHWEST OF A WITNESS POST, 106.37 FEET SOUTH OF STATION 6907 T, 102.31 FEET NORTHEAST OF GOW MNDT RM 2.

Station Notes

THE GEODETIC UNIT COULD NOT FIND THE MARK ON 8-29-01 BUT FOUND MARK GOW 2 MNDT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1255.073	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1254.466	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1255.083	.197			1160.424	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.823 12B = -94.810 09 = -94.724 03 = -94.606

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 52 00.54976	92 51 00.74972			399883.773	179338.544	.066	2	ADJUSTMENT	1999 17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 52 00.54318	92 51 00.75145			399883.649	179337.878	.066	2	ADJUSTMENT	1986 17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 52 00.74348	92 51 00.03545					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2687153.842	461981.980			1677871.544	17028756.276	.066	2	ADJUSTMENT	1999 17648
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2687153.723	461981.313			1677871.425	17028755.610	.066	2	ADJUSTMENT	1986 17289
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Reference</u>
<u>X</u>	<u>Y</u>								
2062538.666	133917.798					.100	2	CLASSICAL SURVEY	1977 15924



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>		
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOW-RN0668-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOW MNDT RM 2

NGS Name: GOW RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0669](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	34	51 N	20 W	465159.73	925101.61	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: GOW NO 2 1974

5.2 MILES SOUTHEAST OF FLOODWOOD, 4.8 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, 0.15 MILE NORTHWEST OF GOWAN, 0.15 MILE NORTHWEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 225.8, 49.8 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 10.5 FEET NORTH OF A POWER POLE NUMBER 7, 102.3 FEET SOUTHWEST OF STATION GOW MNDT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1258.482	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1257.871	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.823 12B = -94.806 09 = -94.721 03 = -94.606

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOW_RM_2-RN0669-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOWAN

NGS Name: GOWAN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0681](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1013
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>				
NE	1	50 N	20 W	465104.22	924851.94	2	2				
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>		<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>			
1952	2017	GOOD	Horz=NO Vert=YES		YES		FLUSH	BAR MAG IN DRILL HOLE			

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2001) Stamping: GOWAN 1952

2.0 MILES SOUTHEAST OF GOWAN, 1.95 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN, THEN 0.2 MILE SOUTH ON AN ENTRANCE TO A CAMPGROUND, THEN 0.1 MILE WEST ON A TRAIL, 66.24 FEET SOUTH OF GOWAN RM 2, 61.96 FEET NORTHWEST OF GOWAN RM 1, 2.9 FEET EAST OF A WITNESS POST.

Station Notes

GOWAN RM 1 AND GOWAN RM 2 WERE NOT LOOKED FOR IN 2001.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>									<u>Project Info</u> <u>Year</u> <u>Reference</u>	
<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>							
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>				
1314.932	.016	2/1				VERTICAL ADJUSTMENT				
1314.919	.016	2/0				VERTICAL ADJUSTMENT			2021	00000963
									1991	00000025
<u>NGVD29</u>									<u>Project Info</u> <u>Year</u> <u>Reference</u>	
<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>							
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>				
1314.295	.016	2				VERTICAL CONTROL SURVEY				
									1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>								
Orthometric Height			Ellipsoid (NAD83)			Project Info		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1314.925	.197		1220.421	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.659 09 = -94.570 03 = -94.455

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>							
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 51 04.21732	92 48 51.93674	408808.256	173587.445	.066	2	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>							
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 51 04.20982	92 48 51.93839	408808.138	173586.686	.066	2	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 51 04.40900	92 48 51.22200			.100	2	CLASSICAL SURVEY	1954	10724	

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>							
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2696125.855	456305.584	1686832.029	17023070.506	.066	2	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>							
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2696125.744	456304.824	1686831.916	17023069.746	.066	2	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2071510.994	128241.245			.100	2	CLASSICAL SURVEY	1954	10724	



Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN-RN0681-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN-RN0681-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN-RN0681-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOWAN AZ MK

NGS Name: GOWAN AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0679](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1013
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	1	50 N	20 W	465107.54	924900.50	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2001)

Stamping: GOWAN 1952

1.75 MILES SOUTHEAST OF GOWAN, 1.85 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 227.7, 104.0 FEET SOUTH TRUNK HIGHWAY 2, 49.5 FEET SOUTH-SOUTHEAST OF A CABLE MARKER, 12.6 FEET SOUTHEAST OF A POWER POLE NUMBER 8, 10.0 FEET SOUTHEAST OF A RIGHT-OF-WAY AND AN ALIGNMENT POST, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.924	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1297.852	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.225	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1298.075	.262		1203.410	.197	2011	GPS - RTRN	2017	RTRN2017
			1203.219	.017	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1203.311	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1297.832	.131		1203.446	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1297.865	.131		1203.446	.066	1996	GPS - STATIC	2003	HGRAND
1297.865	.197		1203.347	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.665 09 = -94.580 03 = -94.465

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 07.53797	92 49 00.49987	408214.618	173926.659	.131	3	GPS - RTRN	2017	RTRN2017
46 51 07.53862	92 49 00.49927	408214.660	173926.725	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 07.53873	92 49 00.50013	408214.600	173926.736	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 07.53829	92 49 00.49972	408214.628	173926.692	.033	C	ADJUSTMENT	2004	GPS1957
46 51 07.53829	92 49 00.49972	408214.628	173926.692	.033	C	GPS - STATIC	2003	HGRAND
46 51 07.54012	92 49 00.50278	408214.417	173926.878	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 07.53307	92 49 00.50395	408214.332	173926.164	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 07.73234	92 48 59.78761			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2695529.415	456639.831	1686236.299	17023405.396	.131	3	GPS - RTRN	2017	RTRN2017
2695529.456	456639.897	1686236.341	17023405.462	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2695529.396	456639.908	1686236.281	17023405.473	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2695529.425	456639.863	1686236.310	17023405.429	.033	C	ADJUSTMENT	2004	GPS1957
2695529.425	456639.863	1686236.310	17023405.429	.033	C	GPS - STATIC	2003	HGRAND
2695529.212	456640.048	1686236.097	17023405.613	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2695529.133	456639.333	1686236.017	17023404.899	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2070914.361	128575.760			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_AZ_MK-RN0679-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_AZ_MK-RN0679-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_AZ_MK-RN0679-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOWAN RM 1

NGS Name: GOWAN RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0683](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	50 N	20 W	465103.95	924851.10	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1974)

Stamping: GOWAN NO 1 1952

1.9 MILES SOUTHEAST OF GOWAN, 1.95 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 227.85, THEN 0.2 MILE SOUTH ON AN ENTRANCE TO A CAMPGROUND, THEN 0.1 MILE WEST ALONG A TRAIL, 0.6 FOOT NORTH OF AN EAST-WEST FENCE LINE, 21.2 FEET WEST OF A GATE POST, 62.2 FEET EAST-SOUTHEAST OF STATION GOWAN, 105.2 FEET SOUTHEAST OF GOWAN RM 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1315.325	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1315.293	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1314.666	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.655 09 = -94.570 03 = -94.455

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_1-RN0683-3E-24JUL2017.jpg	E	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_1-RN0683-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_1-RN0683-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GOWAN RM 2

NGS Name: GOWAN RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0682](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	50 N	20 W	465104.87	924851.89	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1974)

Stamping: GOWAN NO 2 1952

1.9 MILES SOUTHEAST OF GOWAN, 1.95 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 227.85, THEN 0.2 MILE SOUTH ON AN ENTRANCE OF A CAMPGROUND, THEN 0.1 MILE WEST ALONG A TRAIL, 66.7 FEET NORTH OF STATION GOWAN, 105.2 FEET NORTHWEST OF GOWAN RM 1.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1313.957	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1313.911	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1313.285	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1314.059	.262			1219.400	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.659 09 = -94.573 03 = -94.458

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 04.86837	92 48 51.88743			408811.990	173653.392	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2696129.039	456371.559			1686835.299	17023136.446	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_2-RN0682-3S-24JUL2017.jpg	S	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_2-RN0682-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GOWAN_RM_2-RN0682-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GRAND LAKE ST JOHNS LUTH CH

NGS Name: GRAND LAKE ST JOHNS LUTH CH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	51 N	17 W	465152.00	922813.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type

SEE DESCRIPTIVE TEXT

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1978)

Stamping:

10.1 MILES NORTH OF CLOQUET, 0.60 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), THEN 1.40 MILES NORTH ON COUNTY ROAD 874 (INDEPENDENCE ROAD), 75.0 FEET WEST OF COUNTY ROAD 874.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.514 12B = -94.508 09 = -94.406 03 = -94.219

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GRAND_LAKE_ST_JOHNS_LUTH_CH-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GREAT MNDT

NGS Name: GREAT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0757](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1058
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	31	51 N	18 W	465120.71	924029.25	2	2	1974	1981	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1981) Stamping: GREAT 1974

IN BROOKSTON, 0.3 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND STEVENS ROAD IN BROOKSTON.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1348.042	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1347.419	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1348.029	.197			1253.531	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.672 09 = -94.586 03 = -94.445

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 20.70852	92 40 29.25144			443754.202	175126.988	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 20.70200	92 40 29.25317			443754.080	175126.327	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 51 20.89934	92 40 28.55260					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2731057.297	458137.042			1721750.410	17024854.173	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2731057.181	458136.381			1721750.292	17024853.512	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2106442.365	130072.697					.100	2	CLASSICAL SURVEY	1977 15924



Mn/DOT Name: GRYTAL MNDT

NGS Name: GRYTAL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6504](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	10	54 N	17 W	471035.12	922838.42	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1992) **Stamping:** GRYTAL 1992

9.75 MILES NORTH-NORTHEAST FROM CANYON, 0.5 MILE NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 39.45, 59.0 FEET EAST-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 10.0 FEET SOUTH-SOUTHEAST OF A DRIVEWAY, 102.0 FEET SOUTH OF A POWER POLE, 46.1 FEET WEST OF A RIGHT-OF-WAY POST, 10.9 FEET NORTH-NORTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1326.520	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702	
1326.520	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
				1229.076	.018	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1229.164	.019	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1326.244	.131			1229.194	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848	
1326.244	.131			1229.194	.066	1996	GPS - STATIC	2002	HTWIB	

Geoid Separations(ft): GEOID18 = -97.444 12B = -97.441 09 = -97.342 03 = -97.145

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 10 35.11552	92 28 38.41600			493200.523	292013.362	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 10 35.11563	92 28 38.41691			493200.461	292013.373	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 10 35.11537	92 28 38.41665			493200.478	292013.346	.033	C	ADJUSTMENT	2003	GPS1848
47 10 35.11537	92 28 38.41665			493200.480	292013.346	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 10 35.11474	92 28 38.41805			493200.382	292013.281	.033	C	GPS - STATIC	1993	H1993



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2779519.013	575427.510	1770352.989	17142032.413	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2779518.950	575427.521	1770352.926	17142032.424	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2779518.969	575427.494	1770352.944	17142032.398	.033	C	ADJUSTMENT	2003	GPS1848
2779518.969	575427.494	1770352.945	17142032.398	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2779518.872	575427.430	1770352.848	17142032.333	.033	C	GPS - STATIC	1993	H1993



Mn/DOT Name: GRYTAL MNDT RESET

NGS Name: GRYTAL RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1849](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	54 N	17 W	471035.11	922838.41	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: GRYTAL 1992 2107

IN COTTON, 0.5 MILE NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 39.45, 59.0 FEET EAST-NORTHEAST OF NORTHBOUND TRUNK HIGHWAY 53, 46.1 FEET WEST OF A RIGHT-OF-WAY POST, 10.0 FEET SOUTH-SOUTHEAST OF DRIVEWAY NUMBER 9242, 4.8 FEET NORTH OF A WITNESS POST.

Station Pair: FOSTER - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1326.444	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1326.484	.262			1229.043	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.444 12B = -97.441 09 = -97.342 03 = -97.145

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference	
47 10 35.11408	92 28 38.41494	493200.597	292013.216	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year
2779519.088	575427.365	1770353.063	17142032.268	.131	3	GPS - RTRN	2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GRYTAL_RESET-DR1849-3E-14SEP2017.jpg	E	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GRYTAL_RESET-DR1849-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GRYTAL_RESET-DR1849-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: GUAIL MNDT

NGS Name: GUAIL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9117](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	25	53 N	21 W	470227.73	925613.72	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: GUAIL 2001

8.5 MILES NORTH OF FLOODWOOD, 8.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 51.75, 50.5 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 119.0 FEET NORTH-NORTHWEST OF A DRIVEWAY, 112.9 FEET NORTHWEST OF A POWER POLE, 28.3 FEET EAST-NORTHEAST OF THE END OF A GUARD RAIL, 13.5 FEET SOUTH-SOUTHEAST OF AN ENTRANCE, 2.3 FEET NORTH-NORTHEAST OF A WITNESS POST.

Station Pair: ANDREW - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.226	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.173	.262		1151.776	.197	2011	GPS - OPUS	2020	GPSBM
1248.265	.262		1151.868	.197	2011	GPS - OPUS	2020	GPSBM
1248.223	.262		1151.838	.197	2011	GPS - RTRN	2020	RTRN2020
1248.108	.262		1151.723	.197	2011	GPS - RTRN	2017	RTRN2017
			1151.828	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1151.920	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1248.226	.131		1151.966	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1248.226	.131		1151.966	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -96.401 12B = -96.384 09 = -96.342 03 = -96.161

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 27.73417	92 56 13.72060	378530.873	243006.653	.131	3	GPS - OPUS	2020	GPSBM
47 02 27.73403	92 56 13.72002	378530.913	243006.639	.131	3	GPS - OPUS	2020	GPSBM
47 02 27.73403	92 56 13.71933	378530.960	243006.638	.131	3	GPS - RTRN	2020	RTRN2020
47 02 27.73326	92 56 13.71982	378530.926	243006.561	.131	3	GPS - RTRN	2017	RTRN2017
47 02 27.73445	92 56 13.72004	378530.912	243006.681	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 27.73449	92 56 13.72094	378530.849	243006.686	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 27.73431	92 56 13.72063	378530.871	243006.667	.033	C	ADJUSTMENT	2003	GPS1931
47 02 27.73431	92 56 13.72063	378530.871	243006.667	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2665272.262	525467.595	1656082.505	17092243.920	.131	3	GPS - OPUS	2020	GPSBM
2665272.302	525467.581	1656082.545	17092243.906	.131	3	GPS - OPUS	2020	GPSBM
2665272.350	525467.581	1656082.593	17092243.906	.131	3	GPS - RTRN	2020	RTRN2020
2665272.316	525467.503	1656082.559	17092243.828	.131	3	GPS - RTRN	2017	RTRN2017
2665272.301	525467.624	1656082.543	17092243.948	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2665272.238	525467.628	1656082.481	17092243.952	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2665272.260	525467.609	1656082.503	17092243.934	.033	C	ADJUSTMENT	2003	GPS1931
2665272.260	525467.609	1656082.503	17092243.934	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GUAIL-DF9117-3E-07JUL2020.jpg	E	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GUAIL-DF9117-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/GUAIL-DF9117-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: H 159

NGS Name: H 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0314](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	53 N	17 W	470221.86	922644.35	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1953)

Stamping: H 159 1935

1.2 MILES EAST OF THE CANYON POST OFFICE, 18.0 FEET SOUTH OF COUNTY ROAD 132 (HARRIS ROAD), AT THE HIGH POINT, 90.0 FEET EAST OF A FARM ENTRANCE, IN A BARNYARD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1368.573	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1368.078	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -96.102 12B = -96.105 09 = -95.964 03 = -95.771

* No Horizontal Positions in the Database *



Mn/DOT Name: H 163

NGS Name: H 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0160](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	55 N	17 W	471542.00	922853.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	NOT FOUND	Horz=NO Vert=NO	NO			STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1972)

Stamping: H 163 1935

6.2 MILES NORTH OF A SCHOOL IN COTTON, 45.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 300.0 FEET WEST OF A FARMHOUSE, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1379.912	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1379.912	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1379.912	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1379.216	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1379.216	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.920 12B = -97.916 09 = -97.857 03 = -97.684

* No Horizontal Positions in the Database *



Mn/DOT Name: H 165

NGS Name: H 165

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0282](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	11	54 N	17 W	471010.00	922730.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1992	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935)

Stamping: H 165 1935

0.9 MILE EAST OF A COTTON CHURCH, 0.3 MILE EAST OF THE WHITEFACE RIVER, 27.0 FEET NORTH OF COUNTY ROAD 52,
18.0 FEET EAST OF A GATE, AT A FENCE, IN THE FRONT YARD OF A FARMHOUSE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1325.286	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1324.676	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.339 12B = -97.332 09 = -97.237 03 = -97.037

* No Horizontal Positions in the Database *



Mn/DOT Name: H 271

NGS Name: H 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0692](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	21	52 N	18 W	465838.96	923704.92	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2021	GOOD	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** H 271 1948

2.15 MILES WEST ON COUNTY ROAD 47 FROM THE POST OFFICE AT ALBORN, AT THE JUNCTION OF COUNTY ROAD 47 (NORTH AND EAST) AND COUNTY ROAD 166 (WEST), 81.0 FEET SOUTH OF COUNTY ROAD 166, 18.0 FEET EAST OF A ROAD SOUTH, 56.0 FEET SOUTH OF A FENCE CORNER, 1.0 FOOT WEST OF A FENCE LINE, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1369.613	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1369.069	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1369.069	.033	3					VERTICAL CONTROL SURVEY	1967	USGS-VERT
1369.069	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1369.758	.262			1273.944	.197	2011	GPS - RTRN	2021	RTRN2021

Geoid Separations(ft): GEOID18 = -95.813 12B = -95.800 09 = -95.692 03 = -95.525

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>									
Geodetic Position		St Louis County - South Zone				Project Info			
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 58 38.96441	92 37 04.92234	458050.938	219495.054	.131	3	GPS - RTRN	2021	RTRN2021	

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15					Project Info		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2744981.627	502621.987	1735729.356	17069301.390	.131	3	GPS - RTRN	2021	RTRN2021	



Mn/DOT Name: H 272

NGS Name: H 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0540](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	22	53 N	19 W	470318.18	924437.02	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO	CO RD		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
WALL	BENCH MARK DISK	NGS

Description: (1948)

Stamping: H 272 1948

1.5 MILES SOUTHWEST OF MEADOWLANDS, 1.0 MILE SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, IN THE NORTH END OF THE EAST HEADWALL OF A COUNTY ROAD 5 BOX CULVERT, 28.0 FEET NORTH OF A ROAD EAST, 17.0 FEET EAST OF COUNTY ROAD 5.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1274.696	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1274.082	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1274.082	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.630 12B = -96.621 09 = -96.535 03 = -96.358

* No Horizontal Positions in the Database *



Mn/DOT Name: H 273

NGS Name: H 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0717](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	29	52 N	20 W	465713.99	925404.24	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1999) Stamping: H 273 1948

1.5 MILES NORTH OF FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND A ROAD WEST, AT TRUNK HIGHWAY 73 MILEPOINT 45.3, 73.0 FEET WEST OF TRUNK HIGHWAY 73, 31.0 FEET NORTH OF RUDOLPH ROAD, 44.0 FEET WEST OF A POWER POLE, 40.0 FEET WEST OF A FENCE CORNER, 2.5 FEET SOUTH OF A FENCE, 0.8 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.819	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1252.780	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.137	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1252.137	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.617 12B = -95.600 09 = -95.531 03 = -95.400

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/H_273-RN0717-3N-10JUL2017.jpg	N	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/H_273-RN0717-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/H_273-RN0717-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: H 275

NGS Name: H 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0661](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	17	51 N	20 W	465412.00	925325.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: H 275 1948

2.1 MILES SOUTHEAST FROM FLOODWOOD, 2.1 MILES SOUTHEAST ALONG THE GREAT NORTHERN RAILWAY FROM THE STATION AT FLOODWOOD, 0.4 MILE WEST OF MILEPOST 73, AT A PUBLIC ROAD CROSSING, 219.0 FEET NORTHWEST OF A 36.0-INCH DIAMETER CONCRETE PIPE CULVERT NUMBER 73-37, 46.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST TRACK, 61.0 FEET NORTH OF THE ROAD, 62.5 FEET NORTHWEST OF THE CROSSING WARNING SIGN, 2.0 FEET SOUTHWEST OF A RIGHT-OF-WAY FENCE LINE, 21.5 FEET SOUTHEAST OF A TELEPHONE POLE NUMBER 7 AND 4.0 FEET NORTHEAST OF BEING IN LINE WITH THE ROW OF POLES, 2.0 FEET NORTHWEST OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1267.662	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025	

Geoid Separations(ft): GEOID18 = -95.151 12B = -95.131 09 = -95.049 03 = -94.941

* No Horizontal Positions in the Database *



Mn/DOT Name: H 276

NGS Name: H 276

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0386](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	31	55 N	19 W	471145.80	924836.90	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=NO Vert=YES	NO		PROJECTS 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: H 276 1948

2.25 MILES NORTH OF A SCHOOL AT TOIVOLA, 0.5 MILE NORTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND A ROAD EAST, 52.0 FEET EAST OF COUNTY ROAD 5, 17.0 FEET NORTH OF A DIM ENTRANCE EAST, 81.5 FEET NORTH-NORTHEAST OF A POWER POLE, 11.0 FEET SOUTHEAST OF A TELEPHONE PEDESTAL, 6.2 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.616	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1297.616	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1297.583	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1296.904	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1296.904	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.608 12B = -97.611 09 = -97.542 03 = -97.362

* No Horizontal Positions in the Database *



Mn/DOT Name: H 279

NGS Name: H 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1320](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	5	55 N	21 W	471622.84	930203.81	1	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	DESTROYED	Horz=NO Vert=NO	YES	RR		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	BENCH MARK DISK	NGS

Description: (1948)

Stamping: H 279 1948

0.85 MILE NORTHWEST ON A RAILROAD FROM THE RAILROAD STATION AT SILICA, 0.15 MILE SOUTHEAST OF RAILROAD MILEPOST 31, IN THE NORTHEAST END OF THE SOUTHEAST ABUTMENT OF A RAILROAD BRIDGE, 8.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF A RAILROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1344.682	.007	1				VERTICAL CONTROL SURVEY	1993	POSTED

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1343.924	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1343.924	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.260 12B = -97.283 09 = -97.168 03 = -97.096

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/H_279-SJ1320-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: H 28

NGS Name: H 28

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	51 N	17 W	465134.00	922640.00	2	

NGS ACRN:	RN0054	Get Map
NGS Quad / Sta Num :	46092143/	
USGS Quad:	SAGINAW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2009	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: H 28 1934

AT SAGINAW, 12 RAILS WEST ON A RAILROAD FROM THE RAILROAD STATION, 10 RAILS WEST OF THE RAILROAD JUNCTION, 2 RAILS EAST OF A ROAD CROSSING, 30.0 FEET NORTH OF THE NORTH TRACK OF A RAILROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.279	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.865	.007	1				VERTICAL CONTROL SURVEY	1971	L3629
1353.865	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -94.403 12B = -94.390 09 = -94.291 03 = -94.101

* No Horizontal Positions in the Database *



Mn/DOT Name: H 30

NGS Name: H 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0688](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	22	51 N	18 W	465348.00	923609.00	2		1934	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: H 30 1934

2.0 MILES NORTH ON COUNTY ROAD 31 FROM THE JUNCTION OF COUNTY ROAD 31 AND A RAILROAD IN BROOKSTON,
35.5 FEET EAST OF COUNTY ROAD 31, 32.0 FEET SOUTH OF A WEST ENTRANCE TO A TOWN HALL AND A CEMETERY, 25.0
FEET SOUTHEAST OF THE SOUTH END OF A 15.0 INCH DIAMETER METAL CULVERT, 14.6 FEET SOUTHEAST OF A
TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1298.403	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1297.855	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1297.855	.007	1				VERTICAL CONTROL SURVEY	1960	L13 MINN

Geoid Separations(ft): GEOID18 = -95.033 12B = -95.033 09 = -94.928 03 = -94.767

* No Horizontal Positions in the Database *



Mn/DOT Name: HALD MNDT

NGS Name: HALD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9554](#)

[Get Map](#)

NGS Quad / Sta Num : 46092444/

USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	20	51 N	20 W	465255.39	925440.13	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type

ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (1999)

Stamping: HALD 1999

2.7 MILES SOUTH OF FLOODWOOD, 2.7 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 40.25, 48.0 FEET EAST OF TRUNK HIGHWAY 73, 14.0 FEET NORTH OF AN ENTRANCE, 59.8 FEET NORTH-NORTHWEST OF A POWER POLE, 2.1 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.102	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1289.102	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1194.164	.016	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1194.256	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1289.105	.131		1194.332	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1289.105	.131		1194.332	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.944 12B = -94.931 09 = -94.842 03 = -94.737

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 55.38546	92 54 40.13309	384671.892	184978.070	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 55.38556	92 54 40.13396	384671.832	184978.081	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 52 55.38524	92 54 40.13352	384671.862	184978.048	.033	C	ADJUSTMENT	2003	GPS1769
46 52 55.38524	92 54 40.13352	384671.862	184978.049	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671895.774	467494.485	1662627.480	17034286.437	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671895.714	467494.495	1662627.419	17034286.447	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671895.744	467494.463	1662627.450	17034286.415	.033	C	ADJUSTMENT	2003	GPS1769
2671895.744	467494.463	1662627.450	17034286.415	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: HALD MNDT RESET

NGS Name: HALD RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5176](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	20	51 N	20 W	465255.39	925440.13	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 7 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: HALD 1999 2017

2.7 MILES SOUTH OF FLOODWOOD, 2.7 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 40.25, 48.0 FEET EAST OF TRUNK HIGHWAY 73, 14.0 FEET NORTH OF DRIVEWAY NUMBER 5122, 2.1 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1288.941	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
1288.885	.262		1193.954	.197	2011	GPS - RTRN			2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.944 12B = -94.931 09 = -94.842 03 = -94.737

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 52 55.38597	92 54 40.13301	384671.898	184978.122	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
2671895.780	467494.537	1662627.485	17034286.489	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HALD_RESET-DR5176-3E-10AUG2017.jpg	E	Aug 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HALD_RESET-DR5176-2-10AUG2017.jpg		Aug 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HALD_RESET-DR5176-1-10AUG2017.jpg		Aug 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HALDEN MNDT

NGS Name: HALDEN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0640](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1076
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>				
NW	36	52 N	21 W	465709.23	925710.01	2	2				
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>				
1974	1974	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON				

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001)

Stamping: HALDEN 1974

2.6 MILES NORTHWEST OF FLOODWOOD, 2.6 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, THEN 0.25 MILE NORTH ON COUNTY ROAD 186, IN THE SOUTHEAST QUADRANT OF THE RAILROAD CROSSING OF COUNTY ROAD 186, 33.0 FEET EAST OF A ROAD, 19.3 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 16.9 FEET EAST OF A RAILROAD SIGN, 11.1 FEET NORTHEAST OF A WITNESS POST, 87.5 FEET NORTHEAST OF A WITNESS POST, 86.52 FEET NORTHWEST OF HALDEN MNDT RM 1, 86.71 FEET EAST-NORTHEAST OF STATION 6906 C.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.716	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.184	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.713	.197			1170.309	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.571 12B = -95.551 09 = -95.482 03 = -95.357

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>		
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.22942	92 57 10.01037	374425.123	210760.827	.066	2	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>			<u>Project Info</u>		
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.22248	92 57 10.01105	374425.071	210760.124	.066	2	ADJUSTMENT	1986	17289	
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.42962	92 57 09.28243			.100	2	CLASSICAL SURVEY	1977	15924	

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
									<u>Reference</u>
2661435.107	493190.337	1652204.877	17059984.886	.066	2	ADJUSTMENT	1999	17648	
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>
									<u>Reference</u>
2661435.061	493189.634	1652204.830	17059984.183	.066	2	ADJUSTMENT	1986	17289	
<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Reference</u>
<u>X</u>	<u>Y</u>								
2036820.037	165126.611			.100	2	CLASSICAL SURVEY	1977	15924	



Mn/DOT Name: HALDEN MNDT RM 1

NGS Name: HALDEN RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0641](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	36	52 N	21 W	465708.63	925709.12	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2019) **Stamping:** HALDEN NO 1 1974

2.1 MILES NORTHWEST OF FLOODWOOD, 2.55 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 TO TRUNK HIGHWAY 2 MILEPOINT 218.25 THEN 0.25 MILE NORTH ON COUNTY ROAD 186 TO A RAILROAD CROSSING, 92.0 FEET EAST OF A ROAD, 23.5 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 86.5 FEET SOUTHEAST OF STATION HALDEN MNDT, 124.0 FEET EAST OF STATION 6906 C, 95.3 FEET SOUTHEAST OF RAILROAD CROSSING POST, 82.6 FEET SOUTHEAST OF A WITNESS POST, THE GEODETIC UNIT FOUND THE MONUMENT TIP BROKEN OFF WITH NO DISK ON 8-30-01.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1265.762	.016	2/0						VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>	
1265.234	.016	2						VERTICAL CONTROL SURVEY	1974	L23566	

Geoid Separations(ft): GEOID18 = -95.567 12B = -95.551 09 = -95.479 03 = -95.357

* No Horizontal Positions in the Database *



Mn/DOT Name: HARNELL MNDT

NGS Name: HARNELL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9118](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	2	51 N	17 W	465528.07	922812.91		C	2001	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: HARNELL 2001

3.0 MILES SOUTH-SOUTHWEST OF INDEPENDENCE, 2.8 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 16.95, 298.0 FEET NORTH OF COUNTY ROAD 8, 253.7 FEET SOUTH-SOUTHEAST OF TRUNK HIGHWAY 33 MILEPOST 17, 38.7 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 1.8 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1211.376	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1211.464	.009	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1306.428	.131		1211.559	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1931
1306.428	.131		1211.559	.066	1996	GPS - STATIC	2003 HSTLO

Geoid Separations(ft): GEOID18 = -95.079 12B = -95.082 09 = -94.957 03 = -94.760

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 28.06814	92 28 12.90674	494939.195	200109.179	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 28.06828	92 28 12.90763	494939.133	200109.193	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 55 28.06805	92 28 12.90745	494939.145	200109.169	.033	C	ADJUSTMENT	2003	GPS1931
46 55 28.06805	92 28 12.90745	494939.146	200109.169	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2782029.868	483547.072	1772736.265	17050183.247	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2782029.806	483547.085	1772736.204	17050183.260	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2782029.819	483547.062	1772736.216	17050183.237	.033	C	ADJUSTMENT	2003	GPS1931
2782029.819	483547.062	1772736.216	17050183.237	.033	C	GPS - STATIC	2003	HSTLO



Mn/DOT Name: HARNELL MNDT RESET

NGS Name: HARNELL RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1872](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	2	51 N	17 W	465528.07	922812.91	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 35 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: HARNELL 2001 2017

3.0 MILES SOUTH-SOUTHWEST OF INDEPENDENCE, 2.8 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 16.95, 298.0 FEET NORTH OF COUNTY ROAD 8, 38.7 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 253.7 FEET SOUTH-SOUTHEAST OF TRUNK HIGHWAY 33 MILEPOST 17, 1.8 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1306.343	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1306.320	.262		1211.234	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -95.079 12B = -95.082 09 = -94.957 03 = -94.760

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 55 28.06830	92 28 12.90538	494939.289	200109.195	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2782029.963	483547.089	1772736.360	17050183.264	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HARNELL_RESET-DR1872-3E-23AUG2017.jpg	E	Aug 23, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HARNELL_RESET-DR1872-2-23AUG2017.jpg		Aug 23, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HARNELL_RESET-DR1872-1-23AUG2017.jpg		Aug 23, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HEIKKILA

NGS Name: HEIKKILA

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	50 N	20 W	464719.37	924911.28		C

NGS ACRN: RN1683	Get Map
NGS Quad / Sta Num : 46092442/1015	
USGS Quad: GOWAN	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2000	GOOD	Horz=YES Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (TILE OR CLAY) FILLED WITH CONCRETE	TRIANGULATION STATION DISK	NGS

Description: (2002)

Stamping: HEIKKILA 1952

4.0 MILES SOUTH-SOUTHEAST OF GOWAN, 2.0 MILES NORTHEAST OF HEIKKILA LAKE, ON THE TOP OF A HILL, 59.55 FEET NORTH OF HEIKKILA RM 1, 60.47 FEET SOUTHEAST OF HEIKKILA RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>							<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
			<u>Height</u>	<u>Acc</u>	<u>Adj</u>			
1519.682	.131		1469.210	.066	1996	GPS - STATIC	2000	SLC
			1425.857	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>							<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
			<u>Height</u>	<u>Acc</u>	<u>Adj</u>			
1518.993						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -93.999 12B = -93.993 09 = -93.914 03 = -93.796

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>						
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 19.37004	92 49 11.28073	407356.219	150812.969	.033	C	GPS - STATIC	2000	SLC
46 47 19.37230	92 49 11.28211	407356.124	150813.200	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>						
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 47 19.36565	92 49 11.28261	407356.086	150812.527	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
46 47 19.56300	92 49 10.56400			.100	1	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>						
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2694863.866	433519.862	1685540.279	17000296.874	.033	C	GPS - STATIC	2000	SLC
2694863.769	433520.091	1685540.183	17000297.103	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>						
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2694863.737	433519.417	1685540.150	17000296.429	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2070249.161	105455.752			.100	1	CLASSICAL SURVEY	1954	10724



Mn/DOT Name: HEIKKILA RM 1

NGS Name: HEIKKILA RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2622](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	50 N	20 W	464718.81	924911.54		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2000	GOOD	Horz=YES Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: HEIKKILA NO 1 1952

4.0 MILES SOUTH-SOUTHEAST OF GOWAN, 2.0 MILES NORTHEAST OF HEIKKILA LAKE, 4.0 FEET NORTHEAST OF A 10.0 INCH DIAMETER WHITE BIRCH TREE WITH A TRIANGLE BLAZE AND 4.0 FEET NORTHWEST OF A 6.0 INCH DIAMETER OAK TREE WITH A TRIANGLE BLAZE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -93.996 12B = -93.993 09 = -93.914 03 = -93.792



Mn/DOT Name: HEIKKILA RM 2

NGS Name: HEIKKILA RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2623](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	50 N	20 W	464719.94	924911.55		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2000	GOOD	Horz=YES Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: **Stamping:** HEIKKILA NO 2 1952

4.0 MILES SOUTH-SOUTHEAST OF GOWAN, 2.0 MILES NORTHEAST OF HEIKKILA LAKE, ON THE SLOPE OF THE HILL AND ABOUT 5.0 FEET LOWER THAN STATION HEIKKILA.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -93.996 12B = -93.993 09 = -93.914 03 = -93.792



Mn/DOT Name: HELLWEGS

NGS Name: HELLWEGS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2159](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/1008
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	52 N	17 W	470044.22	922816.60		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1966) **Stamping:** HELLWEGS 1952

11.1 MILES SOUTH OF COTTON, 0.2 MILE NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND ARKOLA ROAD IN COTTON, THEN 11.1 MILES SOUTH ALONG TRUNK HIGHWAY 53.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1414.039	.197			1318.344	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1414.006							RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -95.912 12B = -95.909 09 = -95.774 03 = -95.587

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 00 44.22146	92 28 16.60023			494691.506	232141.936	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 00 44.21781	92 28 16.60241			494691.355	232141.567	.066	2	ADJUSTMENT	1986	17289

NAD27								Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
47 00 44.43800	92 28 15.91400					.100	2	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2781512.974	515575.260			1772264.021	17082199.422	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2781512.826	515574.889			1772263.872	17082199.051	.066	2	ADJUSTMENT	1986	17289

NAD27								Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2156898.518	187513.407					.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: HELLWEGS 2

NGS Name: HELLWEGS 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2160](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/1008
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	52 N	17 W	470044.94	922815.98	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1966	2017	NOT FOUND	Horz=NO Vert=NO	YES		FLUSH	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	NGS

Description: (1999) **Stamping:** HELLWEGS 2 1966 1974

11.0 MILES SOUTH OF COTTON, 4.15 MILES NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33, IN TRUNK HIGHWAY 53 MEDIAN, AT TRUNK HIGHWAY 53 MILEPOINT 28.1, 31.5 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 77.9 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 159.9 FEET SOUTH-SOUTHEAST OF AN ALIGNMENT POINT WITNESS POST, ABOUT 400.0 FEET SOUTH OF A POWER LINE CROSSING, 48.0 FEET SOUTH OF AN EXTENDED WOODS ROAD EAST, 127.34 FEET WEST-SOUTHWEST OF HELLWEGS 2 RM 3, 35.71 FEET NORTH OF HELLWEGS 2 RM 4, 72.6 FEET WEST-NORTHWEST OF A WITNESS POST, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1409.558	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
			1313.675	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
			1313.767	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1409.479	.131		1313.872	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848	
1409.479	.131		1313.872	.066	1996	GPS - STATIC	2002	HTWIB	
1414.039	.262		1318.344	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648	

NGVD29			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1414.006						RECIPROCAL VERTICAL ANGLE	1966	HORZ	

Geoid Separations(ft): GEOID18 = -95.912 12B = -95.912 09 = -95.777 03 = -95.587

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 00 44.94103	92 28 15.98026	494734.491	232214.832	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 00 44.94113	92 28 15.98114	494734.429	232214.842	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 00 44.94082	92 28 15.98097	494734.441	232214.811	.033	C	ADJUSTMENT	2003	GPS1848
47 00 44.94082	92 28 15.98097	494734.440	232214.811	.033	C	GPS - STATIC	2002	HTWIB
47 00 44.94066	92 28 15.97992	494734.514	232214.795	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 00 44.93700	92 28 15.98210	494734.363	232214.424	.131	3	ADJUSTMENT	1986	17289

NAD27		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order	Reference
47 00 45.15720	92 28 15.29371			.100	3	10744



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone

UTM - Zone 15

Project Info

<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781555.342	515648.510	1772306.473	17082272.586	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone

UTM - Zone 15

Project Info

<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781555.281	515648.520	1772306.412	17082272.596	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone

UTM - Zone 15

Project Info

<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781555.293	515648.489	1772306.425	17082272.564	.033	C	ADJUSTMENT	2003	GPS1848
2781555.293	515648.489	1772306.425	17082272.564	.033	C	GPS - STATIC	2002	HTWIB
2781555.366	515648.473	1772306.497	17082272.549	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone

UTM - Zone 15

Project Info

<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781555.218	515648.101	1772306.349	17082272.177	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone

X

Y

Project Info

<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2156940.910	187586.620	.100	3	CLASSICAL SURVEY	1986	10744



Mn/DOT Name: HELLWEGS 2 RESET

NGS Name: HELLWEGS 2 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6486](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	52 N	17 W	470045.00	922816.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1966	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	NGS

Description: (2019) Stamping: HELLWEGS 2 1966 1974

LOCATED 11.0 MILE SOUTH OF COTTON, 4.15 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33, IN THE TRUNK HIGHWAY 53 MEDIAN AT TRUNK HIGHWAY 53 MILEPOINT 28.1, 31.5 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 77.9 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 5, ABOUT 400.0 FEET SOUTH OF A POWER LINE CROSSING, 159.9 FEET SOUTH-SOUTHEAST OF AN ALIGNMENT POINT WITNESS POST, 127.34 FEET WEST-SOUTHWEST OF HELLWEGS 2 RM 3, 48.0 FEET SOUTH OF AN EXTENDED WOODS ROAD EAST, 35.71 FEET NORTH OF HELLWEGS 2 RM 4, 72.6 FEET WEST-NORTHWEST OF A WITNESS POST, 2.0 FEET NORTH OF A WITNESS POST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.912 12B = -95.912 09 = -95.777 03 = -95.587



Mn/DOT Name: HELLWEGS 2 RM 3

NGS Name: HELLWEGS 2 RM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2628](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	3	52 N	17 W	470045.61	922814.43			1966	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	NGS
Monument Type CONCRETE MONUMENT (CAST-IN-PLACE)																
Disk Type REFERENCE MARK DISK																
Mon. Agency NGS																

Description:

Stamping: HELLWEGS 2 NO 3 1966

1.91 MILES SOUTH OF CANNON, 1.92 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.909 12B = -95.909 09 = -95.774 03 = -95.584



Mn/DOT Name: HELLWEGS 2 RM 4

NGS Name: HELLWEGS 2 RM 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2629](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	3	52 N	17 W	470044.59	922815.95			1966	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	NGS
Monument Type CONCRETE MONUMENT (CAST-IN-PLACE)																
Disk Type REFERENCE MARK DISK																
Mon. Agency NGS																

Description: (2019)

Stamping: HELLWEGS 2 NO 4 1966

1.92 MILES SOUTH OF CANYON, 1.92 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.909 12B = -95.909 09 = -95.774 03 = -95.584



Mn/DOT Name: HELLWEGS AZ MK

NGS Name: HELLWEGS AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0180](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	52 N	17 W	470030.00	922815.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1978)

Stamping: HELLWEGS 1952

2.15 MILES SOUTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, 30.9 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 27.85, 187.0 FEET SOUTH OF A ROAD EAST, 178.0 FEET SOUTH OF A TRUNK HIGHWAY 53 CROSSROAD, 15.0 FEET WEST OF 5 BIRCH TREES, 1.7 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1409.561	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1405.161	.007	1				VERTICAL CONTROL SURVEY	1966 L63 MINN

Geoid Separations(ft): GEOID18 = -95.873 12B = -95.873 09 = -95.738 03 = -95.548

* No Horizontal Positions in the Database *



Mn/DOT Name: HELLWEGS RM 1

NGS Name: HELLWEGS RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2626](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	52 N	17 W	470044.00	922816.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: Stamping: HELLWEGS NO 1 1952

20.5 MILES NORTHWEST OF DULUTH, 22.5 MILES NORTHWESTERLY ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND JOSHUA AVENUE IN DULUTH.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.909 12B = -95.909 09 = -95.774 03 = -95.587



Mn/DOT Name: HELLWEGS RM 2

NGS Name: HELLWEGS RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2627](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	3	52 N	17 W	470043.56	922816.07			1952	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	NGS
Monument Type BLANK																
Disk Type REFERENCE MARK DISK																

Description:

Stamping: HELLWEGS NO 2 1952

20.5 MILES NORTHWEST OF DULUTH, 22.5 MILES NORTHWESTERLY ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND JOSHUA AVENUE IN DULUTH.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.909 12B = -95.909 09 = -95.774 03 = -95.587



Mn/DOT Name: HIDE MNDT

NGS Name: HIDE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4245](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	4	50 N	17 W	465049.09	923019.82		C	2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: HIDE 2001

3.0 MILES SOUTHWEST OF SAGINAW, 2.30 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY (THE JUNCTION IS 3.31 MILES SOUTHWEST OF SAGINAW), AT TRUNK HIGHWAY 2 MILEPOINT 242.55, 42.0 FEET SOUTH OF TRUNK HIGHWAY 2, 11.5 FEET NORTHEAST OF THE SOUTH END OF CULVERT, 3.8 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1211.625	.009	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1211.713	.010	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1306.034	.131		1211.828	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1306.034	.131		1211.828	.066	1996	GPS - STATIC	2003 HGRAND

Geoid Separations(ft): GEOID18 = -94.432 12B = -94.419 09 = -94.327 03 = -94.150

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 49.09391	92 30 19.82382	486109.262	171848.129	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 49.09405	92 30 19.82469	486109.201	171848.144	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 49.09376	92 30 19.82461	486109.207	171848.114	.033	C	ADJUSTMENT	2004	GPS1957
46 50 49.09376	92 30 19.82461	486109.207	171848.114	.033	C	GPS - STATIC	2003	HGRAND

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2773437.870	455213.413	1764108.409	17021873.496	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2773437.810	455213.427	1764108.349	17021873.509	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2773437.816	455213.398	1764108.354	17021873.480	.033	C	ADJUSTMENT	2004	GPS1957
2773437.816	455213.398	1764108.354	17021873.480	.033	C	GPS - STATIC	2003	HGRAND



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HIDE-DG4245-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HIDE MNDT RESET

NGS Name: HIDE RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9893](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	4	50 N	17 W	465049.09	923019.82	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: HIDE 2001 2017

9.5 MILES NORTH-NORTHWEST OF CLOQUET, 2.3 MILES SOUTHWEST OF GRAND LAKES, 2.7 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 242.2, 42.0 FEET SOUTH OF TRUNK HIGHWAY 2, 11.5 FEET NORTHEAST OF THE SOUTH END OF A CULVERT, 3.8 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1305.880	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1305.857	.262			1211.435	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.432 12B = -94.419 09 = -94.327 03 = -94.150

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 49.09361	92 30 19.82309	486109.312	171848.099	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2773437.921	455213.384	1764108.460	17021873.465	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HIDE_RESET-DQ9893-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HIDE_RESET-DQ9893-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HIDE_RESET-DQ9893-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HOWL MNDT

NGS Name: HOWL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0774](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1053
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	1	50 N	18 W	465056.03	923336.37	2	2	1974	1981	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: HOWL 1974

2.5 MILES SOUTHEAST OF BROOKSTON, AT TRUNK HIGHWAY 2 MILEPOINT 239.95, 2.15 MILES EAST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, 0.7 MILE EAST OF THE ST. LOUIS RIVER, 114.5 FEET NORTH OF TRUNK HIGHWAY 2, 112.0 FEET WEST-NORTHWEST OF A POWER POLE, 3.6 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1294.358	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1293.911	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1294.354	.197			1200.004	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.544 12B = -94.540 09 = -94.439 03 = -94.271

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 56.03349	92 33 36.37187			472447.232	172565.666	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 56.02777	92 33 36.37378			472447.100	172565.085	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 50 56.23303	92 33 35.67471					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2759770.444	455816.242			1750447.769	17022495.035	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2759770.315	455815.662			1750447.640	17022494.455	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2135156.247	127752.868					.100	2	CLASSICAL SURVEY	1977 15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL-RN0774-3N-25JUL2017.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL-RN0774-2-25JUL2017.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL-RN0774-1-25JUL2017.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
N	Jul 25, 2017
	Jul 25, 2017
	Jul 25, 2017



Mn/DOT Name: HOWL MNDT RESET

NGS Name: HOWL RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1815](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	1	50 N	18 W	465056.03	923336.37	2	2	1981	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (2019)

Stamping: HOWL 1974 1981

2.3 MILES EAST-SOUTHEAST OF BROOKSTON, 2.15 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.0, 114.5 FEET NORTH OF TRUNK HIGHWAY 2, 26.12 FEET EAST OF HOWL RM 2, 23.93 FEET NORTH OF HOWL RM 1, 17.0 FEET WEST OF A DRIVEWAY NUMBER 8353, 3.6 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1294.207	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1294.338	.262		1199.797	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.544 12B = -94.540 09 = -94.439 03 = -94.544

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
46 50 56.03010	92 33 36.37164	472447.248	172565.322	.131	3	RTRN2017
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
46 50 56.03349	92 33 36.37187	472447.232	172565.666	.066	2	17648
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
46 50 56.02777	92 33 36.37378	472447.099	172565.086	.066	2	17289

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
2759770.462	455815.898	1750447.787	17022494.692	.131	3	RTRN2017
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
2759770.444	455816.242	1750447.769	17022495.035	.066	2	17648
<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
2759770.315	455815.661	1750447.640	17022494.455	.066	2	17289

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RESET-RN1815-3N-10JUL2006.jpg	N	Jul 10, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RESET-RN1815-2-10JUL2006.jpg		Jul 10, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RESET-RN1815-1-10JUL2006.jpg		Jul 10, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HOWL RM 1

NGS Name: HOWL RM 1

County: ST. LOUIS, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: RN1816	Get Map
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>	NGS Quad / Sta Num : 46092412/	
NE	1	50 N	18 W	465055.80	923336.42	2	3	USGS Quad: BROOKSTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1981	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2019)

Stamping: HOWL 1974 NO 1 1981

2.3 MILES EAST-SOUTHEAST OF BROOKSTON, 2.15 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.0, 91.0 FEET NORTH OF TRUNK HIGHWAY 2, 123.46 FEET WEST-SOUTHWEST OF A POWER POLE, 23.93 FEET SOUTH OF STATION HOWL MNDT RESET, 36.0 FEET EAST OF HOWL RM 2, 17.0 FEET WEST OF DRIVEWAY NUMBER 8353, 1.0 FOOT SOUTH OF A WITNESS POST.

Station Notes

THE MARK HAS BEEN HIT AND LEANING TO THE SOUTH BUT IS STILL USABLE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1290.591	.016	2/1							VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1290.595	.262					1196.054	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.544 12B = -94.540 09 = -94.439 03 = -94.271

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>			<u>Year</u>	<u>Reference</u>
46 50 55.79615	92 33 36.41940	472443.895	172541.623	.131	3	GPS - RTRN				2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>			<u>Year</u>	<u>Reference</u>
2759767.308	455792.173	1750444.601	17022470.981	.131	3	GPS - RTRN				2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_1-RN1816-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_1-RN1816-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_1-RN1816-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: HOWL RM 2

NGS Name: HOWL RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9896](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	1	50 N	18 W	465056.07	923336.74	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1981	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2019)

Stamping: HOWL 1974 NO 2 1981

2.3 MILES EAST-SOUTHEAST OF BROOKSTON, 2.15 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 240.0, 114.5 FEET NORTH OF TRUNK HIGHWAY 2, 36.0 FEET WEST OF HOWL RM 1, 44.6 FEET WEST OF DRIVEWAY NUMBER 8353, 26.12 FEET WEST OF HOWL MNDT RESET, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1292.360	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1292.369	.262			1197.826	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.544 12B = -94.540 09 = -94.439 03 = -94.271

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 50 56.07498	92 33 36.74177	472421.526	172569.906	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2759744.703	455820.266	1750422.045	17022499.093	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_2-DQ9896-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_2-DQ9896-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/HOWL_RM_2-DQ9896-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: INA MNDT

NGS Name: INA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1576](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	35	51 N	17 W	465139.41	922813.13		2	1978	2019	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1981)

Stamping: INA 1978

10.0 MILES NORTH-NORTHWEST OF CLOQUET, 0.6 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), THEN 1.1 MILES NORTH ON COUNTY ROAD 874 (INDEPENDENCE ROAD), 19.0 FEET EAST OF COUNTY ROAD 874, 54.3 FEET SOUTHEAST OF A POWER POLE, 37.75 FEET NORTHWEST OF INA MNDT RM 2, 26.39 FEET SOUTHWEST OF INA MNDT RM 1, 8.0 FEET NORTH OF A FIELD ENTRANCE, 38.7 FEET NORTH-NORTHWEST OF A WITNESS POST, 28.0 FEET SOUTHWEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1337.776	.262		1243.305	.197	2011	GPS - RTRN	2017	RTRN2017
1337.268	.197		1242.983	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1336.907						RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -94.485 12B = -94.472 09 = -94.376 03 = -94.189

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 39.40546	92 28 13.13155	494917.586	176941.348	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 39.40476	92 28 13.13479	494917.361	176941.277	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 39.39893	92 28 13.13702	494917.206	176940.686	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 39.60890	92 28 12.43800			.100	2	CLASSICAL SURVEY	1980	16254



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2782202.984	460380.396	1772876.968	17027026.012	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2782202.760	460380.323	1772876.743	17027025.940	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2782202.610	460379.731	1772876.592	17027025.348	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2157589.189	132317.457			.100	2	CLASSICAL SURVEY	1980	16254

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA-RN1576-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA-RN1576-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA-RN1576-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: INA MNDT RM 1

NGS Name: INA RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3112](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	35	51 N	17 W	465139.55	922812.82	2	3	1978	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: INA 1978 NO 1

10.0 MILES NORTH-NORTHWEST OF CLOQUET, 0.6 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), THEN 1.1 MILES NORTH ON COUNTY ROAD 874, 41.0 FEET EAST OF COUNTY ROAD 874 (INDEPENDENCE ROAD), 45.3 FEET NORTH OF INA MNDT RM 2, 22.0 FEET NORTH OF A FIELD ENTRANCE, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88										
Orthometric Height			Ellipsoid (NAD83)					Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method			Year	Reference
1337.491	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88									
Orthometric Height			Ellipsoid (NAD83)				Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference	
1337.474	.262		1242.999	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.485 12B = -94.472 09 = -94.376 03 = -94.189

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>								
Geodetic Position		St Louis County - South Zone					Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 39.54745	92 28 12.81642	494939.490	176955.728	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15				Project Info			
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2782224.767	460394.960	1772898.761	17027040.539	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_1-CJ3112-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_1-CJ3112-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_1-CJ3112-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: INA MNDT RM 2

NGS Name: INA RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3113](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	35	51 N	17 W	465139.10	922812.82	2	3	1978	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: INA 1978 NO 2

10.0 MILES NORTH-NORTHWEST OF CLOQUET, 0.6 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), THEN 1.1 MILES NORTH ON COUNTY ROAD 874, 40.5 FEET EAST OF COUNTY ROAD 874 (INDEPENDENCE ROAD), 45.3 FEET SOUTH OF INA MNDT RM 1, 23.5 FEET SOUTH OF A FIELD ENTRANCE, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1337.533	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1337.550	.262			1243.078	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.485 12B = -94.472 09 = -94.376 03 = -94.189

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
46 51 39.10016	92 28 12.81836	494939.344	176910.410	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>									
MN State Plane - North Zone		UTM - Zone 15						Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2782225.001	460349.642	1772898.932	17026995.241	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_2-CJ3113-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_2-CJ3113-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INA_RM_2-CJ3113-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: IND MNDT

NGS Name: IND

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN1580	Get Map
NW	35	52 N	17 W	465709.60	922743.39		2	NGS Quad / Sta Num : 46092144/ USGS Quad: INDEPENDENCE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARK IS STEEL PIPE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1992) Stamping: IND 1978

0.5 MILE SOUTH-SOUTHEAST OF INDEPENDENCE, 0.3 MILE SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53, 60.5 FEET SOUTHEAST OF TRUNK HIGHWAY 33, 99.3 FEET NORTHEAST OF TRUNK HIGHWAY 33 MILEPOST 19, 6.7 FEET NORTH-NORTHWEST OF A WITNESS POST.

Station Notes

IN 1992 THE GEODETIC UNIT COULD NOT FIND STATION IND MNDT-NEW ROAD CONSTRUCTION IN THE AREA AN IRON PIN WAS FOUND 11-19-98.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1347.438	.197			1252.330	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1347.110							RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -95.331 12B = -95.325 09 = -95.200 03 = -95.003

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.60254	92 27 43.39433			496989.374	210396.179	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.59653	92 27 43.39537			496989.302	210395.570	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 57 09.81139	92 27 42.70975					.100	2	CLASSICAL SURVEY	1980 16254

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2783993.436	493850.587			1774713.378	17060479.857	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2783993.369	493849.978			1774713.310	17060479.248	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2159378.990	165788.052					.100	2	CLASSICAL SURVEY	1980 16254



Mn/DOT Name: INDEPENDENCE

NGS Name: INDEPENDENCE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1579](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/1013
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	27	52 N	17 W	465744.95	922920.84		3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1978	GOOD	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1992)

Stamping: INDEPENDENCE 1952

1.5 MILES WEST-NORTHWEST OF INDEPENDENCE, 1.3 MILES WEST ALONG COUNTY ROAD 47 FROM THE JUNCTION OF COUNTY ROAD 47 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, THEN 0.15 MILE NORTH ON A ROAD TO A FORMER LOOKOUT TOWER SITE, 109.47 FEET NORTH-NORTHWEST OF INDEPENDENCE RM 2, 91.70 FEET SOUTHWEST OF INDEPENDENCE RM 1, 38.38 FEET WEST-NORTHWEST OF INDEPENDENCE RM 3, 3.0 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1410.758	.262		1315.483	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference
1410.791						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -95.492 12B = -95.485 09 = -95.361 03 = -95.170

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 57 44.94759	92 29 20.83516	490230.879	213979.543	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 57 44.94147	92 29 20.83599	490230.821	213978.923	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 57 45.15600	92 29 20.14800			.100	3	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2777205.333	497376.885	1767932.889	17064014.165	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2777205.281	497376.265	1767932.835	17064013.544	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2152590.860	169314.273			.100	3	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: INDEPENDENCE LOOKOUT TOWER

NGS Name: INDEPENDENCE LOOKOUT TOWER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1578](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/1066
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	52 N	17 W	465744.86	922920.37		4

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1978	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	LOOKOUT TOWER	NGS

Description: (1978)

Stamping:

1.5 MILES WEST-NORTHWEST OF INDEPENDENCE, 1.3 MILES WEST ON COUNTY ROAD 47 FROM TRUNK HIGHWAY 53, THEN 0.15 MILE NORTH OF COUNTY ROAD 47.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.492 12B = -95.485 09 = -95.361 03 = -95.170

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>							
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 57 44.85585	92 29 20.36711	490263.341	213970.232	.328	4	ADJUSTMENT	1999	17648	
46 57 44.84999	92 29 20.36967	490263.164	213969.638	.328	4	ADJUSTMENT	1991	17497	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>							
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 57 44.85912	92 29 20.36833	490263.257	213970.563	.328	4	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
46 57 45.06400	92 29 19.67400			.100	4	CLASSICAL SURVEY	1956	11100	

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>							
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2777237.871	497367.847	1767965.401	17064005.086	.328	4	ADJUSTMENT	1999	17648	
2777237.698	497367.252	1767965.228	17064004.491	.328	4	ADJUSTMENT	1991	17497	
<u>NAD83(1986)</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>							
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2777237.784	497368.178	1767965.314	17064005.416	.328	4	ADJUSTMENT	1986	17289	
<u>NAD27</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>	
2152623.812	169305.212			.100	4	CLASSICAL SURVEY	1956	11100	



Mn/DOT Name: INDEPENDENCE RM 1

NGS Name: INDEPENDENCE RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1583](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	52 N	17 W	465745.20	922919.57		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	UNMONUMENTED	CGS

Description:

Stamping:

1.3 MILES WEST OF INDEPENDENCE, 1.3 MILES WEST ALONG SWAN LAKE ROAD FROM THE JUNCTION OF SWAN LAKE ROAD AND TRUNK HIGHWAY 53 IN INDEPENDENCE. STATION INDEPENDENCE RM 1 IS NORTH OF SWAN LAKE ROAD.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1411.086	.197		1315.811	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -95.492 12B = -95.485 09 = -95.361 03 = -95.170

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 45.19869	92 29 19.56527	490318.979	214004.940	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 45.19257	92 29 19.56611	490318.920	214004.320	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 45.40713	92 29 18.87805			.100	2	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2777293.213	497403.021	1768020.769	17064040.168	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2777293.159	497402.401	1768020.715	17064039.548	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2152678.743	169340.409			.100	2	CLASSICAL SURVEY	1980	16254



Mn/DOT Name: INDEPENDENCE RM 2

NGS Name: INDEPENDENCE RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3114](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	52 N	17 W	465743.88	922921.07		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: **Stamping:** INDEPENDENCE NO 2 1952

1.5 MILES WEST-NORTHWEST OF INDEPENDENCE, 1.3 MILES WEST ALONG COUNTY ROAD 47 FROM THE JUNCTION OF COUNTY ROAD 47 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, THEN 0.15 MILE NORTH ON A ROAD TO A FORMER LOOKOUT TOWER SITE, 6.0 FEET WEST OF THE CENTERLINE OF A DRIVEWAY.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.492 12B = -95.485 09 = -95.361 03 = -95.170



Mn/DOT Name: INDEPENDENCE RM 3

NGS Name: INDEPENDENCE RM 3

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN1584	Get Map
NW	27	52 N	17 W	465744.83	922920.31		2	NGS Quad / Sta Num : 46092144/ USGS Quad: INDEPENDENCE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	GOOD	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978) Stamping: INDEPENDENCE NO 3 1952 1978

1.5 MILES WEST-NORTHWEST OF INDEPENDENCE, 1.3 MILES WEST ALONG COUNTY ROAD 47 FROM THE JUNCTION OF COUNTY ROAD 47 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, THEN 0.15 MILE NORTH ON A ROAD TO A LOOKOUT TOWER, 15.8 FEET NORTHEAST OF THE NORTHEAST CORNER OF THE SOUTHWEST TOWER LEG FOOTING, 8.65 FEET NORTHWEST OF THE NORTHWEST CORNER OF THE SOUTHEAST TOWER LEG FOOTING, 38.38 FEET EAST-SOUTHEAST OF STATION INDEPENDENCE, 63.61 FEET SOUTH-SOUTHWEST OF INDEPENDENCE RM 1, 109.90 FEET NORTH-NORTHWEST OF INDEPENDENCE RM 2, 40.9 FEET EAST-SOUTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1412.727	.197		1317.451	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29

Orthometric Height			Ellipsoid (NAD83)			<u>Determination Method</u>	Project Info	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1412.399						RECIPROCAL VERTICAL ANGLE	1978	HORZ

Geoid Separations(ft): GEOID18 = -95.492 12B = -95.485 09 = -95.361 03 = -95.170

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 57 44.83034	92 29 20.30854	490267.403	213967.645	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 57 44.82423	92 29 20.30938	490267.344	213967.026	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
46 57 45.03859	92 29 19.62080			.100	2	CLASSICAL SURVEY	1980	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2777241.954	497365.295	1767969.479	17064002.528	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2777241.901	497364.676	1767969.425	17064001.909	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2152627.522	169302.668			.100	2	CLASSICAL SURVEY	1980	16254



Mn/DOT Name: INDU MNDT

NGS Name: INDU

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0781](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1049
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	5	50 N	17 W	465048.82	923047.34	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	1981	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) **Stamping:** INDU 1974

2.5 MILES SOUTHWEST OF GRAND LAKES, AT TRUNK HIGHWAY 2 MILEPOINT 242.2, 2.7 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 41.5 FEET SOUTH OF TRUNK HIGHWAY 2, 6.5 FEET EAST OF AN ENTRANCE, 71.4 FEET NORTHWEST OF A RIGHT-OF-WAY POST, 80.9 FEET NORTHEAST OF A WITNESS POST, 80.19 FEET NORTHEAST OF STATION 6907 B, 71.41 FEET NORTH-NORTHWEST OF INDU RM 3.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.136	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1331.835	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.150	.197			1237.881	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.445 12B = -94.436 09 = -94.340 03 = -94.163

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year Reference
Latitude	Longitude								
46 50 48.82319	92 30 47.34422			484196.161	171822.148	.066	2	ADJUSTMENT	1999 17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year Reference
Latitude	Longitude								
46 50 48.81744	92 30 47.34651			484196.003	171821.566	3.281		CLASSICAL SURVEY	1991 H1991

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year Reference
Latitude	Longitude								
46 50 49.02488	92 30 46.64577					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year Reference
X	Y								
2771525.075	455171.368			1762196.386	17021834.132	.066	2	ADJUSTMENT	1999 17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year Reference
X	Y								
2771524.921	455170.784			1762196.231	17021833.549	3.281		CLASSICAL SURVEY	1991 H1991

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year Reference
X	Y								
2146911.317	127108.247					.100	2	CLASSICAL SURVEY	1977 15924



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU-RN0781-3S-25JUL2017.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU-RN0781-2-25JUL2017.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU-RN0781-1-25JUL2017.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
S	Jul 25, 2017
	Jul 25, 2017
	Jul 25, 2017



Mn/DOT Name: INDU MNDT RESET

NGS Name: INDU RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AI4516](#)

[Get Map](#)

NGS Quad / Sta Num : 46092412/

USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	5	50 N	17 W	465048.82	923047.34		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1981	2017	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
PIPE (CAPPED) DRIVEN IN GROUND (<10 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: INDU 1974 1981

9.6 MILES NORTH-NORTHWEST OF CLOQUET, 2.5 MILES SOUTHWEST OF GRAND LAKES, AT TRUNK HIGHWAY 2 MILEPOINT 242.2, 2.7 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS NORTH-NORTHWEST OF CLOQUET), 41.5 FEET SOUTH OF TRUNK HIGHWAY 2, 6.5 FEET EAST OF AN ENTRANCE.

Station Notes

THE MARK IS A STANDARD MNDOT 2.0 INCH SQUARE CAP.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference	
1333.265	.262		1238.830	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.445 12B = -94.436 09 = -94.340 03 = -94.445

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 48.82075	92 30 47.34131	484196.363	171821.901	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 48.82319	92 30 47.34422	484196.161	171822.148	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 50 48.81744	92 30 47.34651	484196.002	171821.566	.066	2	ADJUSTMENT	1986	17289

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2771525.279	455171.122	1762196.589	17021833.887	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2771525.075	455171.368	1762196.386	17021834.132	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Determination Method			Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2771524.921	455170.784	1762196.230	17021833.549	.066	2	ADJUSTMENT	1986	17289



Mn/DOT Name: INDU MNDT RM 1

NGS Name: INDU RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0782](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	5	50 N	17 W	465048.27	923046.71	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1979	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1979) Stamping: INDU NO 1 1974

4.5 MILES SOUTHEAST OF BROOKSTON, 0.6 MILE SOUTHWEST ALONG TRUNK HIGHWAY 31 FROM THE JUNCTION OF TRUNK HIGHWAY 31 AND 2ND AVENUE IN BROOKSTON, THEN 4.4 MILES EAST ALONG TRUNK HIGHWAY 2, THEN 128.84 FEET SOUTH FROM THE CENTERLINE OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.829	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.528	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.442 12B = -94.432 09 = -94.337 03 = -94.160

* No Horizontal Positions in the Database *



Mn/DOT Name: INDU RM 3

NGS Name: INDU RM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1061](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	5	50 N	17 W	465048.27	923046.70	2	3	1979	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: INDU 1974 NO 3 1979

9.6 MILES NORTH-NORTHWEST OF CLOQUET, 2.65 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS NORTH-NORTHWEST OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 242.15, 97.6 FEET SOUTH OF TRUNK HIGHWAY 2, 97.50 FEET EAST-NORTHEAST OF STATION 6907 B, 48.5 FEET EAST OF AN ENTRANCE, 2.7 FEET NORTHEAST OF A RIGHT-OF-WAY MONUMENT, 17.5 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1334.650	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1333.544	.016	2/2					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1333.239	.016	2					VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1333.816	.262			1239.381	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.442 12B = -94.432 09 = -94.340 03 = -94.163

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 48.26785	92 30 46.70472			484240.571	171765.847	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2771569.956	455115.441			1762241.169	17021778.168	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU_RM_3-RN1061-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU_RM_3-RN1061-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/INDU_RM_3-RN1061-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ISLAND USGS

NGS Name: ISLAND

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1231](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/1029
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	17	52 N	21 W	465941.85	930117.46		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2017	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (<10 FT)	SURVEY DISK	USGS

Description: (2019) Stamping: ISLAND 1967

6.5 MILES NORTHWEST OF FLOODWOOD, 0.65 MILE NORTHWEST OF THE ISLAND FARM BUILDINGS, 87.78 FEET NORTHEAST OF ISLAND USGS RM 2, 61.0 FEET NORTH-NORTHWEST OF A RAILROAD CROSSING, 50.02 FEET WEST-NORTHWEST OF ISLAND USGS RM 1, 40.4 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 35.6 FEET NORTHEAST OF THE NORTHEAST RAIL OF A RAILROAD TRACKS, 14.0 FEET NORTHWEST OF A TELEPHONE POLE, 12.4 FEET SOUTHWEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE. THE ROD DEPTH IS UNKNOWN.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1272.963	.197			1177.235	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1272.996							RECIPROCAL VERTICAL ANGLE	1967	HORZ

Geoid Separations(ft): GEOID18 = -95.895 12B = -95.886 09 = -95.820 03 = -95.679

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 59 41.85467	93 01 17.46481			357370.252	226342.069	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 59 41.84936	93 01 17.46178			357370.458	226341.529	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 59 42.06232	93 01 16.71620					.100	2	CLASSICAL SURVEY	1969 14410
46 59 42.05200	93 01 16.73300					.100	3	CLASSICAL SURVEY	1967 USGS-HORZ

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2644252.072	508628.611			1635048.986	17075439.002	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2644252.283	508628.074			1635049.196	17075438.464	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2019637.883	180565.531					.100	2	CLASSICAL SURVEY	1969 14410
2019636.720	180564.484					.100	3	CLASSICAL SURVEY	1967 USGS-HORZ



Mn/DOT Name: ISLAND USGS AZ MK

NGS Name: ISLAND AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0867](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	16	52 N	21 W	465919.00	930041.00	2		1967	1974	GOOD	Horz=NO Vert=NO	NO		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - SMALL	SURVEY DISK	USGS

Description: (1974) Stamping: ISLAND 1967

6.0 MILES NORTHWEST OF FLOODWOOD, 0.2 MILE NORTHEAST OF THE ISLAND FARM BUILDINGS, 44.5 FEET NORTHWEST OF A TRACK ROAD, 40.4 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 14.0 FEET NORTHWEST OF A TELEPHONE POLE, 6.15 FEET WEST OF A RAILROAD CROSSING, 1.2 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.744	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1268.259	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -95.850 12B = -95.840 09 = -95.771 03 = -95.633

* No Horizontal Positions in the Database *



Mn/DOT Name: ISLAND USGS RM 1

NGS Name: ISLAND RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CO9833](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	17	52 N	21 W	465941.42	930116.37		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2017	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	REFERENCE MARK DISK	NGS

Description:

Stamping:

6.5 MILES NORTHWEST OF FLOODWOOD, 0.65 MILE NORTHWEST OF THE ISLAND FARM BUILDINGS, 50.02 FEET
EAST-SOUTHEAST OF STATION ISLAND USGS.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.899 12B = -95.886 09 = -95.820 03 = -95.679



Mn/DOT Name: ISLAND USGS RM 2

NGS Name: ISLAND RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CO9834](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	17	52 N	21 W	465941.54	930118.04		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	2017	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	REFERENCE MARK DISK	NGS

Description:

Stamping:

6.5 MILES NORTHWEST OF FLOODWOOD, 0.65 MILE NORTHWEST OF THE ISLAND FARM BUILDINGS, 87.78 FEET
SOUTHWEST OF STATION ISLAND USGS.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.899 12B = -95.886 09 = -95.820 03 = -95.679



Mn/DOT Name: J 163

NGS Name: J 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0161](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/1014
USGS Quad: CENTRAL LAKES

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	10	55 N	17 W	471522.70	922857.09	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1992	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1992)

Stamping: J 163 1935

3.5 MILES WEST OF MELRUDE, 6.25 MILES NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52, 43.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 10.5 FEET SOUTHWEST OF A POWER POLE, 55.43 FEET NORTHEAST OF STATION MELRUDE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1358.219	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1358.288	.033	3				VERTICAL CONTROL SURVEY	1964	CS6917
1357.527	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1358.232	.197		1260.513	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.907 12B = -97.903 09 = -97.844 03 = -97.664

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - Central Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 15 22.69842	92 28 57.08561	491922.688	102301.661	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - Central Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 15 22.69788	92 28 57.08862	491922.480	102301.606	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 15 22.93800	92 28 56.40900			.100	2	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2777996.571	604552.582	1768870.660	17171149.572	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2777996.364	604552.525	1768870.453	17171149.516	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2153381.133	276492.706			.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: J 271

NGS Name: J 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0693](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	21	52 N	18 W	465840.30	923820.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** J 271 1948

3.15 MILES WEST OF THE POST OFFICE AT ALBORN, 1.0 MILE WEST ON COUNTY ROAD 166 FROM THE JUNCTION OF COUNTY ROAD 166 AND COUNTY ROAD 47, 0.75 MILE WEST OF A POWER LINE CROSSING, 27.0 FEET SOUTH OF COUNTY ROAD 166, 306.0 FEET WEST OF A FARM DRIVE SOUTH, 8.5 FEET EAST OF THE NORTHWEST CORNER OF A MEADOW, 2.0 FEET NORTH OF A FENCE LINE, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1324.591	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1324.039	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1324.039	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.830 12B = -95.817 09 = -95.712 03 = -95.551

* No Horizontal Positions in the Database *



Mn/DOT Name: J 272

NGS Name: J 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0512](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	16	53 N	19 W	470410.51	924440.33	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2021	GOOD	Horz=YES Vert=YES	YES		PROJECTS 1 IN.	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007) **Stamping:** J 272 1948

0.5 MILE WEST FROM MEADOWLANDS, 0.5 MILE WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, AT THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 29 (BITUMINOUS ROAD), 47.0 FEET NORTH OF COUNTY ROAD 133, 31.0 FEET WEST OF COUNTY ROAD 200 (MEADOWSLANDS TRUNK ROAD), 3.2 FEET EAST-NORTHEAST OF A POWER POLE, 0.5 FOOT SOUTH OF A WITNESS POST.

Station Notes

THE MONUMENT IS TILTED NORTH.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1276.897	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1276.897	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1276.510	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1275.893	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1275.893	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1276.927	.262		1180.158	.197	2011	GPS - OPUS	2021	GPSBM

Geoid Separations(ft): GEOID18 = -96.768 12B = -96.758 09 = -96.676 03 = -96.493

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 04 10.50593	92 44 40.33338	426596.240	253180.161	.131	3	GPS - OPUS	2021	GPSBM

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2713247.996	536040.832	1704053.296	17102749.732	.131	3	GPS - OPUS	2021	GPSBM

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_272-SJ0512-3N-27JUL2021.jpg	N	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_272-SJ0512-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_272-SJ0512-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: J 273

NGS Name: J 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0719](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	20	52 N	20 W	465854.56	925434.22	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	POOR	Horz=NO Vert=NO	YES		PROJECTS 24 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001) **Stamping:** J 273 1948

3.8 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 147, AT TRUNK HIGHWAY 73 MILEPOINT 47.35, 34.0 FEET EAST OF TRUNK HIGHWAY 73, 215.0 FEET SOUTH OF COUNTY ROAD 147, 1.0 FOOT WEST OF A FENCE LINE, AT THE NORTHWEST CORNER OF A CULTIVATED FIELD, 0.8 FOOT WEST OF A WITNESS POST.

Station Notes

THE STATION IS VERY UNSTABLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.920	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.267	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1251.267	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.879 12B = -95.859 09 = -95.807 03 = -95.653

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_273-RN0719-3W-10JUL2017.jpg	W	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_273-RN0719-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_273-RN0719-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: J 275

NGS Name: J 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	8	51 N	20 W	465458.00	925419.00	2	

NGS ACRN: RN0656	Get Map
NGS Quad / Sta Num : 46092444/	
USGS Quad: FLOODWOOD	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: J 275 1948

1.05 MILES SOUTHEAST OF FLOODWOOD, 1.05 MILES SOUTHEAST ALONG THE GREAT NORTHERN RAILROAD FROM THE STATION AT FLOODWOOD, 0.5 MILE SOUTHEAST OF THE BRIDGE OVER THE SAVANNA RIVER, 0.45 MILE NORTHWEST OF MILEPOST 74, 0.4 MILE NORTHWEST OF AN EAST-WEST ROAD CROSSING, 0.15 MILE SOUTHEAST OF AN EAST-WEST ROAD CROSSING, AT THE CENTER OF A LOW CUT, 103.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 32.3 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE SOUTHWEST TRACK, 30.0 FEET SOUTHEAST OF A GRASS DRIVE CONNECTING THE TRACKS AND TRUNK HIGHWAY 2, 6.0 FEET SOUTH OF A TELEPHONE POLE, 2.0 FEET SOUTHEAST OF A WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.925	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -95.259 12B = -95.243 09 = -95.164 03 = -95.052

* No Horizontal Positions in the Database *



Mn/DOT Name: J 276

NGS Name: J 276

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0385](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	30	55 N	19 W	471241.00	924837.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: J 276 1948

3.35 MILES NORTH OF THE HIGH SCHOOL AT TOIVOLA, 30.0 FEET EAST OF COUNTY ROAD 5, 15.0 FEET NORTH OF AN ENTRANCE, 7.5 FEET NORTH OF THE NORTH GATE POST, 1.5 FEET WEST OF A FENCE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.579	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1290.890	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1290.890	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.664 12B = -97.661 09 = -97.592 03 = -97.428

* No Horizontal Positions in the Database *



Mn/DOT Name: J 279

NGS Name: J 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1321](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	8	55 N	21 W	471559.49	930127.05	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** J 279 1948

AT SILICA, 0.1 MILE NORTHWEST ON A RAILROAD FROM THE RAILROAD STATION, AT THE JUNCTION OF A RAILROAD AND TRUNK HIGHWAY 73, 47.0 FEET WEST OF TRUNK HIGHWAY 73, 49.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE RAILROAD TRACKS, 19.5 FEET NORTHWEST OF A FENCE CORNER, 1.5 FEET NORTHEAST OF A RIGHT-OF-WAY FENCE, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.565	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1334.810	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1334.810	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1334.810	.007	1					VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -97.260 12B = -97.283 09 = -97.172 03 = -97.096

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/J_279-SJ1321-3S-11JUL2017.jpg	S	Jul 11, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: J 28

NGS Name: J 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0055](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	51 N	17 W	465200.57	922804.43	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974) Stamping: J 28 1934

AT GRAND LAKE, 17 RAILS EAST ON A RAILROAD FROM THE RAILROAD STATION, AT THE EAST SWITCH STAND, 30.0 FEET NORTH OF A RAILROAD.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1337.136	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1336.707	.016	2/0				UNKNOWN/APPROXIMATE		1992	UNCHECKD
1336.707	.007	1				VERTICAL CONTROL SURVEY		1941	L27 MINN

Geoid Separations(ft): GEOID18 = -94.531 12B = -94.521 09 = -94.422 03 = -94.235

* No Horizontal Positions in the Database *



Mn/DOT Name: J 30

NGS Name: J 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0686](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	51 N	18 W	465204.00	923613.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974)

Stamping: J 30 1934

AT BROOKSTON, 2.0 RAILS EAST OF THE GREAT NORTHERN RAILWAY STATION, AT A STREET CROSSING, 65.0 FEET SOUTH OF THE SOUTH TRACK, 30.0 FEET WEST OF A STREET, AT THE FOOT OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1228.597	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1228.032	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT
1228.032	.007	1				VERTICAL CONTROL SURVEY	1934	L13 MINN

Geoid Separations(ft): GEOID18 = -94.770 12B = -94.767 09 = -94.672 03 = -94.508

* No Horizontal Positions in the Database *



Mn/DOT Name: JENKIN MNDT

NGS Name: JENKIN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6505](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	54 N	17 W	470735.46	922818.32	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999) Stamping: JENKIN 1992

3.0 MILES SOUTH OF COTTON, 2.9 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 36.00, 35.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 81.3 FEET EAST-NORTHEAST OF A TELEPHONE CABLE MARKER, 27.1 FEET NORTH-NORTHEAST OF MILEPOST 36, 2.3 FEET SOUTH OF A WITNESS POST.

Station Pair: DODO MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1352.855	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1352.904	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1352.894	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1352.999	.262		1256.001	.197	2011	GPS - OPUS	2020	GPSBM
1352.884	.262		1255.890	.197	2011	GPS - RTRN	2020	RTRN2020
1352.898	.262		1255.900	.197	2011	GPS - RTRN	2017	RTRN2017
			1255.880	.012	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1255.972	.013	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1352.655	.131		1256.024	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1352.655	.131		1256.024	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.998 12B = -96.998 09 = -96.876 03 = -96.680

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 35.45990	92 28 18.32059	494583.846	273809.513	.131	3	GPS - OPUS	2020	GPSBM
47 07 35.46024	92 28 18.31946	494583.925	273809.547	.131	3	GPS - RTRN	2020	RTRN2020
47 07 35.46024	92 28 18.31976	494583.904	273809.547	.131	3	GPS - RTRN	2017	RTRN2017
47 07 35.46014	92 28 18.31994	494583.891	273809.537	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 35.46026	92 28 18.32085	494583.828	273809.549	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 35.46007	92 28 18.32052	494583.851	273809.530	.033	C	ADJUSTMENT	2003	GPS1848
47 07 35.46007	92 28 18.32052	494583.850	273809.531	.033	C	GPS - STATIC	2002	HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 35.45865	92 28 18.32093	494583.824	273809.387	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781055.139	557237.582	1771863.702	17123846.843	.131	3	GPS - OPUS	2020	GPSBM
2781055.217	557237.617	1771863.780	17123846.878	.131	3	GPS - RTRN	2020	RTRN2020
2781055.196	557237.617	1771863.760	17123846.878	.131	3	GPS - RTRN	2017	RTRN2017
2781055.184	557237.607	1771863.747	17123846.867	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781055.121	557237.618	1771863.684	17123846.879	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781055.144	557237.599	1771863.707	17123846.860	.033	C	ADJUSTMENT	2003	GPS1848
2781055.144	557237.599	1771863.707	17123846.860	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781055.117	557237.455	1771863.680	17123846.716	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JENKIN-DF6505-3W-12JUL2020.jpg	W	Jul 12, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JENKIN-DF6505-2-12JUL2020.jpg		Jul 12, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JENKIN-DF6505-1-12JUL2020.jpg		Jul 12, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: JOHN

NGS Name: JOHN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5149](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	28	55 N	21 W	471309.61	930105.50	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 64 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: JOHN 2017

15.0 MILES SOUTH-SOUTHWEST OF HIBBING, 13.45 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 65.4, 29.8 FEET WEST OF TRUNK HIGHWAY 73, 57.9 FEET NORTH OF HAPPY LAKE ROAD, 1.5 FEET EAST OF A WITNESS POST.

Station Pair: BETH - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1329.689	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1329.823	.262		1232.662	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.145 12B = -97.159 09 = -97.070 03 = -96.962

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 13 09.60637	93 01 05.50031	358792.838	308177.697	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2644994.846	590466.761	1635897.060	17157244.734	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JOHN-DR5149-3W-26JUL2017.jpg	W	Jul 26, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JOHN-DR5149-2-26JUL2017.jpg		Jul 26, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/JOHN-DR5149-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 163

NGS Name: K 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0162](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	22	55 N	17 W	471341.79	922916.83	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1935	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1972)

Stamping: K 163 1935

4.15 MILES NORTH OF COTTON, 4.15 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 43.15, 80.3 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 1.0 FOOT EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1342.474	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1342.478	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1342.478	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG
1342.478	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025
NGVD29				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1341.818	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1341.818	.007	1					VERTICAL CONTROL SURVEY	1958	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1342.478	.262			1244.676	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.802 12B = -97.798 09 = -97.726 03 = -97.536

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone			Determination Method	Project Info	
Geodetic Position				X	Y	Acc		Year	Reference
Latitude	Longitude								
47 13 41.79343	92 29 16.83303			490555.495	310929.639	.131	3 GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15			Determination Method	Project Info	
MN State Plane - North Zone				X	Y	Acc		Year	Reference
2776715.420	594318.924			1767576.066	17160921.113	.131	3 GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_163-SJ0162-3W-14SEP2017.jpg	W	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_163-SJ0162-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_163-SJ0162-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 271

NGS Name: K 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0694](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	19	52 N	18 W	465840.29	923938.84	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: K 271 1948

4.15 MILES WEST OF THE POST OFFICE AT ALBORN, AT THE JUNCTION OF COUNTY ROAD 166 AND COUNTY ROAD 821 SOUTH, 49.0 FEET SOUTH OF COUNTY ROAD 166, 28.0 FEET WEST OF COUNTY ROAD 821, 14.5 FEET EAST-SOUTHEAST OF A ROAD SIGN, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1336.293	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1335.739	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1335.739	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.846 12B = -95.830 09 = -95.728 03 = -95.571

* No Horizontal Positions in the Database *



Mn/DOT Name: K 272

NGS Name: K 272

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	15	53 N	19 W	470415.32	924404.00	2	

NGS ACRN: [SJ0511](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL

Monument Type

STEP

Disk Type

BENCH MARK DISK

Mon. Agency

NGS

Description: (1948)

Stamping: K 272 1948

AT MEADOWLANDS, AT THE HIGH SCHOOL, IN THE TOP OF THE SOUTH END OF THE THIRD STEP FROM THE BOTTOM,
AT THE MAIN SCHOOL ENTRANCE, 135.0 FEET WEST OF WESTERN AVENUE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1275.198	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1275.198	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1275.198	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.584	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1274.584	.033	3				VERTICAL CONTROL SURVEY	1967	USGS-VERT
1274.584	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.781 12B = -96.771 09 = -96.686 03 = -96.506

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_272-SJ0511-3W-23MAY2007.jpg	W	May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_272-SJ0511-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_272-SJ0511-1-23MAY2007.jpg		May 23, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 273

NGS Name: K 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0720](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	18	52 N	21 W	465949.00	925443.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

BENCH MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: K 273 1948

4.9 MILES NORTH FROM FLOODWOOD, 4.9 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, 0.25 MILE NORTHWEST OF THE JUNCTION OF A ROAD NORTH AND A TURN IN THE HIGHWAY WITH TANGENTS NORTHWEST AND SOUTH, AT A DIM EAST-WEST CROSSROAD, 45.0 FEET SOUTHWEST OF THE HIGHWAY, 25.0 FEET NORTH OF THE CROSSROAD, 2.0 FEET SOUTH OF A WHITE WOODEN WITNESS POST, 2.5 FEET BELOW THE HIGHWAY AND SET IN THE TOP OF A CONCRETE POST PROJECTING 4.0 INCHES.

Station Notes

1999 - THIS MARK WAS RESET IN 1950 AS K 273 RESET.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1258.741	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -96.020 12B = -96.004 09 = -95.951 03 = -95.794

* No Horizontal Positions in the Database *



Mn/DOT Name: K 273 RESET

NGS Name: K 273 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0721](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	7	52 N	20 W	465948.69	925445.30	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1950	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001)

Stamping: K 273 RESET 1950

4.9 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, 0.25 MILE NORTHWEST ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 191 NORTH, AT A DIM EAST-WEST CROSSROAD, 63.8 FEET SOUTHWEST OF TRUNK HIGHWAY 73, 35.8 FEET NORTH OF A CROSSROAD, 1.0 FOOT NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1258.508	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1257.573	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1258.324	.262			1162.324	.197	2011	GPS - RTRN	2017	RTRN2017
				1162.317	.011	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1162.409	.012	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1258.364	.131			1162.458	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1258.364	.131			1162.458	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -96.020 12B = -960000 09 = -95.951 03 = -95.790

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 59 48.68625	92 54 45.30197	384559.910	226854.933	.131	3	GPS - RTRN	2017	RTRN2017	
46 59 48.68619	92 54 45.30236	384559.883	226854.927	.010		ADJUSTMENT	2012	GPS2800	

NAD83(2007)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 59 48.68623	92 54 45.30321	384559.824	226854.931	.010		ADJUSTMENT	2007	GPS2300	

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position									
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 59 48.68602	92 54 45.30290	384559.846	226854.910	.033	C	ADJUSTMENT	2003	GPS1769	
46 59 48.68602	92 54 45.30290	384559.844	226854.910	.033	C	GPS - STATIC	2002	HFLOO	

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671435.177	509367.511	1662221.906	17076142.292	.131	3	GPS - RTRN	2017	RTRN2017
2671435.150	509367.505	1662221.879	17076142.286	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671435.091	509367.508	1662221.820	17076142.290	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671435.112	509367.487	1662221.842	17076142.269	.033	C	ADJUSTMENT	2003	GPS1769
2671435.112	509367.487	1662221.842	17076142.269	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_273_RESET-RN0721-3S-12JUL2017.jpg	S	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_273_RESET-RN0721-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_273_RESET-RN0721-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 276

NGS Name: K 276

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	30	55 N	19 W	471329.50	924836.00	2	

NGS ACRN: [SJ0384](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: K 276 1948

4.25 MILES NORTH OF A HIGH SCHOOL AT TOIVOLA, 1.0 MILE SOUTH OF THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 750 AND A STORE, 30.0 FEET EAST OF COUNTY ROAD 5, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.573	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1292.573	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1292.497	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.802	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1291.802	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.703 12B = -97.700 09 = -97.631 03 = -97.477

* No Horizontal Positions in the Database *



Mn/DOT Name: K 279

NGS Name: K 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1335](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	8	53 N	21 W	470542.00	930108.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: K 279 1948

IN CEDAR VALLEY, AT A SCHOOL, 31.0 FEET SOUTHEAST OF OLD TRUNK HIGHWAY 73 (COUNTY ROAD 508), 89.0 FEET
SOUTHWEST OF THE SOUTHWEST PORCH CORNER OF A SCHOOL, 69.0 FEET SOUTH OF THE SOUTH EDGE OF A SIDEWALK,
37.0 FEET NORTHWEST OF A FLAGPOLE, 4.0 FEET EAST OF A TELEPHONE POLE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1268.829	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1268.101	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1268.101	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1268.101	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.666 12B = -96.660 09 = -96.611 03 = -96.443

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/K_279-SJ1335-3N-13JUL2017.jpg	N	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: K 28

NGS Name: K 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0056](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	
NE	28	51 N	17 W	
	465244.00	922958.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: K 28 1934

2.0 MILES EAST ON A RAILROAD FROM BURNETT, 49.5 FEET WEST OF RAILROAD MILEPOST 24, AT A ROAD CROSSING, 35.0 FEET NORTH OF THE NORTH TRACK OF A RAILROAD, 15.0 FEET WEST OF A ROAD, AT POLE NUMBER 255.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1312.350	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1311.894	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1311.894	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -94.721 12B = -94.718 09 = -94.606 03 = -94.422

* No Horizontal Positions in the Database *



Mn/DOT Name: K 30

NGS Name: K 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0684](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	29	51 N	18 W	465226.00	923927.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2004	GOOD	Horz=NO Vert=NO	NO		PROJECTS 10 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974) Stamping: K 30 1974

2.6 MILES WEST FROM BROOKSTON, 2.6 MILES WEST ON A RAILROAD FROM THE JUNCTION OF A RAILROAD AND COUNTY ROAD 31, AT RAILROAD MILEPOINT 60.3, 28.5 FEET WEST OF A TELEPHONE POLE, 24.5 FEET SOUTH OF A RAILROAD, 9.0 FEET NORTH OF A RAILROAD RIGHT-OF-WAY FENCE, 0.7 FOOT WEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1234.850	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1234.259	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1234.259	.007	1				VERTICAL CONTROL SURVEY	1974	L23566
1234.259	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT
1234.259	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -94.842 12B = -94.836 09 = -94.744 03 = -94.606

* No Horizontal Positions in the Database *



Mn/DOT Name: KAFUT

NGS Name: KAFUT

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR1843 NGS Quad / Sta Num : 47092234/ USGS Quad: COTTON	Get Map
NW	27	55 N	17 W	471331.84	922917.06	2	3		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 27 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: KAFUT 2017

3.9 MILES NORTH OF COTTON, 4.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 42.95, 30.9 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 5.0 FEET EAST OF A WITNESS POST.

Station Pair: FELTY - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1341.231	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1341.280	.262		1243.492	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.789 12B = -97.785 09 = -97.713 03 = -97.519

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 13 31.84279	92 29 17.06114	490539.261	309921.390	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776707.658	593310.685	1767566.939	17159913.230	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KAFUT-DR1843-3W-17OCT2017.jpg	W	Oct 17, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KAFUT-DR1843-2-17OCT2017.jpg		Oct 17, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KAFUT-DR1843-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KANGAS

NGS Name: KANGAS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1875](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	14	51 N	17 W	465354.69	922811.39	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 41 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: KANGAS 2017

12.7 MILES OF NORTH CLOQUET, 3.85 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 15.15, 39.1 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: MOORE - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1334.479	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1334.568	.262		1239.738	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.829 12B = -94.832 09 = -94.711 03 = -94.518

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 53 54.68882	92 28 11.39207	495041.942	190648.041	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2782212.129	474087.390	1772905.264	17040727.214	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KANGAS-DR1875-3E-15AUG2017.jpg	E	Aug 15, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KANGAS-DR1875-2-15AUG2017.jpg		Aug 15, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KANGAS-DR1875-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KELSEY

NGS Name: KELSEY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2197](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/1010
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	18 W	471002.41	924037.75		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952) Stamping: KELSEY 1952

9.0 MILES EAST OF COTTON, 9.1 MILES WEST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53, 25.4 FEET SOUTH OF COUNTY ROAD 52 (ARKOLA ROAD), 77.98 FEET WEST OF KELSEY RM 1, 81.90 FEET EAST OF KELSEY RM 2, 49.92 FEET WEST OF STATION Y 274, 1.5 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>							<u>Project Info</u>	
<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			
1300.430	.262		1202.852	.197	2011	GPS - OPUS	2021	GPSBM
1299.210	.197		1201.812	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

<u>NGVD29</u>							<u>Project Info</u>	
<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			
1299.210						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.490 03 = -97.303

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		
47 10 02.40766	92 40 37.75249	443492.661	288779.937	.131	3	GPS - OPUS	2021	GPSBM

<u>NAD83(1996)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		
47 10 02.40770	92 40 37.75245	443492.664	288779.941	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		
47 10 02.40638	92 40 37.75751	443492.314	288779.808	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Geodetic Position</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>							
47 10 02.63200	92 40 37.06400			.100	2	CLASSICAL SURVEY	1954	10724



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2729844.794	571777.712	1720691.595	17138451.022	.131	3	GPS - OPUS	2021	GPSBM

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2729844.796	571777.716	1720691.598	17138451.026	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2729844.447	571777.581	1720691.249	17138450.891	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2105228.827	243716.290			.100	2	CLASSICAL SURVEY	1954	10724

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KELSEY-SJ2197-3S-27JUL2021.jpg	S	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KELSEY-SJ2197-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KELSEY-SJ2197-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KELSEY AZ MK

NGS Name: KELSEY AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3166](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	18 W	471002.00	924015.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

Monument Type

BLANK

Disk Type

AZIMUTH MARK DISK

Mon. Agency

NGS

Description: (1952)

Stamping: KELSEY 1952

5.55 MILES WEST FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON TO THE CROSSROADS, THEN 3.25 MILES WEST, 4.0 FEET SOUTH OF A WITNESS POST, 60.0 FEET SOUTH OF THE CENTERLINE OF COUNTY ROAD 52 (ARKOLA ROAD).

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.487 03 = -97.300



Mn/DOT Name: KELSEY RM 1

NGS Name: KELSEY RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3167](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	18 W	471002.38	924036.62		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description:

Stamping: KELSEY NO 1 1952

6.5 MILES EAST OF TOIVOLA, 9.1 MILES WEST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53, 70.0 FEET SOUTH OF THE CENTERLINE OF COUNTY ROAD 52 (ARKOLA ROAD) AND 2.0 FEET EAST OF THE EAST POST OF A GATE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.490 03 = -97.303



Mn/DOT Name: KELSEY RM 2

NGS Name: KELSEY RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3168](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	18 W	471002.41	924038.94		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 12 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: (2019)

Stamping: KELSEY NO 2 1952

6.5 MILES EAST OF TOIVOLA, 9.1 MILES WEST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53, 70.0 FEET SOUTH OF THE CENTERLINE OF COUNTY ROAD 62 (ARKOLA ROAD) AND 61.0 FEET EAST OF A NORTHWEST FENCE CORNER OF A FIELD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.490 03 = -97.303



Mn/DOT Name: KEOUGH

NGS Name: KEOUGH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9901](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	33	51 N	18 W	465117.42	923759.42	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019)

Stamping: KEOUGH 2017

14.3 MILES EAST-SOUTHEAST OF FLOODWOOD, 13.9 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 236.45, 76.4 FEET NORTH OF TRUNK HIGHWAY 2, 41.2 FEET WEST OF DRIVEWAY NUMBER 9074, 1.5 FEET SOUTH OF A WITNESS POST.

Station Pair: BROOKSTON AZ MK - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1285.719	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1285.778	.262		1191.120	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.659 12B = -94.655 09 = -94.563 03 = -94.413

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 51 17.42034	92 37 59.42311	454166.994	174766.740	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2741472.610	457863.985	1732160.766	17024567.040	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KEOUGH-DQ9901-3N-07AUG2017.jpg	N	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KEOUGH-DQ9901-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KEOUGH-DQ9901-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KRISTEN

NGS Name: KRISTEN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5136](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	53 N	21 W	470430.08	925855.72	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 59 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: KRISTEN 2017

10.7 MILES NORTH-NORTHWEST OF FLOODWOOD, 11.8 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 55.0, 30.7 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 125.5 FEET NORTH-NORTHWEST OF MILEPOST NUMBER 55, 22.1 FEET SOUTH-SOUTHEAST OF AN ENTRANCE EXTENDED, 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Station Pair: RACHEL - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1251.973	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1252.032	.262			1155.431	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -96.607 12B = -96.598 09 = -96.552 03 = -96.371

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference	
47 04 30.08057	92 58 55.71883	367394.591	255475.676	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Year	Reference
2654033.408	537842.753	1644864.172	17104628.798	.131	3	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KRISTEN-DR5136-3E-01AUG2017.jpg	E	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KRISTEN-DR5136-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KRISTEN-DR5136-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KULLHEN MNDT

NGS Name: KULLHEN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6510](#)

[Get Map](#)

NGS Quad / Sta Num : 46092144/

USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	52 N	17 W	465918.64	922818.23	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1999)

Stamping: KULLHEN 1992

3.6 MILES SOUTH OF CANYON, 3.5 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 26.45, 112.3 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 191.5 FEET NORTH-NORTHEAST OF A POWER POLE, 101.6 FEET SOUTH-SOUTHEAST OF A POWER POLE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1354.735	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1354.755	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1354.755	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1354.889	.262		1259.197	.197	2011	GPS - RTRN	2017 RTRN2017
			1259.059	.014	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1259.148	.015	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1354.656	.131		1259.253	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1848
1354.656	.131		1259.253	.066	1996	GPS - STATIC	2002 HTWIB

Geoid Separations(ft): GEOID18 = -95.695 12B = -95.689 09 = -95.561 03 = -95.364

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 18.64444	92 28 18.23291	494575.956	223471.244	.131	3	GPS - RTRN	2017 RTRN2017
46 59 18.64525	92 28 18.23276	494575.966	223471.326	.013		ADJUSTMENT	2012 GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 18.64536	92 28 18.23365	494575.905	223471.337	.013		ADJUSTMENT	2007 GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 18.64505	92 28 18.23348	494575.916	223471.306	.033	C	ADJUSTMENT	2003 GPS1848
46 59 18.64505	92 28 18.23348	494575.917	223471.305	.033	C	GPS - STATIC	2002 HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 18.64072	92 28 18.23328	494575.930	223470.865	.033	C	GPS - STATIC	1993 H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781470.306	506904.343	1772209.369	17073531.939	.131	3	GPS - RTRN	2017	RTRN2017
2781470.316	506904.425	1772209.378	17073532.022	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781470.255	506904.436	1772209.317	17073532.032	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781470.266	506904.404	1772209.329	17073532.001	.033	C	ADJUSTMENT	2003	GPS1848
2781470.266	506904.404	1772209.329	17073532.001	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781470.284	506903.966	1772209.346	17073531.563	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KULLHEN-DF6510-3W-19SEP2017.jpg	W	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KULLHEN-DF6510-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KULLHEN-DF6510-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: KUSS MNDT

NGS Name: KUSS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1041](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	52 N	17 W	465642.30	922813.88	2	2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2017	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	MNDT

Description: (1992) Stamping: KUSS 1978

6.0 MILES NORTH OF SAGINAW, 7.1 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 1.0 MILE SOUTHWEST OF INDEPENDENCE, AT TRUNK HIGHWAY 33 MILEPOINT 18.4, 1.0 MILE SOUTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53, 63.5 FEET WEST OF TRUNK HIGHWAY 33, 33.0 FEET EAST OF A GRAVEL ROAD, 12.5 FEET SOUTH OF A POWER POLE, 2.9 FEET EAST OF A WITNESS POST, 46.57 FEET SOUTH OF KUSS RM 1, 57.79 FEET EAST-SOUTHEAST OF KUSS RM 2.

Station Notes

IN 1992 THE GEODETIC UNIT COULD NOT FIND THE STATION AND KUSS RM 1 AND KUSS RM 2-NEW ROAD CONSTRUCTION IN THE AREA.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1360.158	.016	2/1						VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1359.896	.016	2						VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1360.168	.197			1265.099	.131	1996		HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.282 12B = -95.279 09 = -95.151 03 = -94.957

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 56 42.29941	92 28 13.87707	494873.808	207630.272	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>		<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 56 42.29347	92 28 13.87815	494873.733	207629.670	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>				<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>		<u>Year</u>	<u>Reference</u>
46 56 42.50742	92 28 13.19150			.100	2	CLASSICAL SURVEY	1980	16254



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781901.273	491067.098	1772618.186	17057700.397	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781901.203	491066.496	1772618.115	17057699.795	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2157286.843	163004.482			.100	2	CLASSICAL SURVEY	1980	16254



Mn/DOT Name: KUSS RM 1

NGS Name: KUSS RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1043](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	35	52 N	17 W	465642.75	922813.98	2		1978	2017	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: KUSS NO. 1 1978

6.0 MILES NORTH OF SAGINAW, 7.1 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 1.0 MILE SOUTHWEST ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, 83.5 FEET NORTHWEST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 18.35, 25.0 FEET EAST OF A GRAVEL ROAD NORTH, 35.4 FEET NORTH-NORTHWEST OF A POWER POLE WITH A GUY WIRE, 46.6 FEET NORTH OF STATION KUSS MNDT, 58.4 FEET EAST-NORTHEAST OF KUSS RM 2, 46.2 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1361.634	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1361.372	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -95.282 12B = -95.282 09 = -95.154 03 = -94.960

* No Horizontal Positions in the Database *



Mn/DOT Name: KUSS RM 2

NGS Name: KUSS RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1042](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	35	52 N	17 W	465642.43	922814.69	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: KUSS NO. 2 1978

15.5 MILES NORTH OF CLOQUET, 7.1 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 18.35, 170.9 FEET SOUTH-SOUTHWEST OF COUNTY ROAD 975 (NEW INDEPENDENCE ROAD), 111.03 FEET WEST-NORTHWEST OF SOUTHBOUND TRUNK HIGHWAY 33, 99.2 FEET SOUTHWEST OF A POWER POLE WITH 2 GUY WIRES, 1.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.352	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1361.369	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025
NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.109	.016	2					VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.539	.262			1266.257	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.282 12B = -95.279 09 = -95.154 03 = -94.960

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
46 56 42.43273	92 28 14.68679			494817.627	207643.795	.131	3	GPS - RTRN	2017
									RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
2781844.982	491080.148			1772561.936	17057713.520	.131	3	GPS - RTRN	2017
									RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KUSS_RM_2-RN1042-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KUSS_RM_2-RN1042-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/KUSS_RM_2-RN1042-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: L 163

NGS Name: L 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0163](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	34	55 N	17 W	471152.57	922918.47	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1935	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1999)

Stamping: L 163 1935

1.6 MILES NORTH OF COTTON, NEAR THE OLD SCHOOL BUILDING, AT THE JUNCTION OF A GRAVEL ROAD TO SAX, 36.0 FEET NORTH OF A ROAD, 33.0 FEET WEST OF TRUNK HIGHWAY 53, 6.0 FEET NORTHWEST OF A POLE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1326.858	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1326.858	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1326.572	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1326.060	.033	3				VERTICAL CONTROL SURVEY	1964	CS6917
1325.939	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
			1229.230	.019	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1229.318	.020	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1326.572	.131		1229.345	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1326.572	.131		1229.345	.066	1996	GPS - STATIC	2002	HTWIB
1326.999	.197		1229.601	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.628 12B = -97.624 09 = -97.536 03 = -97.339

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 11 52.57316	92 29 18.47006	490437.074	299862.902	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 11 52.57328	92 29 18.47097	490437.011	299862.914	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 11 52.57304	92 29 18.47070	490437.030	299862.890	.033	C	ADJUSTMENT	2003	GPS1848
47 11 52.57304	92 29 18.47070	490437.031	299862.891	.033	C	GPS - STATIC	2002	HTWIB
47 11 52.57404	92 29 18.47207	490436.935	299862.991	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 11 52.56730	92 29 18.47054	490437.040	299862.308	.066	2	ADJUSTMENT	1991	GPS194

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 11 52.80231	92 29 17.78901			.100	2	CLASSICAL SURVEY	1991	17504

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776689.987	583252.768	1767535.607	17149858.798	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776689.924	583252.779	1767535.544	17149858.809	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776689.943	583252.755	1767535.563	17149858.785	.033	C	ADJUSTMENT	2003	GPS1848
2776689.943	583252.755	1767535.563	17149858.786	.033	C	GPS - STATIC	2002	HTWIB
2776689.848	583252.856	1767535.468	17149858.886	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776689.958	583252.174	1767535.578	17149858.204	.066	2	ADJUSTMENT	1991	GPS194

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2152074.871	255191.912			.100	2	CLASSICAL SURVEY	1991	17504



Mn/DOT Name: L 271

NGS Name: L 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0695](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	19	52 N	18 W	465842.87	924046.46	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2020	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	BENCH MARK DISK	NGS

Description: (1948)

Stamping: L 271 1948

5.05 MILES WEST OF THE POST OFFICE IN ALBORN, AT A 90 DEGREE TURN IN COUNTY ROAD 166 (EAST AND SOUTH) AND COUNTY ROAD 167 (NORTHWEST), 26.0 FEET NORTH OF THE EAST TANGENT OF COUNTY ROAD 166, 289.0 FEET NORTHEAST OF COUNTY ROAD 167, 311.0 FEET NORTH-NORTHEAST OF THE NORTHEAST CORNER OF A BRIDGE ON THE SOUTH TANGENT, 37.0 FEET WEST OF A TRAIL NORTH, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1287.035	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1286.477	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1286.477	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.866 12B = -95.850 09 = -95.751 03 = -95.594

* No Horizontal Positions in the Database *



Mn/DOT Name: L 272

NGS Name: L 272

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	19 W	470412.00	924255.00	2	

NGS ACRN: [SJ0510](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	BENCH MARK DISK	NGS

Description: (1964)

Stamping: L 272 1948

0.95 MILE EAST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, IN THE SOUTH END OF THE EAST ABUTMENT OF A COUNTY ROAD 133 BRIDGE OVER THE WHITEFACE RIVER, 12.0 FEET SOUTH OF COUNTY ROAD 133, 2.0 FEET SOUTH OF A BRIDGE RAIL.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1267.412	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1266.805	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1266.805	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.775 12B = -96.768 09 = -96.673 03 = -96.493

* No Horizontal Positions in the Database *



Mn/DOT Name: L 273

NGS Name: L 273

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	7	52 N	20 W	470031.00	925522.00	2	

NGS ACRN: [SJ0499](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1950	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: L 273 1948

5.9 MILES NORTH FROM FLOODWOOD, 5.9 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, ABOUT 0.45 MILE SOUTHEAST OF THE JUNCTION OF A GRAVEL ROAD WEST, AT THE CROSSING OF A POWER LINE, AT THE OUTSIDE OF A CURVE SOUTH AND NORTHWEST, 28.0 FEET NORTHEAST OF TRUNK HIGHWAY 73, 144.0 FEET NORTHWEST OF THE NORTHEAST END OF A 40.0-INCH DIAMETER PIPE CULVERT UNDER THE HIGHWAY, ABOUT 25.0 FEET WEST OF THE PROLONGED SOUTH TANGENT OF THE HIGHWAY, 11.0 FEET SOUTHEAST OF A POWER POLE AND IN LINE WITH THE ROW OF POLES, 2.0 FEET SOUTHEAST OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1247.150	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -96.122 12B = -96.105 09 = -96.056 03 = -95.892

* No Horizontal Positions in the Database *



Mn/DOT Name: L 273 RESET

NGS Name: L 273 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0500](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	7	52 N	20 W	470031.08	925513.05		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1950)

Stamping: L 273 RESET 1950

5.8 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 148 WEST, 86.0 FEET WEST OF TRUNK HIGHWAY 73, 62.0 FEET SOUTH OF COUNTY ROAD 148, IN LINE WITH A POWER LINE, 24.0 FEET SOUTH OF A POWER POLE, 11.6 FEET WEST OF A POLE, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1246.585	.066	3				VERTICAL CONTROL SURVEY	1987 L24645
1246.595	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.125 12B = -96.109 09 = -96.060 03 = -95.895

* No Horizontal Positions in the Database *



Mn/DOT Name: L 274

NGS Name: L 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1373](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	7	53 N	21 W	470504.00	930253.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: L 274 1948

5.55 MILES NORTHEAST OF WAWINA, AT A CROSSROAD, 35.0 FEET NORTH OF COUNTY ROAD 133, 29.0 FEET WEST OF A NORTH-SOUTH ROAD, 11.0 FEET WEST OF A POWER POLE AT A TURN IN A POWER LINE, 5.5 FEET EAST OF A REFERENCE POINT TO A GOVERNMENT LOT CORNER, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1266.408	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1265.670	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1265.670	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN
1265.670	.007	1				VERTICAL CONTROL SURVEY	1952 Q470932

Geoid Separations(ft): GEOID18 = -96.548 12B = -96.542 09 = -96.489 03 = -96.332

* No Horizontal Positions in the Database *



Mn/DOT Name: L 276

NGS Name: L 276

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	19	55 N	19 W	471422.24	924835.27	2	

NGS ACRN: SJ0383	Get Map
NGS Quad / Sta Num : 47092331/	
USGS Quad: TOIVOLA	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** L 276 1948

5.3 MILES NORTH OF THE HIGH SCHOOL IN TOIVOLA, 4.0 MILES SOUTH ALONG COUNTY ROAD 5 FROM THE CROSSROADS IN LITTLE SWAN, AT THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 750, 81.0 FEET EAST OF COUNTY ROAD 5, 31.0 FEET SOUTH OF COUNTY ROAD 750, 46.5 FEET EAST OF A FENCE CORNER, 1.5 FEET NORTH OF A FENCE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

THE AREA HAS BEEN REGRADED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1286.503	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1285.798	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1285.798	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.743 12B = -97.743 09 = -97.670 03 = -97.526

* No Horizontal Positions in the Database *



Mn/DOT Name: L 279 1948

NGS Name: L 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1334](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	4	53 N	21 W	470612.60	930037.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: L 279 1948

12.0 MILES NORTHWEST OF FLOODWOOD, 14.4 MILES NORTHWEST ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, THEN 0.60 MILE WEST ALONG VAN HORN ROAD, THEN 0.40 MILE SOUTH ON CEDAR VALLEY ROAD, 27.0 FEET EAST OF CEDAR VALLEY ROAD, 1.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1276.411	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1275.680	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1275.680	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.732 12B = -96.722 09 = -96.676 03 = -96.509

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/L_279-SJ1334-3E-12JUL2017.jpg	E	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/L_279-SJ1334-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/L_279-SJ1334-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: L 28

NGS Name: L 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0613](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	17	51 N	17 W	465403.00	923128.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: L 28 1934

AT BURNETT, 2.5 RAILS EAST ON A RAILROAD FROM THE RAILROAD STATION, 1 RAIL EAST OF A ROAD CROSSING, 40.0 FEET SOUTH OF THE MAIN RAILROAD TRACK.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1306.126	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1305.647	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1305.647	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -94.977 12B = -94.980 09 = -94.859 03 = -94.675

* No Horizontal Positions in the Database *



Mn/DOT Name: L 30

NGS Name: L 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1214](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	25	51 N	19 W	465236.00	924121.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

SURVEY DISK

Mon. Agency

NGS

Description: (1934)

Stamping: L 30 1934

4.0 MILES WEST ON A RAILROAD FROM BROOKSTON, 115.5 FEET EAST OF RAILROAD MILEPOST 62, 21 RAILS EAST OF A RAILROAD SEMAPHORE, AT A FARM ROAD CROSSING, 30.0 FEET SOUTH OF A RAILROAD, ON THE WEST SIDE OF A GATE.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1236.605	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1235.962	.007	1				VERTICAL CONTROL SURVEY	1934	L13 MINN

Geoid Separations(ft): GEOID18 = -94.885 12B = -94.875 09 = -94.783 03 = -94.652

* No Horizontal Positions in the Database *



Mn/DOT Name: LADYBEAR MN137

NGS Name: LADYBEAR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9121](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	10	53 N	18 W	470543.96	923556.36	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2007	GOOD	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	SURVEY DISK	MN-137

Description: (2002) **Stamping:** LADYBEAR 2001

9.0 MILES NORTH OF ALBORN, 9.0 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 47 IN ALBORN, 0.2 MILE SOUTH OF THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 232, 70.0 FEET WEST OF COUNTY ROAD 7, 10.0 FEET SOUTH OF A SOUTH GATE POST AT A RAILROAD CROSSING, 28.5 FEET EAST OF THE RAILROAD TRACKS, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1311.011	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1311.011	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
			1214.043	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1214.131	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1310.988	.131		1214.194	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1310.988	.131		1214.194	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -96.949 12B = -96.942 09 = -96.831 03 = -96.644

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 05 43.95580	92 35 56.36071	462887.256	262546.097	.010		ADJUSTMENT	2012	GPS2800
NAD83(2007)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 05 43.95588	92 35 56.36161	462887.194	262546.105	.010		ADJUSTMENT	2007	GPS2300
NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 05 43.95568	92 35 56.36135	462887.212	262546.085	.033	C	ADJUSTMENT	2003	GPS1931
47 05 43.95568	92 35 56.36135	462887.212	262546.085	.033	C	GPS - STATIC	2003	HSTLO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2749456.734	545709.447	1740261.210	17112365.994	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2749456.671	545709.454	1740261.148	17112366.002	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2749456.689	545709.434	1740261.166	17112365.982	.033	C	ADJUSTMENT	2003	GPS1931
2749456.689	545709.434	1740261.166	17112365.982	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LADYBEAR-DF9121-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LADYBEAR-DF9121-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LADYBEAR-DF9121-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LAURA

NGS Name: LAURA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5127](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	7	52 N	20 W	470002.09	925454.81	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 39 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: LAURA 2017

5.25 MILES NORTH OF FLOODWOOD, 5.6 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 48.75, 62.4 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 22.1 FEET SOUTH-SOUTHEAST OF A FIELD ENTRANCE, 1.5 FEET WEST-SOUTHWEST OF A WITNESS POST.

Station Pair: ADAM MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1253.728	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1253.770	.262		1157.737	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.053 12B = -96.037 09 = -95.984 03 = -95.823

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 00 02.08508	92 54 54.80581	383909.160	228216.386	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2670773.149	510723.431	1661561.923	17077498.523	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURA-DR5127-3E-31JUL2017.jpg	E	Jul 31, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURA-DR5127-2-31JUL2017.jpg		Jul 31, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURA-DR5127-1-31JUL2017.jpg		Jul 31, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LAURIE MN137

NGS Name: LAURIE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9123](#)

[Get Map](#)

NGS Quad / Sta Num : 46093111/

USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	20	51 N	21 W	465348.08	930202.57		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type

ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)

Disk Type

SURVEY DISK

Mon. Agency

MN-137

Description: (2002)

Stamping: LAURIE 2001

6.0 MILES SOUTHWEST OF FLOODWOOD, 1.7 MILES WEST ON COUNTY ROAD 832 (FLOODWOOD ROAD) FROM THE JUNCTION OF COUNTY ROAD 832 AND TRUNK HIGHWAY 73 IN FLOODWOOD, THEN 0.50 MILE SOUTH ON COUNTY ROAD 186 (SAVANNA ROAD), THEN 4.50 MILES WEST AND SOUTHWEST ON COUNTY ROAD 837 (LAURIE ROAD), 22.0 FEET SOUTH OF COUNTY ROAD 837, 0.2 MILE EAST OF LAURIE ROAD, 2.0 FEET NORTH OF A WITNESS POST, 1000.0 FEET EAST OF THE NORTHWEST CORNER OF SECTION 20.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.885	.262		1157.901	.197	2011	GPS - OPUS	2020	GPSBM
1252.888	.262		1157.905	.197	2011	GPS - OPUS	2020	GPSBM
1252.826	.262		1157.845	.197	2011	GPS - RTRN	2020	RTRN2020
			1157.868	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1157.964	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1252.852	.131		1158.049	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1252.852	.131		1158.049	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -94.983 12B = -94.977 09 = -94.882 03 = -94.783

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 48.08414	93 02 02.56686	353976.662	190522.176	.131	3	GPS - OPUS	2020	GPSBM
46 53 48.08443	93 02 02.56690	353976.659	190522.206	.131	3	GPS - OPUS	2020	GPSBM
46 53 48.08494	93 02 02.56692	353976.658	190522.257	.131	3	GPS - RTRN	2020	RTRN2020
46 53 48.08462	93 02 02.56671	353976.673	190522.225	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 48.08473	93 02 02.56758	353976.612	190522.236	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 53 48.08444	93 02 02.56725	353976.635	190522.207	.033	C	ADJUSTMENT	2003	GPS1931
46 53 48.08444	93 02 02.56725	353976.635	190522.207	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2641156.170	472783.077	1631908.224	17039612.625	.131	3	GPS - OPUS	2020	GPSBM
2641156.167	472783.107	1631908.222	17039612.654	.131	3	GPS - OPUS	2020	GPSBM
2641156.166	472783.158	1631908.220	17039612.706	.131	3	GPS - RTRN	2020	RTRN2020
2641156.181	472783.126	1631908.235	17039612.673	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2641156.120	472783.137	1631908.174	17039612.684	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2641156.143	472783.108	1631908.197	17039612.655	.033	C	ADJUSTMENT	2003	GPS1931
2641156.143	472783.108	1631908.197	17039612.655	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURIE-DF9123-3S-07JUL2020.jpg	S	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURIE-DF9123-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LAURIE-DF9123-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: LEINO MN137

NGS Name: LEINO

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9124](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	22	54 N	19 W	470817.93	924414.12		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 26 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: LEINO 2001

3.5 MILES EAST-SOUTHEAST OF TOIVOLA, 2.0 MILES EAST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 IN TOIVOLA, THEN 2.05 MILES SOUTH ON COUNTY ROAD 230 (OVERTON ROAD), THEN 1.55 MILES EAST ON COUNTY ROAD 980, 0.5 MILE WEST OF COUNTY ROAD 202 (OWL AVENUE) FROM THE JUNCTION OF COUNTY ROAD 202 AND COUNTY ROAD 980, 28.0 FEET NORTH OF COUNTY ROAD 980, 23.2 FEET EAST OF THE EXTENDED CENTERLINE OF DRIVEWAY NUMBER 9998, 2.0 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1290.647	.262		1193.288	.197	2011	GPS - OPUS	2020	GPSBM
1290.617	.262		1193.259	.197	2011	GPS - OPUS	2020	GPSBM
1290.601	.262		1193.249	.197	2011	GPS - RTRN	2020	RTRN2020
			1193.190	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1193.275	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1290.581	.131		1193.331	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1290.581	.131		1193.331	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -97.359 12B = -97.352 09 = -97.277 03 = -97.083

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 08 17.92644	92 44 14.11559	428503.070	278242.608	.131	3	GPS - OPUS	2020	GPSBM
47 08 17.92637	92 44 14.11526	428503.093	278242.601	.131	3	GPS - OPUS	2020	GPSBM
47 08 17.92695	92 44 14.11434	428503.157	278242.660	.131	3	GPS - RTRN	2020	RTRN2020
47 08 17.92664	92 44 14.11509	428503.105	278242.629	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 08 17.92670	92 44 14.11599	428503.043	278242.635	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 08 17.92651	92 44 14.11573	428503.061	278242.615	.033	C	ADJUSTMENT	2003	GPS1931
47 08 17.92651	92 44 14.11573	428503.061	278242.615	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714945.201	561116.377	1705783.262	17127813.491	.131	3	GPS - OPUS	2020	GPSBM
2714945.224	561116.370	1705783.285	17127813.484	.131	3	GPS - OPUS	2020	GPSBM
2714945.287	561116.429	1705783.348	17127813.543	.131	3	GPS - RTRN	2020	RTRN2020
2714945.236	561116.397	1705783.296	17127813.511	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714945.173	561116.403	1705783.234	17127813.517	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2714945.191	561116.384	1705783.252	17127813.498	.033	C	ADJUSTMENT	2003	GPS1931
2714945.191	561116.384	1705783.252	17127813.498	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LEINO-DF9124-3N-13JUL2020.jpg	N	Jul 13, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LEINO-DF9124-2-13JUL2020.jpg		Jul 13, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/LEINO-DF9124-1-13JUL2020.jpg		Jul 13, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: M 163

NGS Name: M 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0164](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	10	54 N	17 W	471029.10	922842.53	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1935	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019)

Stamping: M 163 1935

IN COTTON, 0.05 MILE WEST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53 IN COTTON, THEN 0.4 MILE NORTH ON A FRONTAGE ROAD, IN A PARK OPPOSITE A SCHOOL, 139.0 FEET WEST-SOUTHWEST OF A FRONTAGE ROAD, 126.0 FEET EAST-NORTHEAST OF A FLAG POLE, 7.8 FEET EAST OF THE EAST EDGE OF A BITUMINOUS PARKING LOT IN A GRASS AREA IN THE FRONT OF AN OLD SCHOOL BUILDING, 52.0 FEET SOUTH OF A LIGHT POLE, 105.0 FEET SOUTHWEST OF A FENCE LINE.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1330.234	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1330.234	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1330.234	.016	2/1				VERTICAL CONTROL SURVEY	2007	VCOTT
1330.234	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
1330.234	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1329.617	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1329.617	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1330.319	.262		1232.888	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.434 12B = -97.431 09 = -97.332 03 = -97.132

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
47 10 29.09665	92 28 42.52532	492916.392	291403.604	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2779240.044	574815.445	1770073.282	17141420.943	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/M_163-SJ0164-3E-14SEP2017.jpg	E	Sep 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/M_163-SJ0164-2-14SEP2017.jpg		Sep 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/M_163-SJ0164-1-14SEP2017.jpg		Sep 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: M 271

NGS Name: M 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0696](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	19	52 N	18 W	465816.65	924047.20	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** M 271 1948

5.6 MILES SOUTHWEST OF ALBORN, AT A 90 DEGREE TURN IN COUNTY ROAD 166 (NORTH AND WEST) AND A ROAD EAST AND A TRAIL SOUTH, 28.0 FEET EAST OF THE NORTH TANGENT OF COUNTY ROAD 166, 97.0 FEET NORTH OF A ROAD EAST AND THE WEST TANGENT OF COUNTY ROAD 166 EXTENDED, 65.0 FEET SOUTH OF A BOULDER, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1322.540	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1321.979	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1321.979	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.790 12B = -95.777 09 = -95.682 03 = -95.525

* No Horizontal Positions in the Database *



Mn/DOT Name: M 272

NGS Name: M 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0509](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	53 N	19 W	470415.00	924207.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: M 272 1948

1.6 MILES EAST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.65 MILE EAST OF A COUNTY ROAD 133 BRIDGE OVER THE WHITEFACE RIVER, AT THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 47 SOUTH-GRAVEL ROAD NORTH, 32.0 FEET NORTH OF COUNTY ROAD 133, 23.0 FEET EAST OF A ROAD NORTH, 6.5 FEET EAST OF A TELEPHONE POLE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.952	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.348	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1274.348	.033	3				VERTICAL CONTROL SURVEY	1967	USGS-VERT
1274.348	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.788 12B = -96.778 09 = -96.683 03 = -96.502

* No Horizontal Positions in the Database *



Mn/DOT Name: M 273

NGS Name: M 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0501](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	52 N	20 W	470110.00	925618.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: M 273 1948

5.8 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, THEN 1.25 MILES NORTHWEST ON COUNTY ROAD 148 (OLD TRUNK HIGHWAY 73), 30.0 FEET WEST OF COUNTY ROAD 148, 32.0 FEET NORTH OF A GRASSY DRIVE WEST, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1251.536	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1250.867	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.214 12B = -96.197 09 = -96.148 03 = -95.977

* No Horizontal Positions in the Database *



Mn/DOT Name: M 274

NGS Name: M 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1372](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	8	53 N	21 W	470506.00	930116.00	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** M 274 1948

6.8 MILES NORTHEAST OF WAWINA, 0.2 MILE WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 508 (OLD TRUNK HIGHWAY 73) AND CEDAR VALLEY TOWNSHIP HALL, 330.0 FEET SOUTH OF A CEMETERY CHAPEL, 43.0 FEET NORTH OF A GRAVEL ROAD, 16.0 FEET EAST OF A CEMETERY DRIVE, 1.5 FEET WEST OF A FENCE, 16.5 FEET NORTH OF A FENCE CORNER, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1266.592	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1265.867	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1265.867	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1265.867	.007	1					VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.607 12B = -96.598 09 = -96.548 03 = -96.381

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/M_274-SJ1372-3W-13JUL2017.jpg	W	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: M 276

NGS Name: M 276

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	55 N	19 W	471501.00	924838.00	2	

NGS ACRN: [SJ0382](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BRIDGE ABUTMENT	BENCH MARK DISK	NGS

Description: (1989)

Stamping: M 276 1948

3.3 MILES SOUTH ON COUNTY ROAD 5 FROM THE CROSSROADS AT LITTLE SWAN, 0.75 MILE NORTH OF A CROSSROAD AND A STORE, IN THE EAST END OF THE NORTH ABUTMENT OF A COUNTY ROAD 5 BRIDGE OVER THE SWAN RIVER, 17.0 FEET EAST OF A COUNTY ROAD 5, 2.5 FEET EAST OF BRIDGE BANISTER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1273.629	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1272.917	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.772 12B = -97.775 09 = -97.700 03 = -97.565

* No Horizontal Positions in the Database *



Mn/DOT Name: M 279

NGS Name: M 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0489](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	34	54 N	21 W	470634.00	925949.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2005	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2002) Stamping: M 279 1948

1.95 MILES NORTH OF A SCHOOL AT CEDAR VALLEY, AT A TURN IN A HIGHWAY NORTH AND WEST AND A ROAD EAST, 105.0 FEET EAST OF TRUNK HIGHWAY 73, 29.0 FEET NORTH OF A ROAD EAST, 4.5 FEET SOUTH OF A POWER LINE, 65.0 FEET WEST OF A POWER POLE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1276.392	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1275.654	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN	

Geoid Separations(ft): GEOID18 = -96.791 12B = -96.785 09 = -96.739 03 = -96.565

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/M_279-SJ0489-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: M 28

NGS Name: M 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0614](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	7	51 N	17 W	465445.00	923310.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1953	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: M 28 1934

IN DULUTH, 5940.0 FEET SOUTH OF THE CITY LIMITS, ON THE BROW OF A HILL ALONG A STRAIGHT LINE AND ON THE EXTENSION OF ARLINGTON AVENUE, 1.0 MILE EAST OF CULVER, ALONG A RAILROAD, 10 RAILS EAST OF THE STATION 1.0 MILE SIGN, AT A PRIVATE ROAD CROSSING, 0.5 MILE SOUTH OF MILLER TRUNK ROAD, 73.1 FEET SOUTH OF AN EAST-WEST FENCE, 61.4 FEET SOUTHWEST OF A ROCK, 45.0 FEET NORTH OF A RAILROAD, 42.3 FEET SOUTH OF A CLUSTER OF BIRCH TREES.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1307.944	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1307.438	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1307.438	.007	1					VERTICAL CONTROL SURVEY	1934	L27 MINN

Geoid Separations(ft): GEOID18 = -95.131 12B = -95.131 09 = -95.016 03 = -94.839

* No Horizontal Positions in the Database *



Mn/DOT Name: M 30

NGS Name: M 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1213](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	51 N	19 W	465252.00	924324.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	SEE DESCRIPTION	NGS

Description: (1934)

Stamping: M 30 1934

2.0 MILES EAST ON A RAILROAD FROM THE RAILROAD STATION AT PAUPORES, 30.0 FEET NORTH OF A RAILROAD, AT RAILROAD MILEPOINT 63.5, 99.0 FEET WEST OF A SEMAPHORE, 150.0 FEET SOUTH OF A FARMHOUSE, 75.0 FEET SOUTHWEST OF A BARN, ON THE OUTSIDE EDGE OF A CURVE AT A FARM ROAD CROSSING, 20.0 FEET EAST OF A ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1231.956	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1231.353	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT
1231.297	.007	1				VERTICAL CONTROL SURVEY	1934 L13 MINN

Geoid Separations(ft): GEOID18 = -94.944 12B = -94.931 09 = -94.849 03 = -94.714

* No Horizontal Positions in the Database *



Mn/DOT Name: MACAGNONE

NGS Name: MACAGNONE

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR5141 Get Map NGS Quad / Sta Num : 47092334/ USGS Quad: UPSTEAD LAKE
NW	27	54 N	21 W	470755.90	925948.65	2	3	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 44 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: MACAGNONE 2017

21.1 MILES SOUTH-SOUTHWEST OF HIBBING, 19.65 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 59.1, 27.4 FEET EAST OF TRUNK HIGHWAY 73, 5.0 FEET WEST OF A WITNESS POST.

Station Pair: MAIA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1283.551	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1283.606	.262		1186.704	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.909 12B = -96.903 09 = -96.860 03 = -96.686

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 07 55.89842	92 59 48.65473	363875.912	276354.433	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2650341.611	558689.916	1641200.787	17125472.723	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MACAGNONE-DR5141-3E-01AUG2017.jpg	E	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MACAGNONE-DR5141-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MACAGNONE-DR5141-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MAIA

NGS Name: MAIA

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR5140 Get Map
NW	34	54 N	21 W	470727.08	925949.87	2	3	NGS Quad / Sta Num : 47092333/ USGS Quad: TOIVOLA SW

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 49 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: MAIA 2017

21.6 MILES SOUTH-SOUTHWEST OF HIBBING, 20.2 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 58.55, 31.1 FEET WEST OF TRUNK HIGHWAY 73, 1.5 FEET EAST OF A WITNESS POST.

Station Pair: MACAGNONE - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Year</u>	<u>Reference</u>
1273.239	.016	2/1							VERTICAL ADJUSTMENT			2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Year</u>	<u>Reference</u>
1273.213	.262					1176.353	.197	2011	GPS - RTRN			2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.867 12B = -96.860 09 = -96.817 03 = -96.644

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>			<u>Geodetic Position</u>			<u>St Louis County - South Zone</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>Order (/Class)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order (/Class)</u>	<u>X</u>	<u>Y</u>	<u>Order (/Class)</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order (/Class)</u>	<u>Year</u>	<u>Reference</u>
47 07 27.08328	92 59 49.86998					363771.505	273435.443	.131 3	GPS - RTRN			2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>			<u>MN State Plane - North Zone</u>			<u>UTM - Zone 15</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>Order (/Class)</u>	<u>X</u>	<u>Y</u>	<u>Order (/Class)</u>	<u>X</u>	<u>Y</u>	<u>Order (/Class)</u>	<u>X</u>	<u>Y</u>	<u>Order (/Class)</u>	<u>Year</u>	<u>Reference</u>
2650261.471	555770.407					1641116.901	17122554.424	.131 3	GPS - RTRN			2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MAIA-DR5140-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MAIA-DR5140-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MAIA-DR5140-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MANN MNDT

NGS Name: MANN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0759](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/1057
USGS Quad: MARTIN LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	31	51 N	18 W	465120.43	923959.16	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	1997	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1997) **Stamping:** MANN 1974

3.3 MILES WEST-SOUTHWEST OF BROOKSTON, 3.05 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 234.85, 90.0 FEET NORTH OF TRUNK HIGHWAY 2, 11.2 FEET SOUTH OF A TELEPHONE CABLE MARKER NUMBER B20LP5, 13.5 FEET SOUTHWEST OF A RIGHT-OF-WAY POST, 18.2 FEET SOUTHEAST OF A POWER POLE WITH A GUY WIRE, 4.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1343.737	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1343.114	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1343.731	.197			1249.227	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.672 09 = -94.583 03 = -94.442

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 20.43154	92 39 59.15970	445845.600	175093.039	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 20.42509	92 39 59.16135	445845.483	175092.386	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 20.62249	92 39 58.46106			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2733148.880	458120.598	1723841.047	17024834.892	.066	2	ADJUSTMENT	1999	17648		

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2733148.769	458119.943	1723840.936	17024834.238	.066	2	ADJUSTMENT	1986	17289		

NAD27		MN State Plane - North Zone					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2108533.996	130056.271			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: MARK

NGS Name: MARK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5144](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	9	54 N	21 W	471006.80	930031.20	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 54 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** MARK 2017

18.5 MILES SOUTH-SOUTHWEST OF HIBBING, 17.1 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 61.7, 28.4 FEET EAST OF TRUNK HIGHWAY 73, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: DANIELLE - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1308.951	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1309.079	.262		1212.045	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.034 12B = -97.037 09 = -96.978 03 = -96.824

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
47 10 06.80371	93 00 31.20370	361028.402	289638.677	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2647384.091	571948.842	1638261.516	17138730.504	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MARK-DR5144-3E-01AUG2017.jpg	E	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MARK-DR5144-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MARK-DR5144-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MCGONAGLE MN137

NGS Name: MCGONAGLE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9125](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	1	51 N	20 W	465529.19	924830.41		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2021	POOR	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: MCGONAGLE 2001

5.0 MILES EAST OF FLOODWOOD, 5.2 MILES EAST ALONG COUNTY ROAD 8 (FIFTH AVENUE) FROM THE JUNCTION OF COUNTY ROAD 8 (FIFTH AVENUE) AND TRUNK HIGHWAY 73 (ELM STREET) IN FLOODWOOD, 550.0 FEET WEST OF COUNTY ROAD 170 (MCGONAGLE ROAD), 36.0 FEET NORTH OF COUNTY ROAD 8 (SAINT VINCENT ROAD), 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

FOUND CAP LOOSE. USE WITH CAUTION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order/(Class)	Height	Acc	Adj		Year	Reference	
			1209.574	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
			1209.663	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1304.984	.131		1209.748	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931	
1304.951	.131		1209.748	.066	1996	GPS - STATIC	2003	HSTLO	

Geoid Separations(ft): GEOID18 = -95.361 12B = -95.341 09 = -95.269 03 = -95.138

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 55 29.18760	92 48 30.41129	410427.214	200426.726	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 55 29.18771	92 48 30.41216	410427.153	200426.737	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 55 29.18741	92 48 30.41181	410427.178	200426.707	.033	C	ADJUSTMENT	2003	GPS1931
46 55 29.18741	92 48 30.41181	410427.178	200426.707	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2697520.796	483156.872	1688262.071	17049908.211	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2697520.736	483156.882	1688262.010	17049908.223	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2697520.760	483156.852	1688262.035	17049908.192	.033	C	ADJUSTMENT	2003	GPS1931
2697520.760	483156.852	1688262.035	17049908.192	.033	C	GPS - STATIC	2003	HSTLO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MCGONAGLE-DF9125-1-03JUN2003.jpg		Jun 3, 2003
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: MCKAY MN137

NGS Name: MCKAY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9126](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	15	54 N	18 W	471005.92	923615.17		C	2001	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 24 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 31 FT)	SURVEY DISK	MN-137

Description: (2002) Stamping: MCKAY 2001

1.5 MILES NORTH OF KELSEY, 1.5 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 29 IN KELSEY, THEN 0.2 MILE WEST ON COUNTY ROAD 52, 0.1 MILE WEST OF THE RAILROAD TRACKS, 73.0 FEET EAST OF A BRIDGE OVER A DRAINAGE DITCH, 27.0 FEET SOUTH OF COUNTY ROAD 52, 3.0 FEET WEST OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order</u>	<u>(/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
				1202.304	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1202.396	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1299.866	.131			1202.452	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1299.866	.131			1202.452	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -97.565 12B = -97.569 09 = -97.460 03 = -97.277

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 05.92485	92 36 15.17183	461637.863	289092.180	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 05.92495	92 36 15.17273	461637.801	289092.190	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 05.92481	92 36 15.17247	461637.819	289092.176	.033	C	ADJUSTMENT	2003	GPS1931
47 10 05.92481	92 36 15.17247	461637.819	289092.175	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2747985.018	572241.853	1738825.877	17138890.640	.010		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2747984.956	572241.863	1738825.815	17138890.650	.010		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2747984.974	572241.849	1738825.833	17138890.636	.033	C	ADJUSTMENT	2003	GPS1931
2747984.974	572241.848	1738825.833	17138890.636	.033	C	GPS - STATIC	2003	HSTLO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MCKAY-DF9126-1-03JUN2003.jpg		Jun 3, 2003
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: MEADOWLANDS

NGS Name: MEADOWLANDS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2196](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/1013
USGS Quad: MEADOWLANDS

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	53 N	19 W	470411.42	924346.53	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2021	NOT FOUND	Horz=NO Vert=NO	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2019) **Stamping:** MEADOWLANDS 1952

AT THE EAST EDGE OF MEADOWLANDS, 0.15 MILE EAST ON COUNTY ROAD 133 FROM COUNTY ROAD 29 (CENTRAL AVENUE), 65.0 FEET NORTH OF COUNTY ROAD 133, 122.0 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A HIGHWAY DEPARTMENT BUILDING, 3.0 FEET SOUTH OF A WITNESS POST, 88.14 FEET SOUTH-SOUTHWEST OF MEADOWLANDS RM 1, 89.38 FEET EAST-NORTHEAST OF MEADOWLANDS RM 2.

Station Notes

NEW PARKING LOT AND ENTRANCE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1275.637	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1275.637	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1276.244	.197		1179.643	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1276.211						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -96.771 12B = -96.765 09 = -96.676 03 = -96.496

Lat/Lon and County Coordinates (Feet)

NAD83(1996)			St Louis County - South Zone			Determination Method	Project Info	
Latitude	Longitude		X	Y	Acc		Year	Reference
47 04 11.41767	92 43 46.52997		430321.205	253258.901	.066	2 ADJUSTMENT	1999	17648

NAD83(1986)			St Louis County - South Zone			Determination Method	Project Info	
Latitude	Longitude		X	Y	Acc		Year	Reference
47 04 11.41489	92 43 46.53554		430320.818	253258.620	.066	2 ADJUSTMENT	1986	17289

NAD27						Determination Method	Project Info	
Latitude	Longitude		X	Y	Acc		Year	Reference
47 04 11.63100	92 43 45.84000				.100	2 CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)			UTM - Zone 15			Determination Method	Project Info	
MN State Plane - North Zone			X	Y	Acc		Year	Reference
2716971.915	536150.691		1707775.920	17102854.579	.066	2 ADJUSTMENT	1999	17648

NAD83(1986)			UTM - Zone 15			Determination Method	Project Info	
MN State Plane - North Zone			X	Y	Acc		Year	Reference
2716971.531	536150.407		1707775.536	17102854.296	.066	2 ADJUSTMENT	1986	17289

NAD27						Determination Method	Project Info	
MN State Plane - North Zone			X	Y	Acc		Year	Reference
2092355.756	208088.258				.100	2 CLASSICAL SURVEY	1954	10724



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>	N	
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS-SJ2196-3N-23MAY2007.jpg		May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS-SJ2196-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS-SJ2196-1-23MAY2007.jpg		May 23, 2007
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: MEADOWLANDS AZ MK

NGS Name: MEADOWLANDS AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3306](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	15	53 N	19 W	470413.20	924402.30	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2007	GOOD	Horz=YES Vert=YES	YES		PROJECTS 13 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1952) **Stamping:** MEADOWLANDS 1952

AT THE EAST EDGE OF MEADOWLANDS, 0.2 MILE EAST ON COUNTY ROAD 133, AT THE OLD SCHOOL, 25.8 FEET WEST OF WESTERN AVENUE, 55.0 FEET NORTHEAST OF A LIGHT POLE, 67.0 FEET NORTH OF THE SOUTH ENTRANCE TO THE OLD SCHOOL, NO WITNESS POST DUE TO A MOWED AREA.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>			
1273.118	.016	2/1				VERTICAL ADJUSTMENT			2012	00000702			
1273.121	.016	2/1				VERTICAL CONTROL SURVEY			2009	VWITT			

Geoid Separations(ft): GEOID18 = -96.778 12B = -96.768 09 = -96.683 03 = -96.499

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS_AZ_MK-CJ3306-3N-24MAY2007.jpg	N	May 24, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS_AZ_MK-CJ3306-2-24MAY2007.jpg		May 24, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MEADOWLANDS_AZ_MK-CJ3306-1-24MAY2007.jpg		May 24, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MEADOWLANDS RM 1

NGS Name: MEADOWLANDS RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3307](#)

[Get Map](#)

NGS Quad / Sta Num : 47092323/

USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	53 N	19 W	470412.28	924346.35		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=YES Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description:

Stamping: MEADOWLANDS 1952

AT THE EAST EDGE OF MEADOWLANDS, 0.15 MILE EAST ON COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 29 (CENTRAL AVENUE), IN THE WEST EDGE OF A HEDGE ROW.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.771 12B = -96.762 09 = -96.676 03 = -96.493



Mn/DOT Name: MEADOWLANDS RM 2

NGS Name: MEADOWLANDS RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3308](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	53 N	19 W	470411.13	924347.75		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	NGS

Description: Stamping: MEADOWLANDS 1952

AT EAST EDGE OF MEADOWLANDS, 0.15 MILE EAST ON COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 29 (CENTRAL AVENUE), 36.0 FEET NORTH OF THE CENTERLINE OF COUNTY ROAD 133, AND 2.0 FEET NORTH OF A POWER LINE POLE WITH A TRANSFORMER.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.771 12B = -96.762 09 = -96.676 03 = -96.493



Mn/DOT Name: MECKOLA

NGS Name: MECKOLA

County: ST. LOUIS, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	31	51 N	19 W	465109.50	924755.42	2	3

NGS ACRN: [DQ9908](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 23 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: MECKOLA 2017

7.1 MILES SOUTHEAST OF FLOODWOOD, 7.5 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 228.6, 85.2 FEET NORTH OF TRUNK HIGHWAY 2, 14.5 FEET SOUTH OF A CABLE BOX, 74.4 FEET EAST-SOUTHEAST OF A POWER POLE, 1.5 FEET SOUTH OF A WITNESS POST.

Station Pair: TELLOR - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1328.600	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1328.459	.262		1233.790	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.682 12B = -94.668 09 = -94.583 03 = -94.465

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 09.50131	92 47 55.42231	412738.887	174104.936	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2700051.986	456855.850	1690757.137	17023615.294	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MECKOLA-DQ9908-3N-09AUG2017.jpg	N	Aug 9, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MECKOLA-DQ9908-2-09AUG2017.jpg		Aug 9, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MECKOLA-DQ9908-1-09AUG2017.jpg		Aug 9, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MELRUDE

NGS Name: MELRUDE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2170](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	55 N	17 W	471522.33	922857.68		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1975	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	NGS

Description: (1975)

Stamping: MELRUDE 1952 1975

THE STATION IS LOCATED ABOUT 6.0 MILES NORTH OF COTTON AND 3.5 MILES WEST OF MELRUDE, ALONG THE WEST SIDE OF TRUNK HIGHWAY 53, AT THE JUNCTION OF COUNTY ROAD 59 LEADING EAST, AND AT THE NORTH EDGE OF A FARMSTEAD ON THE WEST SIDE OF THE ROAD. IT IS 82.0 FEET WEST OF THE SOUTHBOUND LANES OF TRUNK HIGHWAY 53, 50.0 FEET NORTHEAST OF THE NORTHEAST CORNER OF A GARAGE, 29.0 FEET NORTH OF THE EXTENDED CENTERLINE OF COUNTY ROAD 59 LEADING EAST, AND 14.0 FEET WEST OF THE CENTER OF A TRACK ROAD LEADING NORTH.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
Height	Acc	Order (/Class)	Height	Acc	Adj	Determination Method	Year	Reference
1358.363	.131		1260.663	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1358.265	.262		1260.559	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.907 12B = -97.903 09 = -97.844 03 = -97.664

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - Central Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33575	92 28 57.68486	491881.333	102264.930	.033	C	ADJUSTMENT	2003	GPS1848
47 15 22.33265	92 28 57.68385	491881.402	102264.615	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - Central Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33211	92 28 57.68686	491881.194	102264.561	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position					Project Info			
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.57200	92 28 57.00800			.100	3	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.531	604515.509	1768829.583	17171112.567	.033	C	ADJUSTMENT	2003	GPS1848
2777955.603	604515.195	1768829.655	17171112.254	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.396	604515.139	1768829.448	17171112.198	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone					Project Info			
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2153340.111	276455.296			.100	3	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: MELRUDE AZ MK

NGS Name: MELRUDE AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3312](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	55 N	17 W	471451.00	922858.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1975	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	AZIMUTH MARK DISK	NGS

Description: (2019)

Stamping: MELRUDE 1952

5.42 MILES NORTH OF COTTON, 5.53 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.877 12B = -97.874 09 = -97.811 03 = -97.628



Mn/DOT Name: MELRUDE AZ MK RESET

NGS Name: MELRUDE AZ MK RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	14	55 N	17 W	471521.56	922809.97	2	C

NGS ACRN: CJ3313	Get Map
NGS Quad / Sta Num : 47092243/1014	
USGS Quad: CENTRAL LAKES	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1964	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (1990)

Stamping: MELRUDE 1952 RESET 1964

6.0 MILES NORTH OF COTTON, 6.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53 TO TRUNK HIGHWAY 53 MILEPOINT 45.10, THEN 0.6 MILE EAST ON COUNTY ROAD 59 (WEST MELRUDE ROAD), 40.5 FEET SOUTH OF COUNTY ROAD 59, 2.6 FEET WEST OF A POWER POLE, 1.9 FEET NORTH OF A WITNESS POST.

Station Notes

DUE TO A PROXIMITY TO A POWER POLE AND TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1370.102	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1370.099	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1370.099	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1370.158	.262		1272.265	.197	2011	GPS - RTRN	2017	RTRN2017
			1272.284	.019	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1272.304	.023	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1369.978	.131		1272.287	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1369.978	.131		1272.287	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -97.894 12B = -97.894 09 = -97.831 03 = -97.651

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 15 21.55790	92 28 09.97331	495172.766	102185.008	.131	3	GPS - RTRN	2017	RTRN2017
47 15 21.55901	92 28 09.97255	495172.818	102185.120	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 15 21.55954	92 28 09.97317	495172.776	102185.174	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 15 21.55964	92 28 09.97308	495172.782	102185.184	.033	C	ADJUSTMENT	2003	GPS1848
47 15 21.55964	92 28 09.97308	495172.783	102185.183	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - Central Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 15 21.55830	92 28 09.97746	495172.481	102185.048	.033	C	GPS - STATIC	1992	HTWIG



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781247.106	604463.268	1772119.984	17171055.882	.131	3	GPS - RTRN	2017	RTRN2017
2781247.158	604463.381	1772120.036	17171055.995	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781247.115	604463.434	1772119.993	17171056.049	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781247.121	604463.444	1772119.999	17171056.059	.033	C	ADJUSTMENT	2003	GPS1848
2781247.121	604463.444	1772119.999	17171056.059	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781246.820	604463.306	1772119.698	17171055.921	.033	C	GPS - STATIC	1992	HTWIG

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_AZ_MK_RESET-CJ3313-3S-13SEP2017.jpg	S	Sep 13, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_AZ_MK_RESET-CJ3313-2-13SEP2017.jpg		Sep 13, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_AZ_MK_RESET-CJ3313-1-13SEP2017.jpg		Sep 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MELRUDE RESET

NGS Name: MELRUDE RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6485](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/1014
USGS Quad: CENTRAL LAKES

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	10	55 N	17 W	471522.34	922857.68	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	HORIZONTAL CONTROL DISK	NGS

Description: (2002)

Stamping: MELRUDE 1952 1975

6.0 MILES NORTH OF COTTON, 6.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 45.10, 82.0 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 63.1 FEET SOUTH OF A POWER POLE, 23.2 FEET EAST OF THE SOUTH LEG OF THE WEST ELLSBURG FOREST MANAGEMENT ROAD SIGN, 22.0 FEET NORTH OF WEST ELLSBURG FOREST ROAD, 22.4 FEET EAST OF A WITNESS POST.

Station Notes

THE STATION NAME WAS CHANGED FROM MELRUDE TO MELRUDE RESET TO IMPROVE CONSISTENCY WITH THE NATIONAL GEODETIC SURVEY'S (NGS) DATABASE. IN 1992 THE GEODETIC UNIT FOUND MELRUDE RM 1 HAD BEEN HIT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1358.554	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1358.550	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1358.547	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1358.609	.262		1260.703	.197	2011	GPS - OPUS	2020	GPSBM
1358.646	.262		1260.746	.197	2011	GPS - RTRN	2020	RTRN2020
1358.593	.262		1260.690	.197	2011	GPS - RTRN	2017	RTRN2017
			1260.627	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1260.680	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1358.370	.131		1260.663	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1358.363	.131		1260.663	.066	1996	GPS - STATIC	2002	HTWIB

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1358.298						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -97.907 12B = -97.903 09 = -97.844 03 = -97.907

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - Central Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33516	92 28 57.68494	491881.327	102264.870	.131	3	GPS - OPUS	2020	GPSBM
47 15 22.33596	92 28 57.68503	491881.321	102264.951	.131	3	GPS - RTRN	2020	RTRN2020
47 15 22.33535	92 28 57.68469	491881.344	102264.889	.131	3	GPS - RTRN	2017	RTRN2017
47 15 22.33547	92 28 57.68406	491881.388	102264.901	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - Central Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33566	92 28 57.68496	491881.326	102264.920	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - Central Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33575	92 28 57.68486	491881.333	102264.930	.033	1	ADJUSTMENT	2003	GPS1848
47 15 22.33575	92 28 57.68486	491881.333	102264.930	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

Geodetic Position		St Louis County - Central Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 15 22.33211	92 28 57.68686	491881.195	102264.563	.033	C	GPS - STATIC	1991	H1991

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
47 15 22.57200	92 28 57.00800			.100	C	CLASSICAL SURVEY	1950	UNK

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.526	604515.449	1768829.578	17171112.508	.131	3	GPS - OPUS	2020	GPSBM
2777955.519	604515.530	1768829.572	17171112.589	.131	3	GPS - RTRN	2020	RTRN2020
2777955.543	604515.468	1768829.595	17171112.527	.131	3	GPS - RTRN	2017	RTRN2017
2777955.586	604515.481	1768829.639	17171112.540	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.524	604515.500	1768829.577	17171112.558	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.531	604515.509	1768829.583	17171112.567	.033	1	ADJUSTMENT	2003	GPS1848
2777955.531	604515.509	1768829.583	17171112.567	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2777955.396	604515.139	1768829.448	17171112.198	.033	C	GPS - STATIC	1991	H1991

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2153340.110	276455.290			.100	C	CLASSICAL SURVEY	1950	UNK

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_RESET-DF6485-3W-08JUL2020.jpg	W	Jul 8, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_RESET-DF6485-2-08JUL2020.jpg		Jul 8, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MELRUDE_RESET-DF6485-1-08JUL2020.jpg		Jul 8, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MELRUDE RM 1

NGS Name: MELRUDE RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3314](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	55 N	17 W	471521.65	922857.07		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1975	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: MELRUDE NO 1 1952

5.94 MILES NORTH OF COTTON, 6.12 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.907 12B = -97.903 09 = -97.844 03 = -97.664



Mn/DOT Name: MIKE MNDT

NGS Name: MIKE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0643](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1075
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	52 N	21 W	465636.03	925615.98	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2003	GOOD	Horz=NO Vert=NO	NO		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: MIKE 1974

1.3 MILES NORTHWEST OF FLOODWOOD, 1.35 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, THEN NORTHEAST ON A ROAD TO THE SOUTH SERVICE ROAD OF A RAILROAD, THEN 0.7 MILE NORTHWEST ON THE SOUTH SERVICE ROAD, AT TRUNK HIGHWAY 2 MILEPOINT 219.05, 22.2 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 225.0 FEET SOUTHEAST OF RAILROAD MILEPOINT 77, 111.0 FEET SOUTHEAST OF A GAS PIPELINE, 4.8 FEET NORTH-NORTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.307	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1252.310	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND
1252.343	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1251.805	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1156.789	.012	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1156.884	.013	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1252.294	.131		1156.943	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1252.294	.131		1156.943	.066	1996	GPS - STATIC	2003	HGRAND
1252.360	.197		1157.009	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.495 12B = -95.479 09 = -95.403 03 = -95.285



Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 56 36.03182	92 56 15.98391	378152.393	207373.639	.010		ADJUSTMENT	2012 GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 56 36.03192	92 56 15.98478	378152.332	207373.650	.013		ADJUSTMENT	2007 GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 56 36.03172	92 56 15.98430	378152.365	207373.629	.033	C	ADJUSTMENT	2004 GPS1957
46 56 36.03172	92 56 15.98430	378152.365	207373.629	.033	C	GPS - STATIC	2003 HGRAND
46 56 36.03215	92 56 15.98511	378152.309	207373.673	.066	2	ADJUSTMENT	1999 17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 56 36.02533	92 56 15.98681	378152.187	207372.983	.066	2	ADJUSTMENT	1986 17289

NAD27

Geodetic Position		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>Latitude</u>	<u>Longitude</u>						<u>Year</u>	<u>Reference</u>
46 56 36.23125	92 56 15.26056			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
2665190.288	489834.399	1655954.099	17056625.472	.010		ADJUSTMENT	2012 GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
2665190.228	489834.409	1655954.038	17056625.482	.013		ADJUSTMENT	2007 GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
2665190.261	489834.389	1655954.072	17056625.461	.033	C	ADJUSTMENT	2004 GPS1957
2665190.261	489834.389	1655954.072	17056625.461	.033	C	GPS - STATIC	2003 HGRAND
2665190.205	489834.432	1655954.015	17056625.505	.066	2	ADJUSTMENT	1999 17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
2665190.088	489833.741	1655953.898	17056624.814	.066	2	ADJUSTMENT	1986 17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2040575.019	161770.618			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: MNCORS BRKS BROOKSTON ARP

NGS Name: BROOKSTON CORS ARP

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: I62754 NGS Quad / Sta Num : 46092412/ USGS Quad: BROOKSTON Get Map
SW	35	51 N	18 W	465128.98	923518.74	3	A	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2023	GOOD	Horz=YES Vert=?	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2019)

Stamping:

1.0 MILE SOUTHEAST OF BROOKSTON, 0.8 MILE SOUTHEASTERLY ALONG TRUNK HIGHWAY 2 FROM THE EASTERN JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 2 SOUTH OF BROOKSTON, AT THE ST. LOUIS COUNTY SOLID WASTE FACILITY.

Station Notes

THE NATIONAL GEODETICS SURVEY (NGS) SITE ID IS MNBK.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1321.867	.033	3				NON-RECIPROCAL VERTICAL ANGLE		2008	VTRIG1

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1321.720	.131		1227.297	.066	1996	GPS - STATIC		2017	HMNCORS07
			1227.150	.008	2011	GPS - STATIC		2015	HMNCORS15
1321.815	.098		1227.163	.049	2011	GPS - STATIC		2012	HMNCORS05
1321.815	.098		1227.255	.049	1996	GPS - STATIC		2006	HMNCORS02

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.665 09 = -94.563 03 = -94.399

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 28.98235	92 35 18.73764	465337.446	175915.265	.003	A	GPS - STATIC	2015	HMNCORS15
46 51 28.98229	92 35 18.73772	465337.440	175915.259	.016	B	GPS - STATIC	2012	HMNCORS05

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 28.98230	92 35 18.73807	465337.416	175915.260	.033	C	GPS - STATIC	2017	HMNCORS07
46 51 28.98248	92 35 18.73878	465337.367	175915.278	.016	B	GPS - STATIC	2006	HMNCORS02

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2752632.903	459106.059	1743317.879	17025793.262	.003	A	GPS - STATIC	2015	HMNCORS15
2752632.897	459106.053	1743317.874	17025793.256	.016	B	GPS - STATIC	2012	HMNCORS05

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2752632.873	459106.054	1743317.850	17025793.256	.033	C	GPS - STATIC	2017	HMNCORS07
2752632.823	459106.072	1743317.800	17025793.274	.016	B	GPS - STATIC	2006	HMNCORS02

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_ARP-I62754-3N-14SEP2006.jpg	N	Sep 14, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_ARP-I62754-2-08SEP2005.jpg		Sep 8, 2005
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_ARP-I62754-1-14SEP2006.jpg		Sep 14, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS BRKS BROOKSTON L1PC1

NGS Name: BROOKSTON CORS L1PHASE CENTER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [!95687](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	51 N	18 W	465128.98	923518.74		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2008	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2019)

Stamping:

1.0 MILE SOUTHEAST OF BROOKSTON, 0.8 MILE SOUTHEASTERLY ALONG TRUNK HIGHWAY 2 FROM THE EASTERN JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 2 SOUTH OF BROOKSTON, AT THE ST. LOUIS COUNTY SOLID WASTE FACILITY. THE STATION IS IN A ZEPHYR GEODETIC ANTENNA SERIAL NUMBER 12668753.

Station Notes

THE NATIONAL GEODETIC SURVEY (NGS) SITE ID IS MNBK.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.665 09 = -94.563 03 = -94.399

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON CORS L1PHASE CENTER-!95687-3N-14SEP2006.jpg	N	Sep 14, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON CORS L1PHASE CENTER-!95687-2-14SEP2006.jpg		Sep 14, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON CORS L1PHASE CENTER-!95687-1-16SEP2006.jpg		Sep 16, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS BRKS BROOKSTON L1PC2

NGS Name: BROOKSTON CORS L1PHASE CENTER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [I95689](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	51 N	18 W	465128.98	923518.74		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2023	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2019)

Stamping:

1.0 MILE SOUTHEAST OF BROOKSTON, 0.8 MILE SOUTHEASTERLY ALONG TRUNK HIGHWAY 2 FROM THE EASTERN JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 2 SOUTH OF BROOKSTON, AT THE ST. LOUIS COUNTY SOLID WASTE FACILITY. STATION MNCORS BRKS BROOKSTON L1PC2 IS IN A ZEPHYR GEODETIC LF MODEL 2 ANTENNA SERIAL NUMBER 30763487.

Station Notes

THE NATIONAL GEODETICS SURVEY (NGS) SITE ID IS MNBK.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.668 12B = -94.665 09 = -94.563 03 = -94.399

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_L1PHASE_CENTER-I95689-3N-17APR2008.jpg	N	Apr 17, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_L1PHASE_CENTER-I95689-2-29APR2008.jpg		Apr 29, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/BROOKSTON_CORS_L1PHASE_CENTER-I95689-1-17APR2008.jpg		Apr 17, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS COTN COTTON ARP

NGS Name: COTTON MNCORS ARP

County: ST. LOUIS, MN (Sheet 1)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>	NGS ACRN: DS3323	Get Map
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>	NGS Quad / Sta Num : 47092234/	
NW	15	54 N	17 W	471001.37	922910.02	3	A	USGS Quad: COTTON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2006	GOOD	Horz=YES Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2025)

Stamping:

0.4 MILE WEST OF COTTON, 0.3 MILE WEST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53 IN COTTON, THEN 0.13 MILES SOUTH ALONG DRIVEWAY TO THE ST. LOUIS COUNTY PUBLIC WORKS BUILDING, THE ANTENNA IS AFFIXED TO A NUT AND BOLT WELDED TO A STEEL MAST ATTACHED TO THE NORTHEAST SIDE OF THE MAINTENANCE BUILDING.

Station Notes

THE NATIONAL GEODETICS SURVEY (NGS) SITE ID IS MNCT.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1365.791	.033	3				NON-RECIPROCAL VERTICAL ANGLE	2008	VTRIG1

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1365.732			1268.400	.011	2011	HORIZONTAL ADJUSTMENT	2025	GPS3823
1365.732			1268.400	.011	2011	GPS - STATIC	2025	HMNARP8
1365.647	.131		1268.528	.066	1996	GPS - STATIC	2017	HMNCORS07
			1268.383	.008	2011	GPS - STATIC	2015	HMNCORS15
1365.778	.098		1268.390	.049	2011	GPS - STATIC	2012	HMNCORS05
1365.647	.098		1268.387	.049	1996	GPS - STATIC	2006	HMNCORS02

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.388 09 = -97.283 03 = -97.086

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 01.36910	92 29 10.02332	491015.226	288594.909	.007		ADJUSTMENT	2025	GPS3823
47 10 01.36910	92 29 10.02332	491015.226	288594.909	.007	C	GPS - STATIC	2025	HMNARP8
47 10 01.36887	92 29 10.02377	491015.195	288594.886	.003	A	GPS - STATIC	2015	HMNCORS15
47 10 01.36904	92 29 10.02350	491015.214	288594.903	.016	B	GPS - STATIC	2012	HMNCORS05

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 10 01.36900	92 29 10.02396	491015.182	288594.899	.033	C	GPS - STATIC	2017	HMNCORS07
47 10 01.36905	92 29 10.02468	491015.132	288594.904	.016	B	GPS - STATIC	2006	HMNCORS02

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2777362.726	571991.146	1768192.772	17138600.197	.007		ADJUSTMENT	2025	GPS3823
2777362.726	571991.146	1768192.772	17138600.197	.007	C	GPS - STATIC	2025	HMNARP8
2777362.695	571991.122	1768192.741	17138600.174	.003	A	GPS - STATIC	2015	HMNCORS15
2777362.713	571991.139	1768192.760	17138600.191	.016	B	GPS - STATIC	2012	HMNCORS05

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2777362.681	571991.135	1768192.728	17138600.187	.033	C	GPS - STATIC	2017	HMNCORS07
2777362.632	571991.140	1768192.679	17138600.192	.016	B	GPS - STATIC	2006	HMNCORS02



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_MNCORS_ARP-DS3323-3N-13SEP2006.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_MNCORS_ARP-DS3323-2-08SEP2005.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_MNCORS_ARP-DS3323-1-07DEC2006.jpg

<u>Dir</u>	<u>Date</u>
N	Sep 13, 2006
	Sep 8, 2005
	Dec 7, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS COTN COTTON L1PC1

NGS Name: COTTON CORS L1 PHASE CENTER

County: ST. LOUIS, MN (Sheet 1)

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u> <u>Sec</u> <u>Twp</u> <u>Rng</u>				
NW 15 54 N 17 W	471001.37	922910.02		

NGS ACRN: [195690](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2005	2008	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2019)

Stamping:

0.4 MILE WEST OF COTTON, 0.3 MILE WEST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53 IN COTTON, ATTACHED TO THE NORTH SIDE OF THE ST. LOUIS COUNTY PUBLIC WORKS BUILDING. THE STATION IS IN A ZEPHYR GEODETIC ANTENNA SERIAL NUMBER 12697010.

Station Notes

THE NATIONAL GEODETICS SURVEY (NGS) SITE ID IS MNCT.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.388 09 = -97.283 03 = -97.086

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_CORS_L1_PHASE_CENTER-195690-3S-13SEP2006.jpg	S	Sep 13, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_CORS_L1_PHASE_CENTER-195690-2-13SEP2006.jpg		Sep 13, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON_CORS_L1_PHASE_CENTER-195690-1-13SEP2006.jpg		Sep 13, 2006

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS COTN COTTON L1PC2

NGS Name: COTTON CORS L1 PHASE CENTER

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	15	54 N	17 W	471001.37	922910.02		

NGS ACRN: [I95691](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2008	2008	GOOD	Horz=YES Vert=?	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT	SEE DESCRIPTION	MNDT

Description: (2019)

Stamping:

0.4 MILE WEST OF COTTON, 0.3 MILE WEST ALONG COUNTY ROAD 52 (ARKOLA ROAD) FROM THE JUNCTION OF COUNTY ROAD 52 AND TRUNK HIGHWAY 53 IN COTTON, ATTACHED TO THE NORTH SIDE OF THE ST. LOUIS COUNTY PUBLIC WORKS BUILDING. STATION MNCORS COTN COTTON L1PC2 IS IN A ZEPHYR GEODETIC LF MODEL 2 ANTENNA SERIAL NUMBER 30767807.

Station Notes

THE NATIONAL GEODETICS SURVEY (NGS) SITE ID IS MNCT.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.388 09 = -97.283 03 = -97.086

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON CORS L1 PHASE CENTER-I95691-3S-17APR2008.jpg	S	Apr 17, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON CORS L1 PHASE CENTER-I95691-2-17APR2008.jpg		Apr 17, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/COTTON CORS L1 PHASE CENTER-I95691-1-17APR2008.jpg		Apr 17, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MNCORS CULV CULVER ARP

NGS Name: CULVER MNCORS ARP

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	51 N	18 W	465349.24	923547.75		

NGS ACRN: [DS3324](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2023	2023	GOOD	Horz=YES Vert=NO	NO			SEE DESCRIPTION
<u>Monument Type</u>							<u>Mon. Agency</u>
SEE DESCRIPTIVE TEXT							MNDT

Description: (2025)

Stamping:

2.15 MILES NORTH OF BROOKSTON, 3.0 MILES NORTH ALONG COUNTY ROAD 31 (ALBORN-BROOKSTON ROAD) FROM THE JUNCTION OF COUNTY ROAD 31 AND TRUNK HIGHWAY 2 (JUNCTION IS 0.75 MILES SOUTH OF BROOKSTON), THEN 0.3 MILES EAST ON COUNTY ROAD 31 (LAMB ROAD), THEN 0.05 MILES SOUTH AND WEST ON ENTRANCE TO THE ST. LOUIS COUNTY TRUCK STATION, THE ANTENNA REFERENCE POINT CONSISTS OF A 1.5 INCH BRASS PLUG IN A SECO ADJUSTABLE MONUMENT MOUNT, THE MOUNT IS THREADED ONTO A 2 INCH STEEL PIPE ATTACHED TO THE ROOF OF THE TRUCK STATION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1328.882			1233.905	.011	2011	HORIZONTAL ADJUSTMENT		2025	GPS3823
1328.882			1233.905	.011	2011	GPS - STATIC		2025	HMNARP8

Geoid Separation(ft): GEOID18 = -95.029

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>			<u>Year</u>	<u>Reference</u>
46 53 47.57756	92 35 44.17223	463595.810	189960.715	.007		ADJUSTMENT		2025	GPS3823
46 53 47.57756	92 35 44.17223	463595.810	189960.715	.007	C	GPS - STATIC		2025	HMNARP8

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>				<u>Determination Method</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>			<u>Year</u>	<u>Reference</u>
2750773.618	473136.158	1741478.668	17039819.877	.007		ADJUSTMENT		2025	GPS3823
2750773.618	473136.158	1741478.668	17039819.877	.007	C	GPS - STATIC		2025	HMNARP8

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CULVER_MNCORS_ARP-DS3324-2-21DEC2023.jpg		Dec 21, 2023
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/CULVER_MNCORS_ARP-DS3324-1-21DEC2023.jpg		Dec 21, 2023

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MOBERG MNDT

NGS Name: MOBERG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9557](#)

[Get Map](#)

NGS Quad / Sta Num : 46092443/

USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	8	50 N	20 W	464951.25	925405.17	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (1999) **Stamping:** MOBERG 1999

6.25 MILES SOUTH OF FLOODWOOD, 6.25 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, TO TRUNK HIGHWAY 73 MILEPOINT 36.70, THEN 0.55 MILE EAST ON A ROAD, 10.0 FEET SOUTH OF A ROAD, 71.6 FEET SOUTHEAST OF A POWER POLE, 12.6 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1291.740	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1291.730	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
			1197.301	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1197.393	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1291.730	.131		1197.468	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1291.730	.131		1197.468	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.455 09 = -94.360 03 = -94.255

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 49 51.25344	92 54 05.16572	386993.591	166308.302	.010		ADJUSTMENT	2012	GPS2800
NAD83(2007)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 49 51.25356	92 54 05.16659	386993.531	166308.314	.013		ADJUSTMENT	2007	GPS2300
NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 49 51.25324	92 54 05.16615	386993.561	166308.282	.033	C	ADJUSTMENT	2003	GPS1769
46 49 51.25324	92 54 05.16615	386993.560	166308.283	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
2674372.811	448844.934	1665078.938	17015641.985	.010		ADJUSTMENT	2012	GPS2800
NAD83(2007)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
2674372.750	448844.946	1665078.878	17015641.997	.013		ADJUSTMENT	2007	GPS2300
NAD83(1996)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
2674372.781	448844.914	1665078.908	17015641.964	.033	C	ADJUSTMENT	2003	GPS1769
2674372.781	448844.914	1665078.908	17015641.965	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: MOBERG MNDT RESET

NGS Name: MOBERG RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5182](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	8	50 N	20 W	464951.25	925405.17	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=NO Vert=YES	YES		RECESSED 8 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: MOBERG 1999 2017

6.25 MILES SOUTH OF FLOODWOOD, 6.25 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD TO TRUNK HIGHWAY 73 MILEPOINT 36.70, THEN 0.55 MILE EAST ON ASP ROAD, 10.0 FEET SOUTH OF ASP ROAD, 71.6 FEET SOUTHEAST OF A POWER POLE, 12.6 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1291.526	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1291.697	.262			1197.242	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.455 09 = -94.360 03 = -94.255

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 49 51.25342	92 54 05.16641	386993.543	166308.300	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2674372.762	448844.932	1665078.890	17015641.983	.131	3	GPS - RTRN	2017	RTRN2017		

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOBERG_RESET-DR5182-3S-06SEP2017.jpg	S	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOBERG_RESET-DR5182-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOBERG_RESET-DR5182-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MOORE

NGS Name: MOORE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1874](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	51 N	17 W	465410.27	922812.56	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) Stamping: MOORE 2017

13.0 MILES NORTH OF CLOQUET, 4.15 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 15.50, 45.7 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 38.3 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33, 305.2 FEET NORTH OF A CROSSOVER FOR BERG ROAD, 1.5 FEET OF A WITNESS POST.

Station Pair: KANGAS - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1334.367	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1334.387	.262		1239.512	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.872 12B = -94.875 09 = -94.754 03 = -94.560

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 54 10.26916	92 28 12.56024	494961.220	192226.645	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Project Info				
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2782118.144	475665.222	1772813.520	17042304.521	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOORE-DR1874-3N-15AUG2017.jpg	N	Aug 15, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOORE-DR1874-2-15AUG2017.jpg		Aug 15, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOORE-DR1874-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MOUSE MN137

NGS Name: MOUSE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9132](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	53 N	20 W	470407.44	925056.50		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 29 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: MOUSE 2001

5.5 MILES WEST OF MEADOWLANDS, 5.0 MILES WEST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 29 SOUTH (THE JUNCTION IS 0.5 MILE WEST OF MEADOWLANDS), 290.0 FEET EAST OF DRIVEWAY FIRE NUMBER 11114, 125.0 FEET WEST OF A DITCH, 24.0 FEET SOUTH OF COUNTY ROAD 133, 2.5 FEET NORTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1272.340	.262		1175.637	.197	2011	GPS - OPUS	2020	GPSBM
1272.429	.262		1175.726	.197	2011	GPS - OPUS	2020	GPSBM
1272.271	.262		1175.591	.197	2011	GPS - RTRN	2020	RTRN2020
			1175.647	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1175.736	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1272.373	.131		1175.785	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1272.373	.131		1175.785	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -96.703 12B = -96.680 09 = -96.637 03 = -96.450

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 04 07.43966	92 50 56.50055	400553.908	252984.676	.131	3	GPS - OPUS	2020	GPSBM
47 04 07.43912	92 50 56.50030	400553.925	252984.622	.131	3	GPS - OPUS	2020	GPSBM
47 04 07.43948	92 50 56.49984	400553.956	252984.658	.131	3	GPS - RTRN	2020	RTRN2020
47 04 07.44052	92 50 56.49990	400553.953	252984.763	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 04 07.44056	92 50 56.50080	400553.890	252984.768	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 04 07.44040	92 50 56.50051	400553.911	252984.752	.033	C	ADJUSTMENT	2003	GPS1931
47 04 07.44040	92 50 56.50051	400553.911	252984.751	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687209.999	535628.032	1678024.892	17102371.599	.131	3	GPS - OPUS	2020	GPSBM
2687210.016	535627.977	1678024.909	17102371.545	.131	3	GPS - OPUS	2020	GPSBM
2687210.048	535628.014	1678024.941	17102371.581	.131	3	GPS - RTRN	2020	RTRN2020
2687210.044	535628.119	1678024.937	17102371.687	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687209.981	535628.123	1678024.875	17102371.691	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2687210.001	535628.107	1678024.895	17102371.674	.033	C	ADJUSTMENT	2003	GPS1931
2687210.001	535628.107	1678024.895	17102371.674	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOUSE-DF9132-3S-07JUL2020.jpg	S	Jul 7, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOUSE-DF9132-2-07JUL2020.jpg		Jul 7, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MOUSE-DF9132-1-07JUL2020.jpg		Jul 7, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MUSHRAT MNDT

NGS Name: MUSHRAT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9556](#)

[Get Map](#)

NGS Quad / Sta Num : 46092444/

USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	20	52 N	20 W	465806.84	925357.47		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1993	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2001)

Stamping: MUSHRAT 1993

2.6 MILES NORTH-NORTHEAST OF FLOODWOOD, 2.65 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD THEN EAST AND NORTH ON SIMI ROAD FOR 0.65 MILE, 12.0 FEET EAST OF SIMI ROAD, 113.9 FEET SOUTH-SOUTHEAST OF A POWER POLE, 181.2 FEET NORTH-NORTHEAST OF A POWER POLE, 39.6 FEET EAST OF A FENCE, 175.7 FEET NORTH-NORTHEAST OF A FENCE CORNER, 4.4 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
			1153.633	.011	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1153.725	.011	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1249.407	.131		1153.784	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1769
1249.407	.131		1153.784	.066	1996	GPS - STATIC		2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.761 12B = -95.738 09 = -95.679 03 = -95.535

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 06.84150	92 53 57.46810	387816.617	216516.870	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 06.84157	92 53 57.46896	387816.557	216516.877	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 58 06.84131	92 53 57.46854	387816.586	216516.851	.033	C	ADJUSTMENT	2003	GPS1769
46 58 06.84131	92 53 57.46854	387816.587	216516.850	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2674777.694	499057.398	1665549.541	17065832.058	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2674777.635	499057.405	1665549.481	17065832.065	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2674777.664	499057.379	1665549.510	17065832.039	.033	C	ADJUSTMENT	2003	GPS1769
2674777.664	499057.379	1665549.510	17065832.039	.033	C	GPS - STATIC	2002	HFLOO



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSHRAT-DE9556-1-10JUL2017.jpg		Jul 10, 2017
** All station images can be viewed at: ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos **			



Mn/DOT Name: MUSHRAT MNDT RESET

NGS Name: MUSHRAT RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5123](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	20	52 N	20 W	465806.84	925357.47	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** MUSHRAT 1993 2017

2.6 MILES NORTH-NORTHEAST OF FLOODWOOD, 2.65 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD TO TRUNK HIGHWAY 73 MILEPOINT 45.9, THEN 0.65 MILE EAST AND NORTH ON SIMI ROAD, 12.0 FEET EAST OF SIMI ROAD, 181.2 FEET NORTH-NORTHEAST OF A POWER POLE, 175.7 FEET NORTH-NORTHEAST OF A FENCE CORNER, 113.9 FEET SOUTH-SOUTHEAST OF A POWER POLE, 39.6 FEET EAST OF A FENCE, 4.4 FEET WEST OF A WITNESS POST.

Station Pair: SIMI MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1249.144	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1249.059	.262			1153.321	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.761 12B = -95.738 09 = -95.679 03 = -95.535

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 58 06.84177	92 53 57.46859			387816.583	216516.897	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2674777.660	499057.425			1665549.507	17065832.085	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSHRAT_RESET-DR5123-3E-10JUL2017.jpg	E	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSHRAT_RESET-DR5123-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSHRAT_RESET-DR5123-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MUSTA MNDT

NGS Name: MUSTA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6508](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	15	53 N	17 W	470432.11	922819.03	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1992	2017	DESTROYED	Horz=NO Vert=NO	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (2007) **Stamping:** MUSTA 1992

2.4 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 32.45, 30.1 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 78.6 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 95.5 FEET SOUTH OF A DITCH BLOCK, 4.2 FEET WEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1350.092	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1350.086	.016	2/1				VERTICAL CONTROL SURVEY	2009	VGNES
1350.086	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1350.086	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
			1253.554	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1253.643	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1349.899	.131		1253.711	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1349.899	.131		1253.711	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.522 12B = -96.532 09 = -96.384 03 = -96.194

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 04 32.10997	92 28 19.02565	494529.887	255232.002	.013		ADJUSTMENT	2012	GPS2800
NAD83(2007)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 04 32.11010	92 28 19.02655	494529.825	255232.016	.013		ADJUSTMENT	2007	GPS2300
NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 04 32.10990	92 28 19.02627	494529.844	255231.995	.033	C	ADJUSTMENT	2003	GPS1848
47 04 32.10990	92 28 19.02627	494529.844	255231.996	.033	C	GPS - STATIC	2002	HTWIB
NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 04 32.10810	92 28 19.02656	494529.825	255231.812	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781157.314	538661.713	1771940.337	17105277.624	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781157.252	538661.725	1771940.274	17105277.637	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781157.271	538661.705	1771940.294	17105277.616	.033	C	ADJUSTMENT	2003	GPS1848
2781157.271	538661.705	1771940.294	17105277.616	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781157.253	538661.523	1771940.275	17105277.434	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA-DF6508-3E-08SEP2009.jpg	E	Sep 8, 2009
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA-DF6508-2-08SEP2009.jpg		Sep 8, 2009
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA-DF6508-1-08SEP2009.jpg		Sep 8, 2009

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: MUSTA MNDT RESET

NGS Name: MUSTA RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1857](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	53 N	17 W	470432.11	922819.03	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 6 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: MUSTA 1992 2017

2.5 MILES NORTH OF CANYON, 2.4 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 32.45, 30.1 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 78.6 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 95.5 FEET SOUTH OF A DITCH BLOCK, 4.2 FEET WEST OF A WITNESS POST.

Station Pair: NICHOL MNDT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1349.869	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1349.928	.262		1253.396	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.522 12B = -96.532 09 = -96.384 03 = -96.194

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 04 32.10953	92 28 19.02507	494529.927	255231.958	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15				Project Info		
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781157.355	538661.669	1771940.377	17105277.580	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA_RESET-DR1857-3E-19SEP2017.jpg	E	Sep 19, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA_RESET-DR1857-2-19SEP2017.jpg		Sep 19, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/MUSTA_RESET-DR1857-1-19SEP2017.jpg		Sep 19, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: N 163

NGS Name: N 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0167](#) [Get Map](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	54 N	17 W	470842.00	922822.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019)

Stamping: N 163 1935

7.3 MILES NORTH OF CANYON, 7.3 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 152 IN CANYON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1338.882	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1338.281	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Geoid Separations(ft): GEOID18 = -97.168 12B = -97.162 09 = -97.054 03 = -96.853

* No Horizontal Positions in the Database *



Mn/DOT Name: N 163 RESET 1966

NGS Name: N 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0168](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	54 N	17 W	470842.00	922822.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1966	2017	NOT FOUND	Horz=NO Vert=YES	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966)

Stamping: N 163 RESET 1966

1.7 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 29 IN COTTON, 0.2 MILE SOUTH OF A TEE-ROAD EAST, ON THE WEST EDGE OF SOUTHBOUND TRUNK HIGHWAY 53, 183.0 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 13.0 FEET NORTH OF WOODS ROAD, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1339.138	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1339.131	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1338.301	.007	1				VERTICAL CONTROL SURVEY	1966	L63 MINN

Geoid Separations(ft): GEOID18 = -97.168 12B = -97.165 09 = -97.054 03 = -96.857

* No Horizontal Positions in the Database *



Mn/DOT Name: N 271

NGS Name: N 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0697](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	26	52 N	19 W	465811.23	924204.33	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: N 271 1948

6.6 MILES SOUTHWEST OF ALBORN, AT A 90 DEGREE TURN (EAST AND SOUTH) IN COUNTY ROAD 166, 25.0 FEET WEST OF THE SOUTH TANGENT, 101.0 FEET SOUTH OF THE EAST TANGENT EXTENDED, 43.5 FEET SOUTHEAST OF THE SOUTHEAST CORNER OF A FARMHOUSE, 1.5 FEET EAST OF A FENCE, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1303.213	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1302.645	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1302.645	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.781 12B = -95.761 09 = -95.672 03 = -95.518

* No Horizontal Positions in the Database *



Mn/DOT Name: N 272

NGS Name: N 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0508](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	13	53 N	19 W	470420.00	924053.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: N 272 1948

2.6 MILES EAST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, AT THE JUNCTION OF COUNTY ROAD 133 AND A ROAD NORTH, 102.0 FEET NORTH OF COUNTY ROAD 133, 17.0 FEET WEST OF A ROAD NORTH, 54.0 FEET NORTH OF A FENCE CORNER, 1.0 FOOT WEST OF A FENCE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1279.364	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1278.764	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1278.764	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.788 12B = -96.781 09 = -96.683 03 = -96.499

* No Horizontal Positions in the Database *



Mn/DOT Name: N 273

NGS Name: N 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0502](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	36	53 N	21 W	470151.96	925605.94	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** N 273 1948

7.9 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, AT THE TOP OF A LOW GRADE, 330.0 FEET SOUTH OF A POWER LINE CROSSING, 22.0 FEET EAST OF TRUNK HIGHWAY 73, 30.5 FEET SOUTH OF A FENCE CORNER AND A GATE POST, 128.0 FEET WEST-NORTHWEST OF A POWER POLE, 1.5 FEET WEST OF A RIGHT-OF-WAY FENCE LINE, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1257.534	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1256.858	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.319 12B = -96.302 09 = -96.256 03 = -96.079

* No Horizontal Positions in the Database *



Mn/DOT Name: N 274

NGS Name: N 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0394](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	18	53 N	19 W	470501.00	924732.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: N 274 1948

6.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, AT THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 155, 64.0 FEET WEST OF COUNTY ROAD 5, 19.0 FEET SOUTH OF COUNTY ROAD 155, 50.5 FEET NORTH-NORTHEAST OF THE NORTHEAST CORNER OF A HOUSE, 31.0 FEET WEST OF A FENCE CORNER, 1.0 FOOT NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1275.273	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.633	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1274.633	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.873 12B = -96.860 09 = -96.794 03 = -96.611

* No Horizontal Positions in the Database *



Mn/DOT Name: N 276

NGS Name: N 276

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0381](#) [Get Map](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	12	55 N	20 W	471552.05	924835.33	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** N 276 1948

2.3 MILES SOUTH ON COUNTY ROAD 5 FROM A CROSSROAD AND A STORE AT LITTLE SWAN, 0.75 MILE SOUTH OF A SCHOOL, 1.0 MILE NORTH OF A COUNTY ROAD 5 BRIDGE OVER THE SWAN RIVER, AT A TEE-JUNCTION OF ANTILLA ROAD WEST AND COUNTY ROAD 5, 31.0 FEET WEST OF COUNTY ROAD 5, 40.0 FEET SOUTH OF THE ROAD WEST, 19.0 FEET SOUTH OF A FENCE CORNER, 1.5 FEET EAST OF A FENCE, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE AREA HAS BEEN REGRADED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.172	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1290.450	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1290.450	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.815 12B = -97.818 09 = -97.739 03 = -97.618

* No Horizontal Positions in the Database *



Mn/DOT Name: N 279

NGS Name: N 279

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	54 N	21 W	470719.00	925948.00	2	

NGS ACRN: SJ0487	Get Map
NGS Quad / Sta Num : 47092333/	
USGS Quad: TOIVOLA SW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1950	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** N 279 1948

2.85 MILES NORTH FROM CEDAR VALLEY, 2.85 MILES NORTH AND EAST ALONG TRUNK HIGHWAY 73 FROM THE SCHOOL AT CEDAR VALLEY, ABOUT 0.9 MILE NORTH OF A TURN IN THE HIGHWAY (NORTH AND WEST) AND THE JUNCTION OF A ROAD LEADING EAST, 35.0 FEET EAST OF TRUNK HIGHWAY 73, 12.0 FEET SOUTH OF A LOGGING TRAIL LEADING EAST, 30.0 FEET NORTH-NORTHEAST OF A TELEPHONE POLE, 2.0 FEET NORTHEAST OF A WHITE WOODEN WITNESS POST.

Station Notes

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Year</u>	<u>Reference</u>			
1276.441	.016	2/0							VERTICAL ADJUSTMENT	1991	00000025		

Geoid Separations(ft): GEOID18 = -96.857 12B = -96.850 09 = -96.808 03 = -96.634

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/N_279-SJ0487-3S-12JUL2017.jpg	S	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: N 279 RESET

NGS Name: N 279 RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	54 N	21 W	470719.00	925948.00		

NGS ACRN: SJ0488	Get Map
NGS Quad / Sta Num : 47092333/	
USGS Quad: TOIVOLA SW	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1950)

Stamping: N 279 RESET 1950

2.8 MILES NORTH AND EAST OF THE HIGH SCHOOL AT CEDAR VALLEY, 75.0 FEET EAST OF TRUNK HIGHWAY 73, 0.9 MILE NORTH OF EAST-WEST COUNTY ROAD 183, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.768	.066	3				VERTICAL CONTROL SURVEY	1987	L24645
1274.778	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.857 12B = -96.850 09 = -96.808 03 = -96.634

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/N_279_RESET-SJ0488-3S-12JUL2017.jpg	S	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: N 28

NGS Name: N 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0615](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	1	51 N	18 W	465532.00	923329.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1943	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: N 28 1934

AT CULVER, 6 RAILS WEST OF THE RAILROAD STATION, 3 RAILS WEST OF A HIGHWAY CROSSING, 45.0 FEET SOUTH OF A RAILROAD.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.896	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1289.371	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1289.371	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -95.266 12B = -95.262 09 = -95.144 03 = -94.970

* No Horizontal Positions in the Database *



Mn/DOT Name: N 30

NGS Name: N 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1212](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	28	51 N	19 W	465222.00	924543.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	SEE DESCRIPTION	NGS

Description: (1934)

Stamping: N 30 1934

AT, PAUPORES, 5 RAILS EAST ON A RAILROAD FROM THE PAUPORES RAILROAD STATION, 2 RAILS EAST OF A ROAD CROSSING, 30.0 FEET SOUTH OF THE MAIN RAILROAD TRACKS.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1240.122	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1239.446	.007	1				VERTICAL CONTROL SURVEY	1934	L13 MINN

Geoid Separations(ft): GEOID18 = -94.869 12B = -94.855 09 = -94.773 03 = -94.652

* No Horizontal Positions in the Database *



Mn/DOT Name: NICHOL MNDT

NGS Name: NICHOL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6507](#)

[Get Map](#)

NGS Quad / Sta Num : 47092233/

USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	10	53 N	17 W	470510.73	922818.72	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2021	GOOD	Horz=YES Vert=YES	YES		RECESSED 8 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (2007)

Stamping: NICHOL 1992

3.0 MILES NORTH OF CANYON, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 33.20, 26.5 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 95.5 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 145.0 FEET SOUTH OF THE CROSSOVER FOR COUNTY ROAD 232, 5.0 FEET WEST OF A WITNESS POST.

Station Pair: MUSTA MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.384	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1354.433	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1354.430	.016	2/1				VERTICAL CONTROL SURVEY	2009	VGNES
1354.430	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1354.400	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.505	.262		1257.871	.197	2011	GPS - RTRN	2017	RTRN2017
			1257.776	.015	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1257.868	.016	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1354.197	.131		1257.934	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1354.197	.131		1257.934	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.624 12B = -96.634 09 = -96.489 03 = -96.296

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 05 10.72517	92 28 18.71847	494552.241	259144.579	.131	3	GPS - RTRN	2017	RTRN2017
47 05 10.72511	92 28 18.71933	494552.181	259144.573	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 05 10.72523	92 28 18.72023	494552.119	259144.585	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 05 10.72504	92 28 18.71994	494552.139	259144.566	.033	C	ADJUSTMENT	2003	GPS1848
47 05 10.72504	92 28 18.71994	494552.141	259144.567	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 05 10.72330	92 28 18.72024	494552.118	259144.390	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781146.784	542574.057	1771935.190	17109188.535	.131	3	GPS - RTRN	2017	RTRN2017
2781146.724	542574.050	1771935.131	17109188.528	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781146.662	542574.062	1771935.068	17109188.540	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781146.682	542574.042	1771935.089	17109188.521	.033	C	ADJUSTMENT	2003	GPS1848
2781146.682	542574.042	1771935.089	17109188.521	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781146.663	542573.866	1771935.069	17109188.344	.033	C	GPS - STATIC	1993	H1993

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NICHOL-DF6507-3N-26JUL2021.jpg	N	Jul 26, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NICHOL-DF6507-2-26JUL2021.jpg		Jul 26, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NICHOL-DF6507-1-26JUL2021.jpg		Jul 26, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: NIKIN MNDT

NGS Name: NIKIN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9109](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	19 W	465115.71	924241.74	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 10 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: NIKIN 2001

11.5 MILES SOUTHEAST OF FLOODWOOD, 11.7 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 232.75, 91.0 FEET SOUTH OF TRUNK HIGHWAY 2, 51.0 FEET EAST OF THE WEST ENTRANCE TO THE ARROWHEAD TOWN HALL AND A FIRE DEPARTMENT (FIRE NUMBER 9798), 44.7 FEET NORTHWEST OF A LIGHT-POLE, 30.4 FEET WEST OF A POWER POLE, 2.9 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1366.762	.016	2/1				VERTICAL ADJUSTMENT		2011	00000672
1366.779	.016	2/1				VERTICAL CONTROL SURVEY		2007	VBROO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
			1272.068	.008	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1272.153	.009	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1366.730	.131		1272.287	.066	1996	HORIZONTAL ADJUSTMENT		2004	GPS1957
1366.762	.131		1272.287	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1931
1366.730	.131		1272.287	.066	1996	GPS - STATIC		2003	HGRAND
1366.762	.131		1272.287	.066	1996	GPS - STATIC		2003	HSTLO

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.662 09 = -94.580 03 = -94.449

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 15.71491	92 42 41.74118			434544.046	174649.613	.007		ADJUSTMENT	2012 GPS2800
<u>NAD83(2007)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 15.71504	92 42 41.74203			434543.987	174649.626	.007		ADJUSTMENT	2007 GPS2300
<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 51 15.71479	92 42 41.74168			434544.011	174649.601	.033	C	ADJUSTMENT	2004 GPS1957
46 51 15.71479	92 42 41.74168			434544.011	174649.601	.033	C	ADJUSTMENT	2003 GPS1931
46 51 15.71479	92 42 41.74168			434544.011	174649.601	.033	C	GPS - STATIC	2003 HGRAND
46 51 15.71479	92 42 41.74168			434544.011	174649.601	.033	C	GPS - STATIC	2003 HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2721851.572	457582.650	1712548.001	17024312.501	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2721851.513	457582.663	1712547.942	17024312.514	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2721851.537	457582.637	1712547.967	17024312.488	.033	C	ADJUSTMENT	2004	GPS1957
2721851.537	457582.637	1712547.967	17024312.488	.033	C	ADJUSTMENT	2003	GPS1931
2721851.537	457582.637	1712547.967	17024312.488	.033	C	GPS - STATIC	2003	HGRAND
2721851.537	457582.637	1712547.967	17024312.488	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN-DF9109-3S-22OCT2006.jpg	S	Oct 22, 2006
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN-DF9109-2-22OCT2006.jpg		Oct 22, 2006
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN-DF9109-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: NIKIN MNDT RESET

NGS Name: NIKIN RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9903](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	19 W	465115.71	924241.74	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: NIKIN 2001 2017

11.5 MILES SOUTHEAST OF FLOODWOOD, 11.7 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 232.75, 91.0 FEET SOUTH OF TRUNK HIGHWAY 2, 51.0 FEET EAST OF THE WEST ENTRANCE TO THE ARROWHEAD TOWN HALL AND A FIRE DEPARTMENT (FIRE NUMBER 9798), 44.7 FEET NORTHWEST OF A LIGHT-POLE, 30.4 FEET WEST OF A POWER POLE, 2.9 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1366.595	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1366.749	.262		1272.087	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.662 09 = -94.580 03 = -94.449

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 51 15.71473	92 42 41.74216	434543.978	174649.595	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2721851.503	457582.631	1712547.933	17024312.482	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN_RESET-DQ9903-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN_RESET-DQ9903-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NIKIN_RESET-DQ9903-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: NORDNESS

NGS Name: NORDNESS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9558](#) [Get Map](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	20	50 N	20 W	464808.43	925439.59		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2002	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE)	SURVEY DISK	NGS

Description: Stamping: NORDNESS 1999

8.5 MILES SOUTH OF FLOODWOOD, 8.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 2 TO TRUNK HIGHWAY 73 MILEPOINT 34.45 THEN 0.3 MILE WEST ON COUNTY ROAD 140, 30.5 FEET NORTH COUNTY ROAD 140, 15.0 FEET WEST OF AN ENTRANCE, 8.5 FEET SOUTHWEST OF A FENCE POST, 56.2 FEET WEST OF A POWER POLE, 2.8 FEET EAST OF A WITNESS POST.

Station Notes

THE MARK WAS RECOVERED WITH THE DISK ON THE GROUND AND THE ROD WAS STABLE, SO THE DISK WAS RESET IN THE SAME POSITION AT THIS TIME (4-01-2002). SEE NORDNESS MNDT RESET (DB5876). NORDNESS MNDT RESET WAS USED FOR THE VERTICAL AND NORDNESS WAS USED ONLY FOR THE HORIZONTAL.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>
			1234.853	.012	2011	HORIZONTAL ADJUSTMENT			2012	GPS2800
			1234.945	.013	2007	HORIZONTAL ADJUSTMENT			2007	GPS2300
1329.000	.131		1235.027	.066	1996	HORIZONTAL ADJUSTMENT			2003	GPS1769
1329.000	.131		1235.027	.066	1996	GPS - STATIC			2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.163 12B = -94.157 09 = -94.058 03 = -93.960

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.42871	92 54 39.58721	384538.848	155904.444	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.42883	92 54 39.58807	384538.788	155904.457	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.42851	92 54 39.58767	384538.816	155904.424	.033	C	ADJUSTMENT	2003	GPS1769
46 48 08.42851	92 54 39.58767	384538.816	155904.424	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672004.783	438421.022	1662698.315	17005225.973	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672004.723	438421.034	1662698.255	17005225.985	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2672004.751	438421.002	1662698.283	17005225.952	.033	C	ADJUSTMENT	2003	GPS1769
2672004.751	438421.002	1662698.283	17005225.952	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: NORDNESS MNDT RESET

NGS Name: NORDNESS RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG5876](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	20	50 N	20 W	464808.42	925439.58	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2002	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2002)

Stamping: NORDNESS 1999 RESET 2002

8.5 MILES SOUTH OF FLOODWOOD, 8.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD TO TRUNK HIGHWAY 73 MILEPOINT 34.45, THEN 0.3 MILE WEST ON COUNTY ROAD 140, 30.5 FEET NORTH COUNTY ROAD 140, 15.0 FEET WEST OF AN ENTRANCE, 8.5 FEET SOUTHWEST OF A FENCE POST, 56.2 FEET WEST OF A POWER POLE, 2.8 FEET EAST OF A WITNESS POST.

Station Notes

THE MARK WAS RECOVERED WITH THE DISK ON THE GROUND AND THE ROD WAS STABLE, SO THE DISK WAS RESET IN THE SAME POSITION AT THIS TIME (4-01-2002). SEE NORDNESS (DE9558). NORDNESS MNDT RESET WAS USED FOR THE VERTICAL AND NORDNESS WAS USED ONLY FOR THE HORIZONTAL.

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1328.993	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1328.984	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Geoid Separations(ft): GEOID18 = -94.163 12B = -94.157 09 = -94.058 03 = -93.957

* No Horizontal Positions in the Database *



Mn/DOT Name: NORDNESS MNDT RESET 2

NGS Name: NORDNESS RESET 2

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DR5187	Get Map
NW	20	50 N	20 W	464808.43	925439.59	2	3	NGS Quad / Sta Num : 46092443/ USGS Quad: PRAIRIE LAKE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: NORDNESS 2002 2017

8.5 MILES SOUTH OF FLOODWOOD, 8.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD TO TRUNK HIGHWAY 73 MILEPOINT 34.45, THEN 0.3 MILE WEST ON COUNTY ROAD 140 (NORDNESS ROAD), 30.5 FEET NORTH OF COUNTY ROAD 140 (NORDNESS ROAD), 15.0 FEET WEST OF DRIVEWAY NUMBER 11681, 56.2 FEET WEST OF A POWER POLE, 2.8 FEET EAST OF A WITNESS POST.

Station Pair: PRAIR MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1328.787	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1328.954	.262		1234.797	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.163 12B = -94.157 09 = -94.058 03 = -93.960

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 48 08.42851	92 54 39.58667	384538.885	155904.423	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2672004.821	438421.002	1662698.352	17005225.952	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NORDNESS_RESET_2-DR5187-3N-06SEP2017.jpg	N	Sep 6, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NORDNESS_RESET_2-DR5187-2-06SEP2017.jpg		Sep 6, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/NORDNESS_RESET_2-DR5187-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: OLIVER

NGS Name: OLIVER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5153](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	8	55 N	21 W	471550.10	930126.83	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 42 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** OLIVER 2017

11.6 MILES SOUTH-SOUTHWEST OF HIBBING, 10.15 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 68.65, 46.6 FEET WEST OF TRUNK HIGHWAY 73, 205.3 FEET SOUTH-SOUTHWEST A GUARD RAIL, 1.5 FEET EAST OF A WITNESS POST.

Station Pair: VINCENT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1329.213	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1329.217	.262			1231.946	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.250 12B = -97.270 09 = -97.162 03 = -97.083

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - Central Zone			Determination Method		Project Info	
Geodetic Position				X	Y	Acc	Order		Year	Reference
Latitude	Longitude									
47 15 50.09658	93 01 26.82754			357438.876	105603.107	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15			Determination Method		Project Info	
MN State Plane - North Zone				X	Y	Acc	Order		Year	Reference
X	Y									
2643506.748	606725.250			1634430.478	17173499.339	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/OLIVER-DR5153-3W-26JUL2017.jpg	W	Jul 26, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/OLIVER-DR5153-2-26JUL2017.jpg		Jul 26, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/OLIVER-DR5153-1-26JUL2017.jpg		Jul 26, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: P 163

NGS Name: P 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0169](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	54 N	17 W	470706.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966)

Stamping: P 163 1935

3.5 MILES SOUTH OF COTTON, 3.5 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.573	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1352.996	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -96.922 12B = -96.926 09 = -96.794 03 = -96.601

* No Horizontal Positions in the Database *



Mn/DOT Name: P 163 RESET

NGS Name: P 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0170](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	54 N	17 W	470706.00	922817.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1966	1992	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1978)

Stamping: P 163 RESET 1966

3.6 MILES SOUTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 35.45, 75.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 16.0 FEET NORTH OF A DIM TRAIL EAST, 54.5 FEET NORTH-NORTHWEST OF A POWER POLE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1352.950	.066	3				VERTICAL CONTROL SURVEY	1987 L24645
1352.953	.007	1				VERTICAL CONTROL SURVEY	1966 L63 MINN

Geoid Separations(ft): GEOID18 = -96.919 12B = -96.926 09 = -96.794 03 = -96.601

* No Horizontal Positions in the Database *



Mn/DOT Name: P 271

NGS Name: P 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0698](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	52 N	19 W	465720.00	924205.75	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019)

Stamping: P 271 1948

7.6 MILES WEST-SOUTHWEST OF ALBORN, AT A 90 DEGREE TURN (NORTH AND WEST) IN COUNTY ROAD 166, 27.0 FEET SOUTH OF THE WEST TANGENT, 122.0 FEET WEST OF THE NORTH TANGENT EXTENDED, 8.5 FEET EAST OF A TELEPHONE POLE, 10.0 FEET WEST OF A SMALL BOULDER, 57.0 FEET WEST OF A TRAIL SOUTH, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1319.584	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1319.007	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1319.007	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.640 12B = -95.623 09 = -95.535 03 = -95.387

* No Horizontal Positions in the Database *



Mn/DOT Name: P 272

NGS Name: P 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0507](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	18	53 N	18 W	470418.00	923941.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1993	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: P 272 1948

3.55 MILES EAST OF THE HIGH SCHOOL AT MEADOWLANDS, AT THE JUNCTION OF COUNTY ROAD 133 AND A ROAD NORTH, 69.0 FEET NORTH OF COUNTY ROAD 133, 23.0 FEET WEST OF A ROAD NORTH, 75.0 FEET NORTHWEST OF THE NORTH END OF A METAL CULVERT, 2.0 FEET SOUTH OF A WITNESS POST, IN JULY 1993 THE TOP 18.0 INCH DIAMETER OF THE CONCRETE MONUMENT WITH THE DISK WAS FOUND LYING IN A ROAD DITCH BY THE AZIMUTH MARK FOR NATIONAL GEODETIC SURVEY (NGS) STATION ELMER (ABOUT 10.0 MILES WEST OF WHERE P 272 WAS ESTABLISHED IN 1948).

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1282.927	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1282.330	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.775 12B = -96.765 09 = -96.663 03 = -96.479

* No Horizontal Positions in the Database *



Mn/DOT Name: P 273

NGS Name: P 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0503](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	36	53 N	21 W	470227.00	925613.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1950	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

BENCH MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: P 273 1948

8.6 MILES NORTH FROM FLOODWOOD, ABOUT 8.6 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, AT THE JUNCTION OF A ROAD EAST, 73.0 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 17.0 FEET NORTH OF THE ROAD EAST, 120.0 FEET EAST AND ACROSS THE HIGHWAY FROM THE EAST BANK OF THE FLOODWOOD RIVER, 54.5 FEET EAST OF A FENCE CORNER, 1.0 FOOT SOUTH OF A WIRE FENCE, 2.0 FEET WEST OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1246.743	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.397 12B = -96.381 09 = -96.342 03 = -96.158

* No Horizontal Positions in the Database *



Mn/DOT Name: P 273 RESET 1950

NGS Name: P 273 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0504](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	25	53 N	21 W	470226.80	925611.20	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1950)

Stamping: P 273 RESET 1950

8.2 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, AT THE NORTH END OF A TRUNK HIGHWAY 73 CURVE AND THE JUNCTION OF A ROAD EAST, 148.0 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 21.0 FEET SOUTH OF A SIDE ROAD, 50.0 FEET NORTH AND 107.0 FEET EAST OF THE NORTHEAST CORNER OF THE EAST END OF A BOX CULVERT, 40.0 FEET SOUTH OF AN EAST-WEST FENCE, 1.0 FOOT SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.498	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1247.799	.066	3				VERTICAL CONTROL SURVEY	1987	L24645
1247.799	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.397 12B = -96.381 09 = -96.342 03 = -96.158

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/P_273_RESET-SJ0504-3NE-12JUL2017.jpg	NE	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/P_273_RESET-SJ0504-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/P_273_RESET-SJ0504-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: P 274

NGS Name: P 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0393](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	7	53 N	19 W	470552.83	924735.75	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: P 274 1948

5.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, 1.0 MILE SOUTH OF A RAILROAD CROSSING, AT THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 193, 103.0 FEET WEST OF COUNTY ROAD 5, 19.0 FEET SOUTH OF COUNTY ROAD 193, 71.0 FEET WEST OF A FENCE CORNER, 1.5 FEET NORTH OF A FENCE LINE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1274.492	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1273.852	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1273.852	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.998 12B = -96.985 09 = -96.922 03 = -96.732

* No Horizontal Positions in the Database *



Mn/DOT Name: P 276

NGS Name: P 276

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	6	55 N	19 W	471657.45	924833.93	2	

NGS ACRN: [SJ0380](#)
NGS Quad / Sta Num : 47092342/
USGS Quad: LITTLE SWAN

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** P 276 1948

1.0 MILE SOUTH ON COUNTY ROAD 5 FROM A CROSSROAD AND A STORE AT LITTLE SWAN, 0.5 MILE NORTH OF A SCHOOL, AT THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 442 WEST, 31.0 FEET EAST OF COUNTY ROAD 5, 8.0 FEET SOUTH OF COUNTY ROAD 442 WEST EXTENDED, 8.0 FEET SOUTH OF A FENCE CORNER, 1.0 FOOT WEST OF A FENCE, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE AREA HAS BEEN RE-DITCHED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.769	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.037	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1291.037	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.884 12B = -97.890 09 = -97.811 03 = -97.700

* No Horizontal Positions in the Database *



Mn/DOT Name: P 279

NGS Name: P 279

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	54 N	21 W	470810.00	925950.00	2	

NGS ACRN: [SJ0485](#)
NGS Quad / Sta Num : 47092334/
USGS Quad: UPSTEAD LAKE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1959	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1959) Stamping: P 279 1948

16.0 MILES NORTH OF FLOODWOOD, 16.0 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 8 IN FLOODWOOD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1296.913	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1296.169	.007	1				VERTICAL CONTROL SURVEY		1948	L28 MINN

Geoid Separations(ft): GEOID18 = -96.926 12B = -96.922 09 = -96.876 03 = -96.706

* No Horizontal Positions in the Database *



Mn/DOT Name: P 279 RESET 1958

NGS Name: P 279 RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	54 N	21 W	470810.00	925950.00		

NGS ACRN: SJ0486	Get Map
NGS Quad / Sta Num : 47092334/	
USGS Quad: UPSTEAD LAKE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1959)

Stamping: P 279 RESET 1958

3.75 MILES NORTH OF A SCHOOL IN CEDAR VALLEY, 75.0 FEET WEST OF TRUNK HIGHWAY 73, AT THE NORTH END OF A SMALL MEADOW, 480.0 FEET SOUTH OF A METAL CULVERT, IN THE CENTER OF A LONG HIGHWAY CURVE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1291.080	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1291.074	.033	3/0				UNKNOWN/APPROXIMATE	1958	RSTPRE87

Geoid Separations(ft): GEOID18 = -96.926 12B = -96.922 09 = -96.876 03 = -96.706

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/P_279_RESET-SJ0486-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: P 28

NGS Name: P 28

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	52 N	18 W	465703.00	923407.00	2	

NGS ACRN: [RN0616](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2018) Stamping: P 28 1934

1.9 MILES NORTH ON A RAILROAD FROM CULVER, 115.5 FEET SOUTH OF RAILROAD MILEPOST 31, 17 RAILS SOUTH OF A RAILROAD SEMAPHORE, 45.0 FEET EAST OF A RAILROAD.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1279.030	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1278.501	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1278.501	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -95.521 12B = -95.512 09 = -95.394 03 = -95.223

* No Horizontal Positions in the Database *



Mn/DOT Name: P 30

NGS Name: P 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0680](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	36	51 N	20 W	465134.00	924843.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	POOR	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974) Stamping: P 30 1934

1.85 MILES EAST ON A RAILROAD FROM THE MIRBAT RAILROAD STATION, 0.2 MILE EAST OF A DOUBLE SIGNAL RELAY, 13 RAILS WEST OF A RAILROAD CULVERT, AT A WIRE GATE IN THE SOUTH RIGHT-OF-WAY FENCE, 30.0 FEET SOUTH OF A RAILROAD.

Station Notes

THE MONUMENT IS TILTED. THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1239.184	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1238.554	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1238.554	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT
1238.554	.007	1				VERTICAL CONTROL SURVEY	1960	L13 MINN

Geoid Separations(ft): GEOID18 = -94.750 12B = -94.737 09 = -94.652 03 = -94.537

* No Horizontal Positions in the Database *



Mn/DOT Name: PASCH

NGS Name: PASCH

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1883](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	24	50 N	17 W	464741.13	922657.57	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 18 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (17) **Stamping:** PASCH 2017

5.3 MILES NORTH CLOQUET, 3.55 MILES SOUTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 33 MILEPOINT 7.70, 26.8 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 33, 46.3 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 33, 161.3 FEET NORTH OF A CROSSOVER, 1.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1205.673	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1205.664	.262			1111.835	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -93.845 12B = -93.829 09 = -93.743 03 = -93.550

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 47 41.12902	92 26 57.56696	500169.297	152799.028	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2787657.445	436283.207	1778295.185	17002931.668	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PASCH-DR1883-3S-22AUG2017.jpg	S	Aug 22, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PASCH-DR1883-2-22AUG2017.jpg		Aug 22, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PASCH-DR1883-1-22AUG2017.jpg		Aug 22, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PAUP MNDT

NGS Name: PAUP

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	50 N	19 W	465108.50	924702.57	2	C

NGS ACRN:	RN0746	Get Map
NGS Quad / Sta Num :	46092442/1062	
USGS Quad:	GOWAN	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001)

Stamping: PAUP 1974

7.7 MILES SOUTHEAST OF FLOODWOOD, 8.3 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 SOUTH IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 229.3, 67.5 FEET SOUTH OF TRUNK HIGHWAY 2, 79.7 FEET WEST-NORTHWEST OF A POWER POLE NUMBER 11514, 50.41 FEET NORTH OF STATION 6907 N, 36.3 FEET NORTHWEST OF A RIGHT-OF-WAY POST, 3.7 FEET NORTH OF A WITNESS POST.

Station Notes

PAUP MNDT RM 2 WAS NOT SEARCHED FOR IN 1995.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1345.230	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1345.227	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1345.230	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1345.247	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1344.620	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1345.548	.262		1250.887	.197	2011	GPS - RTRN	2017	RTRN2017
			1250.555	.008	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1250.647	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1345.240	.131		1250.768	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1345.240	.131		1250.768	.066	1996	GPS - STATIC	2003	HGRAND
1345.240	.131		1250.739	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648
1345.247	.131		1250.768	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -94.672 12B = -94.665 09 = -94.577 03 = -94.458

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.49707	92 47 02.57241	416411.889	173987.193	.131	3	GPS - RTRN	2017	RTRN2017
46 51 08.49585	92 47 02.57236	416411.892	173987.069	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.49596	92 47 02.57322	416411.832	173987.081	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.49547	92 47 02.57292	416411.853	173987.031	.033	C	ADJUSTMENT	2004	GPS1957
46 51 08.49547	92 47 02.57293	416411.852	173987.031	.033	C	GPS - STATIC	2003	HGRAND
46 51 08.49547	92 47 02.57293	416411.852	173987.031	.033	C	ADJUSTMENT	1999	17648
46 51 08.49547	92 47 02.57293	416411.852	173987.031	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 08.48831	92 47 02.57453	416411.737	173986.306	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 08.68721	92 47 01.86319			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2703725.799	456768.770	1694429.194	17023523.347	.131	3	GPS - RTRN	2017	RTRN2017
2703725.803	456768.647	1694429.198	17023523.224	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2703725.743	456768.657	1694429.138	17023523.234	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2703725.764	456768.608	1694429.159	17023523.185	.033	C	ADJUSTMENT	2004	GPS1957
2703725.763	456768.608	1694429.159	17023523.185	.033	C	GPS - STATIC	2003	HGRAND
2703725.763	456768.608	1694429.159	17023523.185	.033	C	ADJUSTMENT	1999	17648
2703725.763	456768.608	1694429.159	17023523.185	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2703725.655	456767.882	1694429.049	17023522.459	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2079110.779	128704.292			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP-RN0746-3S-25JUL2017.jpg	S	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP-RN0746-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP-RN0746-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PAUP MNDT AZ MK

NGS Name: PAUP AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0747](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1063
USGS Quad: GOWAN

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	32	51 N	19 W	465110.72	924612.72	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	MNDT

Description: (2001)

Stamping: PAUP 1974

7.5 MILES WEST-SOUTHWEST OF BROOKSTON, 8.1 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31, AT TRUNK HIGHWAY 2 MILEPOINT 230, 97.8 FEET NORTH OF TRUNK HIGHWAY 2, 78.0 FEET WEST OF AN EXTENDED DRIVEWAY SOUTH, 3.0 FEET SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1331.073	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1331.057	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1331.057	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1331.057	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1330.430	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1331.093	.262		1236.415	.197	2011	GPS - OPUS	2021	GPSBM
1331.087	.262		1236.405	.197	2011	GPS - RTRN	2021	RTRN2021
1331.211	.262		1236.540	.197	2011	GPS - RTRN	2017	RTRN2017
			1236.412	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1236.500	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1331.067	.131		1236.628	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1331.067	.131		1236.628	.066	1996	GPS - STATIC	2003	HGRAND
1331.067	.262		1236.546	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.583 03 = -94.462

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.72314	92 46 12.72428	419877.622	174198.274	.131	3	GPS - OPUS	2021	GPSBM
46 51 10.72355	92 46 12.72346	419877.679	174198.316	.131	3	GPS - RTRN	2021	RTRN2021
46 51 10.72314	92 46 12.72460	419877.600	174198.274	.131	3	GPS - RTRN	2017	RTRN2017
46 51 10.72314	92 46 12.72374	419877.659	174198.274	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.72326	92 46 12.72460	419877.600	174198.286	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.72291	92 46 12.72419	419877.628	174198.251	.033	C	ADJUSTMENT	2004	GPS1957
46 51 10.72291	92 46 12.72419	419877.628	174198.251	.033	C	GPS - STATIC	2003	HGRAND
46 51 10.72409	92 46 12.72524	419877.556	174198.371	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.71690	92 46 12.72690	419877.437	174197.643	.131	3	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 10.91563	92 46 12.01718			.100	3	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2707189.608	457008.779	1697891.780	17023758.614	.131	3	GPS - OPUS	2021	GPSBM
2707189.665	457008.821	1697891.837	17023758.655	.131	3	GPS - RTRN	2021	RTRN2021
2707189.586	457008.779	1697891.758	17023758.614	.131	3	GPS - RTRN	2017	RTRN2017
2707189.646	457008.779	1697891.818	17023758.614	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2707189.586	457008.791	1697891.758	17023758.626	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2707189.614	457008.756	1697891.787	17023758.590	.033	C	ADJUSTMENT	2004	GPS1957
2707189.614	457008.756	1697891.787	17023758.590	.033	C	GPS - STATIC	2003	HGRAND
2707189.541	457008.875	1697891.713	17023758.710	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2707189.429	457008.146	1697891.600	17023757.981	.131	3	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2082574.542	128944.546			.100	3	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP_AZ_MK-RN0747-3N-25JUL2021.jpg	N	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP_AZ_MK-RN0747-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAUP_AZ_MK-RN0747-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PAUP MNDT RM 2

NGS Name: PAUP RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0744](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	32	51 N	19 W	465109.83	924704.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2007	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2001)

Stamping: PAUP NO 2 1974

1.7 MILES SOUTHWEST OF PAUPORES, 3.4 MILES SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 AT GOWAN, AT TRUNK HIGHWAY 2 MILEPOINT 229.3, 69.3 FEET NORTH OF TRUNK HIGHWAY 2, 87.0 FEET WEST-SOUTHWEST OF A POWER POLE, 2.5 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1335.811	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1335.184	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.583 03 = -94.462

* No Horizontal Positions in the Database *



Mn/DOT Name: PAYNE

NGS Name: PAYNE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2195](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/1014
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	10	53 N	18 W	470545.48	923558.24	2	1	1952	2007	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2007) Stamping: PAYNE 1952

IN PAYNE, 9.0 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 47
IN ALBORN, ABOUT 0.2 MILE SOUTH ON COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY
ROAD 232, 199.0 FEET WEST OF COUNTY ROAD 7, 99.5 FEET WEST OF THE WEST RAIL OF A RAILROAD, 13.0 FEET WEST OF A
FENCE, 91.19 FEET NORTHWEST OF PAYNE RM 1, 110.94 FEET SOUTHEAST OF PAYNE RM 2, 21.5 FEET NORTHWEST OF A
TELEPHONE PEDESTAL NUMBER C291.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1315.857	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1315.860	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1315.614	.131		1218.859	.066	1996	HORIZONTAL ADJUSTMENT	1999 17648

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1315.614						RECIPROCAL VERTICAL ANGLE	1952 HORZ

Geoid Separations(ft): GEOID18 = -96.952 12B = -96.945 09 = -96.834 03 = -96.647

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 05 45.47618	92 35 58.24025	462757.498	262700.394	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 05 45.47409	92 35 58.24350	462757.272	262700.182	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 05 45.69600	92 35 57.55000			.100	1	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>								
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2749325.697	545862.638	1740130.430	17112519.306	.033	1	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>MN State Plane - North Zone</u>								
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2749325.473	545862.425	1740130.206	17112519.093	.033	1	ADJUSTMENT	1986	17289

<u>NAD27</u>							<u>Project Info</u>	
<u>MN State Plane - North Zone</u>								
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2124710.493	217800.911			.100	1	CLASSICAL SURVEY	1956	11100



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE-SJ2195-3W-22MAY2007.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE-SJ2195-2-22MAY2007.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE-SJ2195-1-22MAY2007.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
W	May 22, 2007
	May 22, 2007
	May 22, 2007



Mn/DOT Name: PAYNE AZ MK

NGS Name: PAYNE AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3454](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	53 N	18 W	470530.00	923555.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: Stamping: PAYNE 1952

43.0 FEET EAST OF THE CENTERLINE OF COUNTY ROAD 7, 19.5 FEET NORTH OF THE CENTER OF A DRIVEWAY, 2.0 FEET WEST OF A FENCE AND 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.913 12B = -96.903 09 = -96.791 03 = -96.604



Mn/DOT Name: PAYNE RM 1

NGS Name: PAYNE RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3455](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	10	53 N	18 W	470544.68	923557.63	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2007	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2007)

Stamping: PAYNE NO 1 1952

9.0 MILES NORTH OF ALBORN, 9.0 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 47 IN ALBORN, ALSO 0.2 MILE SOUTH OF THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 232, 156.5 FEET WEST OF COUNTY ROAD 7, 57.0 FEET WEST OF THE WEST RAIL OF THE RAILROAD TRACKS, 69.7 FEET SOUTHEAST OF A TELEPHONE PEDESTAL NUMBER C291, 68.0 FEET NORTH OF AN ENTRANCE, 104.0 FEET SOUTHWEST OF A TELEPHONE POLE, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1314.085	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702	
1314.085	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT	

Geoid Separations(ft): GEOID18 = -96.952 12B = -96.942 09 = -96.834 03 = -96.647

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_1-CJ3455-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_1-CJ3455-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_1-CJ3455-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PAYNE RM 2

NGS Name: PAYNE RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3456](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	53 N	18 W	470546.06	923559.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2007	GOOD	Horz=NO Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2007)

Stamping: PAYNE NO 2 1952

9.0 MILES NORTH OF ALBORN, 9.0 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 47 IN ALBORN, ALSO 0.2 MILE SOUTH OF THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 232, 2.0 FEET SOUTHEAST OF AN OLD FENCE LINE, 110.94 FEET NORTHWEST OF STATION PAYNE, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1312.386	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1312.386	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT

Geoid Separations(ft): GEOID18 = -96.955 12B = -96.949 09 = -96.837 03 = -96.650

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_2-CJ3456-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_2-CJ3456-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PAYNE_RM_2-CJ3456-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PICKETT MNDT

NGS Name: PICKETT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE8058](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	18 W	465104.45	923507.84		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	NOT FOUND	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	SURVEY DISK	MNDT

Description: (2003)

Stamping: PICKETT 1999

1.5 MILES SOUTHEAST OF BROOKSTON, 6.10 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 9.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 2 MILEPOINT 238.70, 114.0 FEET NORTH OF TRUNK HIGHWAY 2, 93.0 FEET EAST-NORTHEAST OF A RIGHT-OF-WAY POST, 35.4 FEET NORTHEAST OF A POWER POLE, 2.3 FEET WEST OF A WITNESS POST.

Station Notes

REPORTED REMOVED BY MNDOT DISTRICT 1 BUT FOUND IN GOOD CONDITION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1165.710	.008	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1165.798	.009	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1260.299	.131		1165.966	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1260.299	.131		1165.966	.066	1996	GPS - STATIC	2003 HGRAND
1260.345	.131		1165.933	.066	1996	HORIZONTAL ADJUSTMENT	2002 GPS1733
1260.332	.131		1165.966	.066	1996	GPS - STATIC	1999 HBROO

Geoid Separations(ft): GEOID18 = -94.596 12B = -94.596 09 = -94.495 03 = -94.596

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.45006	92 35 07.83761	466090.707	173428.376	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.45020	92 35 07.83848	466090.647	173428.390	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 51 04.44990	92 35 07.83838	466090.654	173428.360	.033	C	ADJUSTMENT	2004	GPS1957
46 51 04.44990	92 35 07.83838	466090.654	173428.360	.033	C	GPS - STATIC	2003	HGRAND
46 51 04.44990	92 35 07.83838	466090.654	173428.360	.033	1	ADJUSTMENT	2002	GPS1733
46 51 04.44990	92 35 07.83838	466090.652	173428.360	.033	C	GPS - STATIC	1999	HBROO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2753406.978	456625.603	1744088.202	17023312.824	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2753406.917	456625.617	1744088.141	17023312.837	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2753406.925	456625.587	1744088.149	17023312.807	.033	C	ADJUSTMENT	2004	GPS1957
2753406.925	456625.587	1744088.149	17023312.807	.033	C	GPS - STATIC	2003	HGRAND
2753406.925	456625.587	1744088.149	17023312.807	.033	1	ADJUSTMENT	2002	GPS1733
2753406.925	456625.586	1744088.149	17023312.807	.033	C	GPS - STATIC	1999	HBROO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PICKETT-DE8058-3W-25JUL2017.jpg	W	Jul 25, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PIPE MNDT

NGS Name: PIPE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0666](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/1070
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	27	51 N	20 W	465221.02	925137.86	2	C	1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2019) Stamping: PIPE 1974

4.6 MILES SOUTHEAST OF FLOODWOOD, 4.15 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 225.15, 85.6 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 37.3 FEET SOUTHWEST OF THE SOUTHEAST END OF A METAL CULVERT, 48.4 FEET EAST OF A POWER POLE NUMBER 1 WITH A TRANSFORMER, 20.0 FEET SOUTHEAST OF DRIVEWAY NUMBER 11198, 6.5 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1252.570	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	
1252.370	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1251.772	.016	2					VERTICAL CONTROL SURVEY	1974	L23566	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1252.455	.262			1157.593	.197	2011	GPS - RTRN	2017	RTRN2017	
				1157.681	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1157.777	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1252.360	.131			1157.872	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957	
1252.360	.131			1157.872	.066	1996	GPS - STATIC	2003	HGRAND	
1252.360	.197			1157.665	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -94.875 12B = -94.862 09 = -94.773 03 = -94.662

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 52 21.01742	92 51 37.85813	397316.030	181425.601	.131	3	GPS - RTRN	2017	RTRN2017
46 52 21.01715	92 51 37.85728	397316.089	181425.573	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 52 21.01724	92 51 37.85815	397316.029	181425.582	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 52 21.01685	92 51 37.85778	397316.054	181425.543	.033	C	ADJUSTMENT	2004	GPS1957
46 52 21.01685	92 51 37.85778	397316.054	181425.543	.033	C	GPS - STATIC	2003	HGRAND
46 52 21.01841	92 51 37.85442	397316.288	181425.699	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 52 21.01188	92 51 37.85642	397316.146	181425.039	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 52 21.21272	92 51 37.14066			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2684568.833	464047.527	1675290.411	17030824.326	.131	3	GPS - RTRN	2017	RTRN2017
2684568.892	464047.500	1675290.470	17030824.299	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2684568.832	464047.509	1675290.410	17030824.308	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2684568.858	464047.470	1675290.436	17030824.269	.033	C	ADJUSTMENT	2004	GPS1957
2684568.858	464047.470	1675290.436	17030824.269	.033	C	GPS - STATIC	2003	HGRAND
2684569.091	464047.628	1675290.669	17030824.427	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2684568.954	464046.966	1675290.531	17030823.765	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2059953.798	135983.490			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PIPE-RN0666-3SW-24JUL2017.jpg	SW	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PIPE-RN0666-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PIPE-RN0666-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: POINET MNDT

NGS Name: POINET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9560](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	33	50 N	20 W	464612.77	925256.23	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1999	2017	DESTROYED	Horz=NO Vert=NO	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 45 FT)	SURVEY DISK	MNDT

Description: (1999) **Stamping:** POINET 1999

6.35 MILES NORTH OF CROMWELL, 6.35 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT TRUNK HIGHWAY 73 MILEPOINT 31.55, 74.0 FEET EAST OF TRUNK HIGHWAY 73, 74.0 FEET NORTH-NORTHEAST OF A POWER POLE, 21.0 FEET WEST OF A GRAVEL ROAD, 2.6 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1306.657	.016	2/1				VERTICAL ADJUSTMENT			2004	00000464		
1306.648	.016	2/1				VERTICAL CONTROL SURVEY			2002	VFLOO		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference		
1306.530	.262		1212.724	.197	2011	GPS - RTRN			2016	RTRN2016		
			1212.816	.016	2011	HORIZONTAL ADJUSTMENT			2012	GPS2800		
			1212.911	.017	2007	HORIZONTAL ADJUSTMENT			2007	GPS2300		
1306.657	.131		1213.006	.066	1996	HORIZONTAL ADJUSTMENT			2003	GPS1769		
1306.657	.131		1213.006	.066	1996	GPS - STATIC			2002	HFLOO		

Geoid Separations(ft): GEOID18 = -93.809 12B = -93.806 09 = -93.714 03 = -93.612

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - South Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
46 46 12.77311	92 52 56.23329	391664.719	144145.739	.131	3	GPS - RTRN				2016	RTRN2016		
46 46 12.77325	92 52 56.23291	391664.745	144145.753	.013		ADJUSTMENT				2012	GPS2800		

NAD83(2007)		Geodetic Position		St Louis County - South Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
46 46 12.77337	92 52 56.23376	391664.686	144145.766	.013		ADJUSTMENT				2007	GPS2300		

NAD83(1996)		Geodetic Position		St Louis County - South Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
46 46 12.77308	92 52 56.23340	391664.711	144145.736	.033	C	ADJUSTMENT				2003	GPS1769		
46 46 12.77308	92 52 56.23340	391664.712	144145.735	.033	C	GPS - STATIC				2002	HFLOO		



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679228.374	426722.004	1669903.129	16993522.937	.131	3	GPS - RTRN	2016	RTRN2016
2679228.401	426722.018	1669903.155	16993522.952	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679228.341	426722.030	1669903.096	16993522.963	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2679228.367	426722.000	1669903.121	16993522.934	.033	C	ADJUSTMENT	2003	GPS1769
2679228.367	426722.000	1669903.121	16993522.934	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET-DE9560-3W-06JUN2016.jpg	W	Jun 6, 2016
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET-DE9560-2-06JUN2016.jpg		Jun 6, 2016
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET-DE9560-1-06JUN2016.jpg		Jun 6, 2016

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: POINET MNDT RESET

NGS Name: POINET RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR3222](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	33	50 N	20 W	464612.77	925256.23	2	C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2018	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 45 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: POINET 1999 2017

6.35 MILES NORTH OF CROMWELL, 6.35 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, AT TRUNK HIGHWAY 73 MILEPOINT 31.55, 74.0 FEET EAST OF TRUNK HIGHWAY 73, 21.0 FEET WEST OF A DRIVEWAY, 2.6 FEET SOUTH OF A WITNESS POST.

Station Pair: FINE MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1306.448	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1306.480			1212.632	.020	2011	HORIZONTAL ADJUSTMENT	2019	GPS3322
1306.503	.131		1212.855	.066	1996	GPS - STATIC	2019	HCARL
1306.480			1212.632	.020	2011	GPS - STATIC	2019	HCARL
1306.625	.262		1212.819	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -93.809 12B = -93.806 09 = -93.714 03 = -93.612

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 46 12.77326	92 52 56.23292	391664.745	144145.754	.013		ADJUSTMENT	2019	GPS3322
46 46 12.77326	92 52 56.23292	391664.745	144145.754	.013	C	GPS - STATIC	2019	HCARL
46 46 12.77312	92 52 56.23378	391664.685	144145.741	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 46 12.77302	92 52 56.23341	391664.710	144145.730	.033	C	GPS - STATIC	2019	HCARL

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2679228.400	426722.019	1669903.155	16993522.953	.013		ADJUSTMENT	2019	GPS3322
2679228.400	426722.019	1669903.155	16993522.953	.013	C	GPS - STATIC	2019	HCARL
2679228.340	426722.004	1669903.095	16993522.938	.131	3	GPS - RTRN	2017	RTRN2017

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2679228.366	426721.994	1669903.120	16993522.928	.033	C	GPS - STATIC	2019	HCARL

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET_RESET-DR3222-3E-06SEP2017.jpg	E	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET_RESET-DR3222-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/POINET_RESET-DR3222-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PRAIR MNDT

NGS Name: PRAIR

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DE9561	Get Map
NW	20	50 N	20 W	464808.51	925414.18	2	C	NGS Quad / Sta Num : 46092443/ USGS Quad: PRAIRIE LAKE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	SURVEY DISK	MNDT

Description: (1999) Stamping: PRAIR 1999

8.5 MILES SOUTH OF FLOODWOOD, 8.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 34.45, 63.0 FEET NORTHEAST OF TRUNK HIGHWAY 73, 36.0 FEET NORTHWEST OF AN ENTRANCE, 20.7 FEET SOUTH OF A POWER POLE, 1.8 FEET SOUTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1326.234	.016	2/1				VERTICAL ADJUSTMENT	2004 00000464
1326.224	.016	2/1				VERTICAL CONTROL SURVEY	2002 VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1232.120	.018	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1232.212	.019	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1326.211	.131		1232.291	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1769
1326.211	.131		1232.291	.066	1996	GPS - STATIC	2002 HFLOO

Geoid Separations(ft): GEOID18 = -94.166 12B = -94.157 09 = -94.061 03 = -93.960

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.51148	92 54 14.18229	386306.353	155902.516	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.51159	92 54 14.18315	386306.293	155902.527	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.51127	92 54 14.18274	386306.322	155902.495	.033	C	ADJUSTMENT	2003	GPS1769
46 48 08.51127	92 54 14.18274	386306.321	155902.493	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673772.246	438433.811	1664464.974	17005236.435	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673772.186	438433.822	1664464.914	17005236.446	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673772.214	438433.789	1664464.942	17005236.413	.033	C	ADJUSTMENT	2003	GPS1769
2673772.214	438433.789	1664464.942	17005236.414	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: PRAIR MNDT RESET

NGS Name: PRAIR RESET

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	20	50 N	20 W	464808.51	925414.18	2	3

NGS ACRN: [DR5186](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 15 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: PRAIR 1999 2017

8.5 MILES SOUTH OF FLOODWOOD, 8.5 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 34.45, 63.0 FEET NORTHEAST OF TRUNK HIGHWAY 73, 36.0 FEET NORTHWEST OF AN ENTRANCE, 20.7 FEET SOUTH OF A POWER POLE, 1.8 FEET SOUTHWEST OF A WITNESS POST.

Station Pair: NORDNESS MNDT RESET 2 - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1326.047	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1326.251	.262		1232.091	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.166 12B = -94.157 09 = -94.061 03 = -93.960

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 48 08.51113	92 54 14.18255	386306.335	155902.481	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>							
2673772.228	438433.775	1664464.956	17005236.399	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIR_RESET-DR5186-3E-06SEP2017.jpg	E	Sep 6, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIR_RESET-DR5186-2-06SEP2017.jpg		Sep 6, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIR_RESET-DR5186-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: PRAIRIE LAKE MN137

NGS Name: PRAIRIE LAKE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9146](#)

[Get Map](#)

NGS Quad / Sta Num : 46092443/

USGS Quad: PRAIRIE LAKE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	50 N	21 W	464653.32	925857.52		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	SURVEY DISK	MN-137

Description: (2002)

Stamping: PRAIRIE LAKE 2001

8.0 MILES NORTHWEST OF CROMWELL, 11.25 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 210 IN CROMWELL, THEN 0.40 MILE WEST ON COUNTY ROAD 140, THEN 4.80 MILES SOUTH AND WEST ON COUNTY ROAD 51, AT TRUNK HIGHWAY 73 MILEPOINT 34.45, 33.0 FEET WEST OF A FIELD ENTRANCE, 30.0 FEET WEST OF A DRIVEWAY, 25.0 FEET NORTH OF COUNTY ROAD 51, 3.0 FEET SOUTH-SOUTHWEST OF A POWER POLE, 2.0 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1305.430	.262		1211.523	.197	2011	GPS - OPUS	2020	GPSBM
1305.404	.262		1211.497	.197	2011	GPS - OPUS	2020	GPSBM
1305.457	.262		1211.543	.197	2011	GPS - RTRN	2020	RTRN2020
1305.467	.262		1211.549	.197	2011	GPS - RTRN	2016	RTRN2016
			1211.526	.014	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1211.622	.015	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1305.444	.131		1211.710	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1305.444	.131		1211.710	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -93.907 12B = -93.917 09 = -93.812 03 = -93.710

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 46 53.32436	92 58 57.51728	366542.640	148408.965	.131	3	GPS - OPUS	2020	GPSBM
46 46 53.32462	92 58 57.51764	366542.615	148408.992	.131	3	GPS - OPUS	2020	GPSBM
46 46 53.32578	92 58 57.51634	366542.706	148409.109	.131	3	GPS - RTRN	2020	RTRN2020
46 46 53.32427	92 58 57.51704	366542.656	148408.956	.131	3	GPS - RTRN	2016	RTRN2016
46 46 53.32415	92 58 57.51785	366542.600	148408.944	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 46 53.32427	92 58 57.51872	366542.540	148408.957	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 46 53.32399	92 58 57.51839	366542.562	148408.929	.033	C	ADJUSTMENT	2003	GPS1931
46 46 53.32399	92 58 57.51839	366542.562	148408.928	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2654071.477	430776.062	1644763.422	16997607.981	.131	3	GPS - OPUS	2020	GPSBM
2654071.452	430776.088	1644763.397	16997608.008	.131	3	GPS - OPUS	2020	GPSBM
2654071.542	430776.206	1644763.488	16997608.125	.131	3	GPS - RTRN	2020	RTRN2020
2654071.494	430776.053	1644763.439	16997607.972	.131	3	GPS - RTRN	2016	RTRN2016
2654071.437	430776.040	1644763.383	16997607.960	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2654071.377	430776.052	1644763.322	16997607.972	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2654071.400	430776.024	1644763.345	16997607.944	.033	C	ADJUSTMENT	2003	GPS1931
2654071.400	430776.024	1644763.345	16997607.944	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIRIE_LAKE-DF9146-3N-06JUL2020.jpg	N	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIRIE_LAKE-DF9146-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/PRAIRIE_LAKE-DF9146-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Q 159

NGS Name: Q 159

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0300](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	2	53 N	17 W	470616.71	922711.41	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1935	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: Q 159 1935

4.5 MILES NORTH OF CANYON, 4.5 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON TO TRUNK HIGHWAY 53 MILEPOINT 34.50, THEN 0.9 MILE EAST ON COUNTY ROAD 49, 26.0 FEET SOUTH OF COUNTY ROAD 49 (THREE LAKES ROAD), 64.8 FEET SOUTH-SOUTHWEST OF A POWER POLE, 40.5 FEET NORTHWEST OF THE NORTHEAST CORNER OF A CABIN, 13.2 FEET EAST-NORTHEAST OF A CABLE MARKER, 0.5 FOOT NORTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1376.533	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1376.605	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1376.605	.016	2/1				VERTICAL CONTROL SURVEY	2009	VGNES
1376.605	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1376.041	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1376.041	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1376.490	.262		1279.742	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.742 12B = -96.752 09 = -96.614 03 = -96.414

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 06 16.71023	92 27 11.40856	499210.734	265829.616	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2785748.565	549297.509	1776544.531	17115903.198	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Q_159-SJ0300-3S-18SEP2017.jpg	S	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Q_159-SJ0300-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Q_159-SJ0300-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Q 163

NGS Name: Q 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0171](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	53 N	17 W	470616.00	922817.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1978	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1978)

Stamping: Q 163 1935

4.45 MILES NORTH OF CANYON, 4.47 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1356.798	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1356.234	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Geoid Separations(ft): GEOID18 = -96.791 12B = -96.801 09 = -96.663 03 = -96.470

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 271

NGS Name: Q 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0699](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	34	52 N	19 W	465718.02	924321.60	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: Q 271 1948

8.6 MILES WEST-SOUTHWEST OF ALBORN, 1.0 MILE EAST ALONG COUNTY ROAD 166 FROM THE JUNCTION OF COUNTY ROAD 166 AND COUNTY ROAD 5, 0.1 MILE WEST OF A CULVERT AT A CREEK, AT A SMALL FARM CLEARING, 27.0 FEET SOUTH OF COUNTY ROAD 166, 92.0 FEET EAST OF A FARM DRIVE, 148.0 FEET NORTHEAST OF THE NORTHEAST CORNER OF A HOUSE, 7.0 FEET EAST OF A TELEPHONE POLE, 2.5 FEET NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1316.172	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1315.591	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1315.591	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.643 12B = -95.623 09 = -95.541 03 = -95.394

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 272

NGS Name: Q 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0506](#) [Get Map](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	16	53 N	18 W	470416.00	923825.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Q 272 1948

4.55 MILES EAST OF THE HIGH SCHOOL AT MEADOWLANDS, AT THE JUNCTION OF COUNTY ROAD 133 AND A DIM ROAD NORTH, 70.0 FEET NORTH OF COUNTY ROAD 133, 20.0 FEET EAST OF A DIM ROAD NORTH, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1288.118	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1287.527	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1287.527	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.755 12B = -96.748 09 = -96.644 03 = -96.456

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 273

NGS Name: Q 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0525](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	53 N	21 W	470310.00	925709.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1950	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Q 273 1948

9.7 MILES NORTH FROM FLOODWOOD, ABOUT 9.7 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, ABOUT 0.35 MILE SOUTHEAST OF THE JUNCTION OF A ROAD EAST, AT THE JUNCTION OF A ROAD LEADING NORTH, 78.0 FEET NORTHEAST OF TRUNK HIGHWAY 73, 27.0 FEET WEST OF THE ROAD NORTH, 120.0 FEET NORTH OF THE JUNCTION, 90.0 FEET SOUTH OF A POWER POLE, 65.5 FEET NORTH OF A TELEPHONE POLE, 2.0 FEET NORTH OF A WHITE WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1250.316	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.479 12B = -96.466 09 = -96.424 03 = -96.240

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 273 RESET 1950

NGS Name: Q 273 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0526](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	26	53 N	21 W	470310.00	925709.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1950	2017	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1950)

Stamping: Q 273 RESET 1950

9.3 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 186 NORTH, 103.0 FEET NORTH OF THE JUNCTION, 75.0 FEET NORTH-NORTHEAST OF TRUNK HIGHWAY 73, 35.0 FEET WEST OF A SIDE ROAD, 36.0 FEET SOUTH OF A POWER POLE, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE. FOUND THE CONCRETE BROKEN.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1249.801	.066	3				VERTICAL CONTROL SURVEY	1987	L24645
1249.807	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.479 12B = -96.466 09 = -96.424 03 = -96.240

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Q_273_RESET-SJ0526-1-13JUL2017.jpg		Jul 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Q 274

NGS Name: Q 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0392](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	31	54 N	19 W	470645.70	924725.67	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019)

Stamping: Q 274 1948

3.95 MILES SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, ON A COUNTY ROAD 5 CURVE AND A RAILROAD CROSSING, 53.0 FEET SOUTHEAST OF COUNTY ROAD 5, 292.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST RAILROAD TRACK, 44.0 FEET WEST OF A ROAD, 21.0 FEET SOUTH OF A ROAD CONNECTING COUNTY ROAD 5 AND A ROAD, 5.5 FEET SOUTHEAST OF A TELEPHONE POLE, 2.0 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1283.826	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1283.183	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1283.183	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.119 12B = -97.109 09 = -97.047 03 = -96.853

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 275

NGS Name: Q 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0492](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	7	54 N	17 W	471005.73	923325.79	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Q 275 1948

3.0 MILES NORTHEAST OF KELSEY, 2.0 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF A RAILROAD AND COUNTY ROAD 52, 40.0 FEET NORTH OF COUNTY ROAD 52, 21.0 FEET EAST OF A GRASSY CROSSROAD, 15.0 FEET NORTH-NORTHEAST OF THE EAST END OF A METAL CULVERT, 1.5 FEET NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1312.891	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1312.258	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1312.258	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.519 12B = -97.526 09 = -97.411 03 = -97.224

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 279

NGS Name: Q 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1333](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	21	54 N	21 W	470854.38	930015.94	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Q 279 1948

4.75 MILES NORTH OF A SCHOOL IN CEDAR VALLEY, 0.15 MILE SOUTH OF THE SOUTH END OF A MEADOW AND A CULVERT UNDER COUNTY ROAD 184 (OLD TRUNK HIGHWAY 73), 36.0 FEET WEST OF COUNTY ROAD 184, 195.0 FEET SOUTH OF A WINDING ROAD SIGN, 180.0 FEET NORTH OF THE NORTH END OF A CURVE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1302.750	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1301.999	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1301.999	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1301.999	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.968 12B = -96.965 09 = -96.913 03 = -96.752

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Q_279-SJ1333-3N-12JUL2017.jpg	N	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Q 28

NGS Name: Q 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0617](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	52 N	18 W	465822.02	923432.73	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1948	GOOD	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: Q 28 1934

IN ALBORN, 164.0 FEET SOUTH OF THE SOUTHWEST CORNER OF A RAILROAD STATION, 15.8 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 16.0 FEET NORTHEAST OF A WATER CRANE, IN LINE WITH THE NORTH EDGE OF A WATER TANK, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.850	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.322	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1304.322	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT
1304.322	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.738 12B = -95.731 09 = -95.607 03 = -95.436

* No Horizontal Positions in the Database *



Mn/DOT Name: Q 30

NGS Name: Q 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1211](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	27	51 N	20 W	465206.00	925108.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	UNKNOWN	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type
BLANK

Disk Type
BENCH MARK DISK

Mon. Agency
NGS

Description: (1934)

Stamping:

0.36 MILE NORTHWEST OF GOWAN, 0.27 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 83 NORTHWEST OF GOWAN.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1246.858	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -94.839 12B = -94.823 09 = -94.737 03 = -94.623

* No Horizontal Positions in the Database *



Mn/DOT Name: QUIST MNDT

NGS Name: QUIST

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9562](#)

[Get Map](#)

NGS Quad / Sta Num : 46092444/

USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	51 N	20 W	465457.00	925421.02	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1993	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type

ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)

Disk Type

SURVEY DISK

Mon. Agency

MNDT

Description: (2001)

Stamping: QUIST 1993

0.55 MILE SOUTHEAST OF FLOODWOOD, 0.45 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 EAST OF FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 221.50, 45.5 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 12.0 FEET SOUTHEAST OF AN ENTRANCE, 60.0 FEET NORTHEAST OF A RIGHT-OF-WAY POST, 6.9 FEET NORTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1266.818	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1266.818	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1171.579	.011	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1171.671	.011	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1266.828	.131		1171.714	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1266.828	.131		1171.714	.066	1996	GPS - STATIC	2003	HGRAND
1266.828	.131		1171.714	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1266.828	.131		1171.714	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.256 12B = -95.239 09 = -95.164 03 = -95.049

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 57.00464	92 54 21.01894	386071.371	197292.421	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 57.00473	92 54 21.01980	386071.312	197292.431	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 57.00461	92 54 21.01912	386071.358	197292.418	.033	C	ADJUSTMENT	2004	GPS1957
46 54 57.00461	92 54 21.01912	386071.358	197292.418	.033	C	GPS - STATIC	2003	HGRAND
46 54 57.00461	92 54 21.01912	386071.358	197292.418	.033	C	ADJUSTMENT	2003	GPS1769
46 54 57.00461	92 54 21.01912	386071.357	197292.417	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673192.646	479819.765	1663939.942	17046604.650	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673192.586	479819.774	1663939.882	17046604.659	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2673192.634	479819.762	1663939.930	17046604.647	.033	C	ADJUSTMENT	2004	GPS1957
2673192.634	479819.762	1663939.930	17046604.647	.033	C	GPS - STATIC	2003	HGRAND
2673192.634	479819.762	1663939.930	17046604.647	.033	C	ADJUSTMENT	2003	GPS1769
2673192.634	479819.762	1663939.930	17046604.647	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/QUIST-DE9562-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: QUIST MNMT RESET

NGS Name: QUIST RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9917](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	51 N	20 W	465457.00	925421.02	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 40 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNMT

Description: (2017)

Stamping: QUIST 1993 2017

0.55 MILE SOUTHEAST OF FLOODWOOD, 0.45 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 EAST OF FLOODWOOD (THE JUNCTION IS 0.5 MILE SOUTHEAST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 221.50, 45.5 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 12.0 FEET SOUTHEAST OF AN ENTRANCE, 6.9 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1266.704	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1266.795	.262		1171.536	.197	2011	GPS - OPUS	2020	GPSBM
1266.733	.262		1171.474	.197	2011	GPS - OPUS	2020	GPSBM
1266.808	.262		1171.566	.197	2011	GPS - RTRN	2020	RTRN2020
1266.667	.262		1171.428	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.256 12B = -95.239 09 = -95.164 03 = -95.049

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
46 54 57.00370	92 54 21.01954	386071.329	197292.326	.131	3	GPS - OPUS
46 54 57.00380	92 54 21.01950	386071.332	197292.336	.131	3	GPS - OPUS
46 54 57.00457	92 54 21.01886	386071.376	197292.414	.131	3	GPS - RTRN
46 54 57.00396	92 54 21.01845	386071.405	197292.352	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Reference</u>
2673192.604	479819.670	1663939.900	17046604.554	.131	3	GPS - OPUS
2673192.607	479819.680	1663939.903	17046604.565	.131	3	GPS - OPUS
2673192.652	479819.758	1663939.948	17046604.643	.131	3	GPS - RTRN
2673192.680	479819.696	1663939.976	17046604.581	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/QUIST_RESET-DQ9917-3SW-06JUL2020.jpg	SW	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/QUIST_RESET-DQ9917-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/QUIST_RESET-DQ9917-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: R 163

NGS Name: R 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0172](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	11	53 N	17 W	470503.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966)

Stamping: R 163 1935

3.1 MILES NORTH OF CANYON, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 152 IN CANYON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1354.026	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1353.475	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Geoid Separations(ft): GEOID18 = -96.601 12B = -96.614 09 = -96.466 03 = -96.276

* No Horizontal Positions in the Database *



Mn/DOT Name: R 163 RESET 1966

NGS Name: R 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0173](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SW	11	53 N	17 W	470502.93	922816.29	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1966	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: R 163 RESET 1966

3.0 MILES NORTH OF CANYON, 3.1 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 33.10, 75.3 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 1.7 FEET NORTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1355.234	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1355.283	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702
1355.279	.016	2/1					VERTICAL CONTROL SURVEY	2009	VGNES
1355.279	.016	2/1					VERTICAL CONTROL SURVEY	2009	VWITT
1355.250	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1354.233	.007	1					VERTICAL CONTROL SURVEY	1966	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference
1355.293	.262			1258.679	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.601 12B = -96.611 09 = -96.466 03 = -96.273

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Reference
Latitude	Longitude								
47 05 02.93201	92 28 16.29112			494720.014	258354.911	.131	3	GPS - RTRN	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Reference
X	Y								
2781321.175	541785.884			1772108.433	17108400.413	.131	3	GPS - RTRN	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/R_163_RESET-SJ0173-3E-18SEP2017.jpg	E	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/R_163_RESET-SJ0173-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/R_163_RESET-SJ0173-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: R 271

NGS Name: R 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0700](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	52 N	19 W	465716.00	924434.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: R 271 1948

9.6 MILES SOUTHWEST OF ALBORN, AT THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 30.0 FEET SOUTH OF COUNTY ROAD 166, 103.0 FEET EAST OF COUNTY ROAD 5, 70.0 FEET EAST OF A FENCE CORNER, 1.0 FOOT NORTH OF A FENCE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1299.030	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1298.439	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1298.439	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT
1298.439	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.643 12B = -95.623 09 = -95.541 03 = -95.397

* No Horizontal Positions in the Database *



Mn/DOT Name: R 272

NGS Name: R 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0505](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	16	53 N	18 W	470409.00	923709.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: R 272 1948

1.75 MILES SOUTH ON COUNTY ROAD 7 FROM THE RAILROAD STATION AT PAYNE THEN 0.9 MILE WEST ON COUNTY ROAD 133, 0.6 MILE WEST OF A RAILROAD CROSSING OF COUNTY ROAD 133, AT A SLIGHT CURVE IN COUNTY ROAD 133 AND A TRAIL NORTH, 78.0 FEET NORTH OF COUNTY ROAD 133, 18.0 FEET WEST OF A TRAIL, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1293.262	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.675	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1292.675	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.712 12B = -96.706 09 = -96.598 03 = -96.414

* No Horizontal Positions in the Database *



Mn/DOT Name: R 273

NGS Name: R 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0527](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	23	53 N	21 W	470344.00	925823.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) **Stamping:** R 273 1948

10.9 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, 0.8 MILE SOUTHEAST OF A 9.0 FEET BRIDGE, AT THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 508, 25.0 FEET SOUTHWEST OF TRUNK HIGHWAY 73, 222.0 FEET SOUTHEAST OF COUNTY ROAD 508, 128.0 FEET NORTHWEST OF A POWER POLE, 1.5 FEET NORTHEAST OF A FENCE, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1246.822	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1246.129	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD	
1246.129	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN	

Geoid Separations(ft): GEOID18 = -96.529 12B = -96.519 09 = -96.476 03 = -96.292

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/R_273-SJ0527-3W-13JUL2017.jpg	W	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: R 274

NGS Name: R 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0391](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	29	54 N	19 W	470752.00	924725.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: R 274 1948

2.7 MILES SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, 1.3 MILES NORTH OF A RAILROAD CROSSING, AT THE JUNCTION OF COUNTY ROAD 5 AND A DIM ROAD EAST, 64.0 FEET EAST OF COUNTY ROAD 5, 20.0 FEET NORTH OF A ROAD EAST, 50.0 FEET NORTHEAST OF A POWER POLE, 2.0 FEET NORTHEAST OF A WITNESS POST.

Station Notes

FOUND THE MARK OUT OF THE GROUND, REMOVED THE DISK, AND RETURNED TO THE GEODETIC OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1286.782	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1286.133	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.264 12B = -97.257 09 = -97.188 03 = -96.995

* No Horizontal Positions in the Database *



Mn/DOT Name: R 275

NGS Name: R 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0346](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	54 N	18 W	470821.00	923603.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2018) Stamping: R 275 1948

1.0 MILE SOUTH ON A RAILROAD FROM THE RAILROAD STATION AT KELSEY, 669.0 FEET NORTH OF RAILROAD MILEPOST 44, AT A FARM ROAD CROSSING, 70.5 FEET WEST OF THE WEST RAIL OF THE WEST RAILROAD TRACK, 27.0 FEET SOUTH OF A FARM ROAD, 1.5 FEET EAST OF A RAILROAD RIGHT-OF-WAY FENCE, 17.5 FEET SOUTH OF THE SOUTH GATE POST, 40.8 FEET SOUTHWEST OF A RAILROAD CROSSING SIGN, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1302.189	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1301.589	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.339 12B = -97.339 09 = -97.234 03 = -97.040

* No Horizontal Positions in the Database *



Mn/DOT Name: R 279

NGS Name: R 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1332](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	16	54 N	21 W	470935.65	930042.87	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	NOT FOUND	Horz=NO Vert=NO	YES		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: R 279 1948

5.7 MILES NORTH OF A SCHOOL IN CEDAR VALLEY, AT THE TOP OF A GRADE, 32.0 FEET NORTHEAST OF COUNTY ROAD 184 (OLD TRUNK HIGHWAY 73), 29.5 FEET NORTHWEST OF A TELEPHONE POLE, 7.5 FEET NORTHEAST OF A POLE LINE, 2.5 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1313.465	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1312.714	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1312.714	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1312.714	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.995 12B = -96.995 09 = -96.939 03 = -96.781

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/R_279-SJ1332-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: R 28

NGS Name: R 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0338](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	11	52 N	18 W	470024.74	923500.26	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1935	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) Stamping: R 28 1934

2.5 MILES NORTH ON A RAILROAD FROM ALBORN, 2.0 MILES SOUTH OF BIRCH, 7 RAILS NORTH OF HARPERS CROSSING, 107.5 FEET SOUTH OF RAILROAD MILEPOST 35, 50.0 FEET EAST OF THE EAST TRACK OF A RAILROAD, ON THE OUTSIDE EDGE OF A CURVE.

Station Notes

THE SURVEY MARK IS ON PRIVATE PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1333.213	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1332.658	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1332.658	.007	1				VERTICAL CONTROL SURVEY	1941 L27 MINN

Geoid Separations(ft): GEOID18 = -96.063 12B = -96.060 09 = -95.935 03 = -95.761

* No Horizontal Positions in the Database *



Mn/DOT Name: R 30

NGS Name: R 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0663](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	21	51 N	20 W	465320.00	925231.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2001	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 10 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001) Stamping: R 30 1934

2.2 MILES NORTHWEST OF GOWAN, 2.2 MILES NORTHWEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86, AT TRUNK HIGHWAY 2 MILEPOINT 223.8, 101.6 FEET NORTHEAST OF TRUNK HIGHWAY 2, 46.7 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 35.0 FEET NORTHWEST OF A DIRT ROAD, 1.0 FOOT SOUTHWEST OF A WITNESS POST.

Station Notes

THE GEODETIC UNIT REPORTED THE MONUMENT WAS OUT OF THE GROUND AND THE DISK WAS GONE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.881	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1252.297	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1251.736	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN

Geoid Separations(ft): GEOID18 = -95.023 12B = -95.006 09 = -94.924 03 = -94.813

* No Horizontal Positions in the Database *



Mn/DOT Name: RACHEL

NGS Name: RACHEL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5135](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	15	53 N	21 W	470412.35	925847.49	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 50 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** RACHEL 2017

10.45 MILES NORTH-NORTHWEST OF FLOODWOOD, 11.45 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 54.7, 26.6 FEET WEST-SOUTHWEST OF TRUNK HIGHWAY 73, 22.2 FEET NORTH-NORTHWEST OF COUNTY ROAD 133 EXTENDED, 1.5 FEET EAST-NORTHEAST OF A WITNESS POST.

Station Pair: KRISTEN - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1249.627	.016	2/1				VERTICAL ADJUSTMENT			2021	00000963			

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Orthometric Height			Ellipsoid (NAD83)			Determination Method			Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj				Year	Reference			
1249.558	.262		1152.990	.197	2011	GPS - RTRN			2017	RTRN2017			

Geoid Separations(ft): GEOID18 = -96.578 12B = -96.568 09 = -96.522 03 = -96.342

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		Geodetic Position		St Louis County - South Zone		Acc		Order		Determination Method		Project Info	
Latitude	Longitude	X	Y							Year	Reference		
47 04 12.34562	92 58 47.48870	367952.124	253674.915	.131	3	GPS - RTRN		2017	RTRN2017				

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Acc		Order		Determination Method		Project Info	
X	Y	X	Y							Year	Reference		
2654605.851	536046.815	1645434.063	17102832.821	.131	3	GPS - RTRN		2017	RTRN2017				

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RACHEL-DR5135-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RACHEL-DR5135-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RACHEL-DR5135-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: RAECHELLE

NGS Name: RAECHELLE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9919](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	7	51 N	20 W	465525.58	925452.91	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 43 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: RAECHELLE 2017

IN FLOODWOOD, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 220.75, 63.6 FEET NORTHEAST OF TRUNK HIGHWAY 2, 59.3 FEET EAST SOUTHEAST OF TRUNK HIGHWAY 73, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Station Pair: EMILY - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1258.410	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1258.173	.262		1162.865	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.328 12B = -95.308 09 = -95.233 03 = -95.118

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
46 55 25.57602	92 54 52.91271	383874.314	200200.201	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2670971.522	482709.068	1661723.557	17049495.621	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RAECHELLE-DQ9919-3NE-01AUG2017.jpg	NE	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RAECHELLE-DQ9919-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RAECHELLE-DQ9919-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: RANTA

NGS Name: RANTA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9911](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	51 N	20 W	465201.14	925103.96	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 11 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: RANTA 2017

4.9 MILES SOUTHEAST OF FLOODWOOD, 4.65 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 225.75, 55.4 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 48.8 FEET NORTHWEST OF MIRBAT ROAD, 1.5 FEET NORTHEAST OF A WITNESS POST.

Station Pair: SHEA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1256.674	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1256.677	.262		1161.864	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.826 12B = -94.810 09 = -94.724 03 = -94.609

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 52 01.13835	92 51 03.96082	399660.944	179399.318	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
2686930.517	462040.894	1677648.397	17028815.460	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RANTA-DQ9911-3SW-15AUG2017.jpg	SW	Aug 15, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RANTA-DQ9911-2-15AUG2017.jpg		Aug 15, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RANTA-DQ9911-1-15AUG2017.jpg		Aug 15, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: REBAR 15

NGS Name: REBAR 15

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1687](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	52 N	21 W	465732.29	925747.63		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	1967	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	UNMONUMENTED	USGS

Description:

Stamping:

THE REINFORCING BAR IS LOCATED IN ST. LOUIS COUNTY, 2.79 MILES NORTHWEST OF FLOODWOOD ALONG ST. VINCENT ROAD AND THE BURLINGTON NORTHERN RAILROAD.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1255.903	.197		1160.444	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648	

Geoid Separations(ft): GEOID18 = -95.623 12B = -95.607 09 = -95.538 03 = -95.410

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 32.29121	92 57 47.63487	371830.144	213114.309	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 32.28489	92 57 47.63457	371830.161	213113.669	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 32.49409	92 57 46.89787			.100	2	CLASSICAL SURVEY	1982	17020

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2658820.747	495522.066	1649594.649	17062319.035	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2658820.769	495521.425	1649594.670	17062318.395	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2034206.221	167458.595			.100	2	CLASSICAL SURVEY	1982	17020



Mn/DOT Name: REBAR 16

NGS Name: REBAR 16

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1688](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	36	52 N	21 W	465648.62	925634.99		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1967	1967	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	UNMONUMENTED	USGS

Description:

Stamping:

THE REINFORCING BAR IS LOCATED IN ST. LOUIS COUNTY, 1.52 MILES NORTHWEST OF FLOODWOOD ALONG ST. VINCENT ROAD AND THE BURLINGTON NORTHERN RAILROAD.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1255.247	.197			1159.883	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.525 12B = -95.505 09 = -95.433 03 = -95.315

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 48.62306	92 56 34.98714			376841.800	208657.603	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 48.61659	92 56 34.98825			376841.719	208656.948	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>								<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
46 56 48.82405	92 56 34.25700					.100	2	CLASSICAL SURVEY	1982	17020

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2663869.106	491107.369			1654635.136	17057899.626	.066	2	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2663869.031	491106.713			1654635.059	17057898.970	.066	2	ADJUSTMENT	1986	17289

<u>NAD27</u>								<u>Project Info</u>		
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>									
2039254.266	163043.738					.100	2	CLASSICAL SURVEY	1982	17020



Mn/DOT Name: RIESS MNDT

NGS Name: RIESS

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF6503](#)
NGS Quad / Sta Num : 47092234/
USGS Quad: COTTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	55 N	17 W	471244.47	922915.71	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	NO		RECESSED 3 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (1992)

Stamping: RIESS 1992

3.0 MILES NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, AT TRUNK HIGHWAY 53 MILEPOINT 42.05, 67.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 11.0 FEET SOUTH OF A DRIVEWAY, 43.5 FEET SOUTHEAST OF A ONE-WAY SIGN, 12.9 FEET NORTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1332.182	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1332.182	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1234.541	.019	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1234.587	.020	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1332.084	.131		1234.571	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1332.084	.131		1234.571	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -97.713 12B = -97.713 09 = -97.634 03 = -97.441

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 12 44.46918	92 29 15.71253	490630.041	305121.186	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 12 44.46938	92 29 15.71343	490629.979	305121.206	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 12 44.46947	92 29 15.71334	490629.985	305121.215	.033	C	ADJUSTMENT	2003	GPS1848
47 12 44.46947	92 29 15.71334	490629.987	305121.214	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
47 12 44.46907	92 29 15.71560	490629.829	305121.175	.033	C	GPS - STATIC	1993	H1993



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776838.752	588511.935	1767691.471	17155115.947	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776838.690	588511.955	1767691.409	17155115.967	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776838.696	588511.964	1767691.415	17155115.976	.033	C	ADJUSTMENT	2003	GPS1848
2776838.696	588511.964	1767691.415	17155115.976	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2776838.540	588511.922	1767691.259	17155115.934	.033	C	GPS - STATIC	1993	H1993



Mn/DOT Name: RM USGS

NGS Name: GAGING STATION RM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0138](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	52 N	17 W	465717.00	922744.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	SURVEY DISK	USGS

Description: (1978)

Stamping:

5.8 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, 0.25 MILE SOUTHWEST OF A TRUNK HIGHWAY 53 BRIDGE OVER THE CLOQUET RIVER IN INDEPENDENCE, NEAR THE OLD BRIDGE OVER THE CLOQUET RIVER, 65.0 FEET NORTHWEST OF A GRAVEL ROAD (OLD TRUNK HIGHWAY 33), 53.0 FEET WEST OF A POWER POLE.

Station Notes

THE YEAR SET DATE IS APPROXIMATE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1293.436	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.976	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1293.170	.016	2				VERTICAL CONTROL SURVEY	1978	L24513
1292.976	.016	2				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -95.351 12B = -95.344 09 = -95.216 03 = -95.023

* No Horizontal Positions in the Database *



Mn/DOT Name: RUD MNDT

NGS Name: RUD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4250](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	52 N	21 W	465716.18	925758.08	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: RUD 2001

3.5 MILES NORTHWEST OF FLOODWOOD, 3.55 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 217.50, 63.0 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 50.0 FEET NORTH OF COUNTY ROAD 835, 31.0 FEET NORTH-NORTHWEST OF A POWER POLE, 43.6 FEET NORTHEAST OF A FIBER OPTIC MARKER, 7.0 FEET SOUTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
1264.325	.016	2/1						VERTICAL ADJUSTMENT	2011	00000675		
1264.325	.016	2/1						VERTICAL CONTROL SURVEY	2003	VGRAND		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
			1168.748	.012	2011			HORIZONTAL ADJUSTMENT	2012	GPS2800		
			1168.843	.013	2007			HORIZONTAL ADJUSTMENT	2007	GPS2300		
1264.335	.131		1168.922	.066	1996			HORIZONTAL ADJUSTMENT	2004	GPS1957		
1264.335	.131		1168.922	.066	1996			GPS - STATIC	2003	HGRAND		

Geoid Separations(ft): GEOID18 = -95.577 12B = -95.561 09 = -95.492 03 = -95.367

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 16.18359	92 57 58.07757	371095.003	211487.078	.010				ADJUSTMENT	2012	GPS2800	

<u>NAD83(2007)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 16.18370	92 57 58.07844	371094.943	211487.090	.013				ADJUSTMENT	2007	GPS2300	

<u>NAD83(1996)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 16.18347	92 57 58.07805	371094.970	211487.066	.033	C			ADJUSTMENT	2004	GPS1957	
46 57 16.18347	92 57 58.07805	371094.970	211487.066	.033	C			GPS - STATIC	2003	HGRAND	



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2658099.191	493888.842	1648871.274	17060687.435	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2658099.131	493888.853	1648871.213	17060687.446	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2658099.158	493888.829	1648871.240	17060687.423	.033	C	ADJUSTMENT	2004	GPS1957
2658099.158	493888.829	1648871.240	17060687.423	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RUD-DG4250-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: RUD MNDT RESET

NGS Name: RUD RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9925](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	52 N	21 W	465716.18	925758.08	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 30 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: RUD 2001 2017

3.5 MILES NORTHWEST OF FLOODWOOD, 3.55 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 217.50, 63.0 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 50.0 FEET NORTH OF COUNTY ROAD 835, 43.6 FEET NORTHEAST OF A FIBER OPTIC MARKER, 31.0 FEET NORTH-NORTHWEST OF A POWER POLE, 1.0 FOOT SOUTHWEST OF A WITNESS POST.

Station Pair: SKID MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.207	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1264.128	.262		1168.567	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.577 12B = -95.561 09 = -95.492 03 = -95.367

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 57 16.18347	92 57 58.07802	371094.972	211487.066	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>				
<u>MN State Plane - North Zone</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>X</u>	<u>Y</u>							
2658099.160	493888.829	1648871.243	17060687.423	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
<u>Location:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RUD_RESET-DQ9925-3SW-24JUL2017.jpg	SW	Jul 24, 2017
<u>Monument:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RUD_RESET-DQ9925-2-24JUL2017.jpg		Jul 24, 2017
<u>Disk:</u>	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/RUD_RESET-DQ9925-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: S 163

NGS Name: S 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0174](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	17 W	470407.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935)

Stamping: S 163 1935

2.0 MILES NORTH OF CANYON, 2.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM CANYON, ACROSS THE HIGHWAY FROM A FILLING STATION, 48.0 FEET EAST OF TRUNK HIGHWAY 53, 27.0 FEET SOUTH OF A GRAVEL CROSSROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1347.537	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.453 12B = -96.466 09 = -96.319 03 = -96.125

* No Horizontal Positions in the Database *



Mn/DOT Name: S 163 RESET

NGS Name: S 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0175](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	17 W	470407.00	922818.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1941	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: Stamping: S 163 RESET 1941

21.1 MILES NORTHWEST OF HERMANTOWN, 20.5 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAYS 53 (MILLER TRUNK HIGHWAY) AND 194 IN HERMANTOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1347.222	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702

Geoid Separations(ft): GEOID18 = -96.453 12B = -96.466 09 = -96.319 03 = -96.125

* No Horizontal Positions in the Database *



Mn/DOT Name: S 163 RESET 1966

NGS Name: S 163 RESET 1966

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0176](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	17 W	470407.06	922815.43	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1966	2005	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1999)

Stamping: S 163 RESET 1966

2.0 MILES NORTH ON TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 133 WEST/COUNTY ROAD 976 EAST, 93.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 32, 21.0 FEET SOUTH OF COUNTY ROAD 976 (BERKLUND ROAD), 1.7 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1347.209	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1346.287	.007	1					VERTICAL CONTROL SURVEY	1966	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
				1250.739	.017	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1250.831	.018	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1347.012	.131			1250.903	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1347.012	.131			1250.903	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.453 12B = -96.463 09 = -96.315 03 = -96.125

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 04 07.05695	92 28 15.42985			494778.108	252693.509	.016		ADJUSTMENT	2012	GPS2800

<u>NAD83(2007)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 04 07.05707	92 28 15.43074			494778.046	252693.521	.016		ADJUSTMENT	2007	GPS2300

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 04 07.05688	92 28 15.43049			494778.064	252693.502	.033	C	ADJUSTMENT	2003	GPS1848
47 04 07.05688	92 28 15.43049			494778.062	252693.501	.033	C	GPS - STATIC	2002	HTWIB

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>									
47 04 07.05429	92 28 15.43089			494778.036	252693.238	.033	C	GPS - STATIC	1991	H1991



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781426.843	536125.572	1772206.275	17102742.056	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781426.782	536125.584	1772206.214	17102742.067	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781426.799	536125.565	1772206.231	17102742.048	.033	C	ADJUSTMENT	2003	GPS1848
2781426.799	536125.565	1772206.231	17102742.048	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781426.774	536125.302	1772206.205	17102741.786	.033	C	GPS - STATIC	1991	H1991



Mn/DOT Name: S 271

NGS Name: S 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0701](#) [Get Map](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	28	52 N	19 W	465808.00	924438.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1985	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: S 271 1948

7.5 MILES SOUTH OF THE HIGH SCHOOL AT MEADOWLANDS, 7.0 MILES SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5, 147.0 FEET WEST OF COUNTY ROAD 5, 23.0 FEET SOUTH OF COUNTY ROAD 165 (GRAVEL), 110.0 FEET WEST OF THE SOUTH END OF A METAL CULVERT, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1284.315	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1283.721	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.784 12B = -95.771 09 = -95.686 03 = -95.535

* No Horizontal Positions in the Database *



Mn/DOT Name: S 272

NGS Name: S 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0341](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	53 N	18 W	470410.89	923555.34	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=NO Vert=NO	NO	7781		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** S 272 1948

IN THE NORTH END OF THE WEST ABUTMENT OF COUNTY ROAD 133 BRIDGE NUMBER 7781, 1.75 MILES SOUTH ON COUNTY ROAD 7 FROM THE RAILROAD STATION IN PAYNE, AT THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 7, 13.0 FEET NORTH OF COUNTY ROAD 133, 34.0 FEET EAST OF COUNTY ROAD 7, 130.0 FEET EAST OF THE EAST RAIL OF THE EAST TRACK OF A RAILROAD.

Station Notes

THE BOX CULVERT HAS BEEN REPLACED.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.285	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1303.701	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1303.701	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.699 12B = -96.693 09 = -96.575 03 = -96.391

* No Horizontal Positions in the Database *



Mn/DOT Name: S 273

NGS Name: S 273

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	22	53 N	21 W	470408.00	925911.00	2	

NGS ACRN: [SJ0528](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	DESTROYED	Horz=NO Vert=NO	YES	6739		SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	BENCH MARK DISK	NGS

Description: (1948)

Stamping: S 273 1948

10.9 MILES NORTHWEST ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD THEN 0.8 MILE NORTHWEST ON COUNTY ROAD 508, IN THE NORTH END OF THE WEST HEADWALL OF OLD TRUNK HIGHWAY 73 BRIDGE NUMBER 6739 (COUNTY ROAD 508) OVER VAARA CREEK, 11.0 FEET WEST OF COUNTY ROAD 508, 0.3 FOOT NORTH OF THE NORTH END OF A BRIDGE RAILING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1248.590	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1247.888	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.561 12B = -96.548 09 = -96.502 03 = -96.325

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/S_273-SJ0528-3E-13JUL2017.jpg	E	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: S 274

NGS Name: S 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0390](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	20	54 N	19 W	470847.00	924725.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** S 274 1948

1.65 MILES SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, 0.2 MILE SOUTH OF A COUNTY ROAD 5 CURVE AND THE JUNCTION OF COUNTY ROAD 158 NORTH, 38.0 FEET EAST OF COUNTY ROAD 5, 14.0 FEET SOUTH OF A FARM ROAD EAST, 28.0 FEET SOUTH OF A POWER POLE, 6.5 FEET WEST OF A TELEPHONE POLE, 3.5 FEET EAST OF A FENCE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1284.673	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1284.020	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1284.020	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.372 12B = -97.369 09 = -97.300 03 = -97.106

* No Horizontal Positions in the Database *



Mn/DOT Name: S 275

NGS Name: S 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	54 N	18 W	470729.14	923558.78	2	

NGS ACRN: [SJ0345](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
1948	1948	GOOD	Horz=? Vert=YES	NO	CO RD		SEE DESCRIPTION	NGS

Monument Type
WALL

Disk Type
BENCH MARK DISK

Description: (1948)

Stamping: S 275 1948

2.0 MILES SOUTH ON A RAILROAD FROM THE RAILROAD STATION IN KELSEY, 0.1 MILE NORTH OF RAILROAD MILEPOST 43, IN THE NORTH END OF THE WEST HEADWALL OF A COUNTY ROAD 7 CULVERT, 21.0 FEET WEST OF COUNTY ROAD 7, 86.0 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1301.103	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1300.509	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.218 12B = -97.214 09 = -97.106 03 = -96.916

* No Horizontal Positions in the Database *



Mn/DOT Name: S 279

NGS Name: S 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1331](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	8	54 N	21 W	471008.70	930149.72	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019)

Stamping: S 279 1948

7.9 MILES SOUTH OF HIBBING, 9.8 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING, THEN 1.5 MILES NORTHWEST ON COUNTY ROAD 184 (FLOODWOOD RIVER ROAD), 33.0 FEET NORTHEAST OF COUNTY ROAD 184 (OLD TRUNK HIGHWAY 73), 176.0 FEET WEST OF THE WEST CORNER OF A HOUSE, 74.0 FEET NORTHWEST OF A FARM DRIVEWAY.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1312.510	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order /(Class)	Height	Acc	Adj		Year	Reference
1311.753	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1311.753	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1311.753	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.981 12B = -96.981 09 = -96.919 03 = -96.775

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/S_279-SJ1331-3N-12JUL2017.jpg	N	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/S_279-SJ1331-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/S_279-SJ1331-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: S 28

NGS Name: S 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0339](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	35	53 N	18 W	470202.34	923531.09	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1991) Stamping: S 28 1934

4.5 MILES NORTH ON A RAILROAD FROM ALBORN, 7 RAILS NORTH OF THE STATION SIGN AT BIRCH, 70.0 FEET
NORTHWEST OF A HOUSE, 40.0 FEET EAST OF A RAILROAD.

Station Notes

THE ROAD IS INACCESSIBLE 07/27/21.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1323.872	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1323.304	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1323.304	.007	1				VERTICAL CONTROL SURVEY	1941	L27 MINN

Geoid Separations(ft): GEOID18 = -96.335 12B = -96.332 09 = -96.204 03 = -96.030

* No Horizontal Positions in the Database *



Mn/DOT Name: S 280

NGS Name: S 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1450](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	5	55 N	21 W	471659.00	930129.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1957	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1957) Stamping: S 280 1948

26.5 MILES NORTH OF FLOODWOOD, 26.5 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND HIGHWAY 8 IN FLOODWOOD, THEN 125.0 FEET WEST ALONG SOUTH TOWN LINE ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1357.435	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1356.667	.007	1				VERTICAL CONTROL SURVEY	1948	L28 MINN

Geoid Separations(ft): GEOID18 = -97.336 12B = -97.359 09 = -97.244 03 = -97.175

* No Horizontal Positions in the Database *



Mn/DOT Name: S 280 RESET

NGS Name: S 280 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1451](#) [Get Map](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	5	55 N	21 W	471659.00	930129.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1957	2017	DESTROYED	Horz=NO Vert=NO	YES		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1957) **Stamping:** S 280 RESET 1957

1.1 MILES NORTH ON TRUNK HIGHWAY 73 FROM A RAILROAD CROSSING AT SILICA, AT A CROSSROAD, 129.0 FEET WEST OF TRUNK HIGHWAY 73, 35.0 FEET SOUTH OF COUNTY ROAD 442, 1.0 FOOT SOUTH OF A FENCE.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE. FOUND THAT THE STATION, THE CONCRETE WAS BROKEN UP AND THE DISK WAS LYING TO THE SIDE OF THE BROKEN CONCRETE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1355.148	.066	3				VERTICAL CONTROL SURVEY	1987	L24645	
1355.142	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT	
1355.142	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN	
1355.142	.007	1				VERTICAL CONTROL SURVEY	1957	Q470932	

Geoid Separations(ft): GEOID18 = -97.336 12B = -97.359 09 = -97.247 03 = -97.178

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/S_280_RESET-SJ1451-1-11JUL2017.jpg		Jul 11, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: S 30

NGS Name: S 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0657](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	8	51 N	20 W	465439.00	925357.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1963	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1963)

Stamping: S 30 1934

1.3 MILES EAST FROM FLOODWOOD, ON THE GREAT NORTHERN RAILROAD, 2 RAILS WEST OF A ROAD CROSSING AT TELEPHONE POLE NUMBER 1733 WHICH IS ON THE NORTH SIDE OF TRACKS, 30.0 FEET SOUTH OF THE TRACKS, 49.5 FEET WEST OF MILEPOST 74.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1268.429	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -95.216 12B = -95.197 09 = -95.118 03 = -95.006

* No Horizontal Positions in the Database *



Mn/DOT Name: SAG MNDT

NGS Name: SAG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0049](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1173
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	3	50 N	17 W	465041.80	922812.78	2	2	1974	2008	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 2 IN.	STEEL SPIKE IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2019) **Stamping:** SAG 1974 1981

1.5 MILES SOUTHWEST OF SAGINAW, 0.6 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 2 MILEPOINT 244.25, 66.5 FEET SOUTH OF TRUNK HIGHWAY 2, 55.0 FEET EAST OF AN ENTRANCE, 92.5 FEET EAST-NORTHEAST OF A POWER POLE, 28.4 FEET NORTH OF A WITNESS POST, 76.73 FEET EAST OF SAG MNDT RM 1, 27.93 FEET NORTH OF STATION 6907 AB, IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION AND SAG MNDT RM 1 TRUNK HIGHWAY 2 HAS BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1329.827	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1329.558	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1329.820	.197			1235.683	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.340 12B = -94.327 09 = -94.235 03 = -94.048

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 41.80493	92 28 12.78086			494940.453	171105.359	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 50 41.79901	92 28 12.78349			494940.270	171104.759	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 50 42.00748	92 28 12.08303					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2782274.902	454544.874			1772940.682	17021192.895	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2782274.724	454544.273			1772940.504	17021192.294	3.281		CLASSICAL SURVEY	1991 H1991

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2157661.420	126481.873					.100	2	CLASSICAL SURVEY	1977 15924



Mn/DOT Name: SAG MNMT RESET

NGS Name: SAG RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1808](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	2	50 N	17 W	465041.80	922812.78		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1981	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	STEEL SPIKE IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	MNMT

Description: (2019)

Stamping: SAG 1974 1981

5.05 MILES EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST END OF BRIDGE NUMBER 5190 (TRUNK HIGHWAY 2 OVER THE BURLINGTON NORTHERN RAILROAD AND THE ST. LOUIS RIVER), AND 0.6 MILE WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, ABOUT 1.0 MILE SOUTHWEST OF SAGINAW, ON THE SOUTH RIGHT-OF-WAY OF TRUNK HIGHWAY 2, AT MILEPOINT 244.25, 66.5 FEET SOUTH OF TRUNK HIGHWAY 2, 55.0 FEET EAST OF AN ENTRANCE, 92.5 FEET EAST-NORTHEAST OF A POWER POLE, 28.4 FEET NORTH OF A WITNESS POST.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.340 12B = -94.324 09 = -94.235 03 = -94.340

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 41.80493	92 28 12.78086	494940.453	171105.359	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 50 41.79901	92 28 12.78349	494940.270	171104.759	.066	2	ADJUSTMENT	1986	17289

State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2782274.902	454544.874	1772940.682	17021192.895	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2782274.724	454544.273	1772940.504	17021192.294	.066	2	ADJUSTMENT	1986	17289

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAG_RESET-RN1808-3E-26JUL2017.jpg	E	Jul 26, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SAG MNDT RM 1

NGS Name: SAG RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1051](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	3	50 N	17 W	465041.76	922813.88	2	2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (2019)

Stamping: SAG 1974 NO 1 1978

1.6 MILES SOUTHWEST OF SAGINAW, 0.6 MILE WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 2 MILEPOINT 244.25, 72.5 FEET SOUTH OF TRUNK HIGHWAY 2, 23.0 FEET WEST OF A FIELD ENTRANCE, 31.5 FEET NORTH-NORTHEAST OF A CORNER POWER POLE, 27.0 FEET WEST OF COUNTY ROAD 874 EXTENDED, 30.3 FEET NORTH-NORTHEAST OF CABLE POST NUMBER 263, 71.3 FEET NORTHWEST OF A 10.0 INCH DIAMETER PINE TREE, 78.7 FEET WEST-NORTHWEST OF A WITNESS POST, 76.51 FEET EAST OF STATION SAG MNDT, IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION-TRUNK HIGHWAY 2 HAS BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1327.980	.016	2/2				VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1327.711	.016	2				VERTICAL CONTROL SURVEY	1979	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1327.983	.197		1233.836	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.340 12B = -94.327 09 = -94.235 03 = -94.048

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 50 41.76416	92 28 13.88334	494863.810	171101.248	.066	2	ADJUSTMENT

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
46 50 41.75825	92 28 13.88592	494863.631	171100.649	.066	2	ADJUSTMENT

<u>NAD27</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>Latitude</u>	<u>Longitude</u>					
46 50 41.96672	92 28 13.18516			.100	2	CLASSICAL SURVEY

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2782198.297	454540.119	1772864.104	17021188.250	.066	2	ADJUSTMENT

<u>NAD83(1986)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2782198.123	454539.519	1772863.929	17021187.650	.066	2	ADJUSTMENT

<u>NAD27</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
<u>X</u>	<u>Y</u>					
2157584.834	126477.117			.100	2	CLASSICAL SURVEY



Mn/DOT Name: SAGINAW

NGS Name: SAGINAW

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0375](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1021
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	2	50 N	17 W	465042.72	922726.61	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2008	DESTROYED	Horz=NO Vert=NO	NO			STEEL SPIKE IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2019)

Stamping: SAGINAW 1952

9.5 MILES NORTH OF CLOQUET, IN THE NORTHEAST QUADRANT OF THE JUNCTION OF THE TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 121.0 FEET NORTH OF TRUNK HIGHWAY 2, 82.4 FEET EAST OF TRUNK HIGHWAY 33, 60.6 FEET NORTH OF A TELEPHONE CABLE RISER 7, 2.3 FEET NORTHWEST OF A WITNESS POST, AT TRUNK HIGHWAY 2 MILEPOINT 244.9, 88.34 FEET NORTHWEST OF SAGINAW RM 1, 85.36 FEET SOUTHEAST OF SAGINAW RM 2, IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION AND SAGINAW RM 1 AND SAGINAW RM 2, TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 HAVE BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.842	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.586	.016	2					VERTICAL CONTROL SURVEY	1978	L24513
1332.586	.016	2					VERTICAL CONTROL SURVEY	1974	L23563
1332.586	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1332.839	.197			1238.731	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.311 12B = -94.294 09 = -94.203 03 = -94.016

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 50 42.72051	92 27 26.60777			498150.302	171197.558	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 50 42.71450	92 27 26.61050			498150.112	171196.949	.066	2	ADJUSTMENT	1986	17289

NAD27								Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 50 42.92300	92 27 25.91000					.100	2	CLASSICAL SURVEY	1956	11100



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785483.831	454664.053	1776148.395	17021307.521	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785483.646	454663.442	1776148.209	17021306.911	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2160870.439	126601.054			.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: SAGINAW AZ MK

NGS Name: SAGINAW AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0376](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1021
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	2	50 N	17 W	465031.23	922720.18	2	3	1952	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2001)

Stamping: SAGINAW 1952

9.3 MILES NORTH OF CLOQUET, 0.15 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, THEN 0.2 MILE SOUTH ON OLD TRUNK HIGHWAY 33, 54.0 FEET WEST OF OLD TRUNK HIGHWAY 33, 119.5 FEET SOUTH OF THE SOUTH END OF AN ENTRANCE, 119.5 FEET SOUTHEAST OF A POWER POLE NUMBER 24356, 1.5 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1320.808	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1320.818	.016	2/1				VERTICAL ADJUSTMENT	2013 00000797
1320.818	.016	2/1				VERTICAL CONTROL SURVEY	2009 VBUSC
1320.818	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1320.558	.016	2				VERTICAL CONTROL SURVEY	1974 L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1320.831	.262		1226.740	.197	1996	HORIZONTAL ADJUSTMENT	1999 17648

Geoid Separations(ft): GEOID18 = -94.278 12B = -94.262 09 = -94.173 03 = -93.983

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>			<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 31.22907	92 27 20.17853		498597.161	170033.230	.131	3	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>			<u>St Louis County - South Zone</u>				<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 31.22320	92 27 20.18139		498596.962	170032.636	.131	3	ADJUSTMENT	1986	17289
<u>NAD27</u>							<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 31.43168	92 27 19.48114				.100	3	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>								
MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2785940.460	453503.534	1776603.197	17020146.862	.131	3	ADJUSTMENT	1999	17648
<u>NAD83(1986)</u>								
MN State Plane - North Zone		UTM - Zone 15					Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2785940.266	453502.937	1776603.002	17020146.266	.131	3	ADJUSTMENT	1986	17289
<u>NAD27</u>								
MN State Plane - North Zone							Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2161327.058	125440.553			.100	3	CLASSICAL SURVEY	1977	15924



<u>Station Photos</u>			
<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAGINAW_AZ_MK-RN0376-3SW-25JUL2017.jpg	SW	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAGINAW_AZ_MK-RN0376-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAGINAW_AZ_MK-RN0376-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SAGINAW RM 1

NGS Name: SAGINAW RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0374](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	2	50 N	17 W	465042.35	922725.46	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2019) **Stamping:** SAGINAW NO 1 1952

1.2 MILES SOUTHWEST OF SAGINAW, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 86.0 FEET NORTH OF TRUNK HIGHWAY 2, 137.0 FEET EAST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 11.25, 66.2 FEET NORTHEAST OF A TELEPHONE POLE, 56.0 FEET EAST-NORTHEAST OF A TELEPHONE CABLE PEDESTAL 7, 88.3 FEET SOUTHEAST OF STATION SAGINAW, 170.9 FEET SOUTHEAST OF SAGINAW RM 2, 1.4 FEET WEST OF A WITNESS POST, IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION, TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 HAVE BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1330.319	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1330.066	.016	2					VERTICAL CONTROL SURVEY	1978	L24513	
1330.066	.016	2					VERTICAL CONTROL SURVEY	1974	L23566	
1330.066	.016	2					VERTICAL CONTROL SURVEY	1974	L23563	

Geoid Separations(ft): GEOID18 = -94.308 12B = -94.291 09 = -94.199 03 = -94.012

* No Horizontal Positions in the Database *



Mn/DOT Name: SAGINAW RM 2

NGS Name: SAGINAW RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0052](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	17 W	465043.33	922727.46	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2008	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (2019)

Stamping: SAGINAW NO 2 1952

1.2 MILES SOUTHWEST OF SAGINAW, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 56.3 FEET EAST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 11.25, 181.0 FEET NORTH OF TRUNK HIGHWAY 2, 52.3 FEET SOUTH-SOUTHWEST OF A 12.0 INCH DIAMETER TWIN BIRCH TREE, 85.4 FEET NORTHWEST OF STATION SAGINAW, 170.9 FEET NORTHWEST OF SAGINAW RM 1, 1.5 FEET NORTHWEST OF A WITNESS POST, IN 1995 THE GEODETIC UNIT COULD NOT FIND THE STATION, TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 HAVE BEEN REBUILT INTO A 4 LANE ROADWAY.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1332.189	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1331.933	.016	2				VERTICAL CONTROL SURVEY	1978	L24513
1331.933	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1331.933	.016	2				VERTICAL CONTROL SURVEY	1974	L23563

Geoid Separations(ft): GEOID18 = -94.311 12B = -94.294 09 = -94.203 03 = -94.016

* No Horizontal Positions in the Database *



Mn/DOT Name: SAHA

NGS Name: SAHA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9905](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	34	51 N	19 W	465114.53	924406.44	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 16 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: SAHA 2017

9.9 MILES SOUTHEAST OF FLOODWOOD, 10.55 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 231.65, 79.8 FEET NORTH OF TRUNK HIGHWAY 2, 45.5 FEET EAST OF DRIVEWAY NUMBER 10025, 1.5 FEET SOUTH OF A WITNESS POST.

Station Pair: FUNDY - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1363.800	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.665 09 = -94.583 03 = -94.455

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAHA-DQ9905-3N-07AUG2017.jpg	N	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAHA-DQ9905-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAHA-DQ9905-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SAX

NGS Name: SAX

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2193](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/1017
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	55 N	18 W	471240.63	923614.30		C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2020	GOOD	Horz=YES Vert=YES	YES		RECESSED 5 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1995)

Stamping: SAX 1952

6.5 MILES NORTHWEST OF COTTON, 2.95 MILES NORTH ON COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 52, 143.82 FEET NORTHWEST OF STATION Y 28, 142.4 FEET SOUTHWEST OF A TELEPHONE POLE, 124.0 FEET WEST OF THE WEST RAIL OF A RAILROAD, 117.4 FEET WEST-SOUTHWEST OF A RAILROAD CROSSING SIGN POST, 91.59 FEET SOUTHEAST OF SAX RM 2, 82.89 FEET WEST OF SAX RM 1, 56.0 FEET SOUTH OF COUNTY ROAD 28, 2.1 FEET NORTH OF A WITNESS POST.

Station Notes

IN 1992 THE GEODETIC UNIT FOUND SAX RM 2 HAD BEEN DISTURBED BY DITCH DREDGING AND SAX RM 1 AND STATION Y 28 COULD NOT BE FOUND.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1314.194	.262		1216.389	.197	2011	GPS - OPUS	2020	GPSBM
1314.230	.262		1216.425	.197	2011	GPS - OPUS	2020	GPSBM
1314.167	.262		1216.362	.197	2011	GPS - RTRN	2020	RTRN2020
			1216.487	.020	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1216.572	.021	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1314.105	.131		1216.533	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1314.105	.131		1216.533	.066	1996	GPS - STATIC	2002	HTWIB
1314.203	.131		1216.582	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648
1314.220	.131		1216.533	.066	1996	GPS - STATIC	1997	GPS805-C

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1315.614						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -97.805 12B = -97.805 09 = -97.710 03 = -97.542

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 40.63241	92 36 14.30388	461728.626	304767.755	.131	3	GPS - OPUS	2020	GPSBM
47 12 40.63244	92 36 14.30366	461728.641	304767.758	.131	3	GPS - OPUS	2020	GPSBM
47 12 40.63238	92 36 14.30325	461728.669	304767.751	.131	3	GPS - RTRN	2020	RTRN2020
47 12 40.63253	92 36 14.30265	461728.711	304767.766	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 40.63264	92 36 14.30355	461728.649	304767.778	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 40.63250	92 36 14.30332	461728.665	304767.763	.033	C	ADJUSTMENT	2003	GPS1848
47 12 40.63250	92 36 14.30332	461728.665	304767.763	.033	C	GPS - STATIC	2002	HTWIB
47 12 40.63250	92 36 14.30332	461728.665	304767.763	.033	C	ADJUSTMENT	1999	17648
47 12 40.63250	92 36 14.30332	461728.665	304767.763	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 40.63210	92 36 14.30754	461728.373	304767.723	.033	1	ADJUSTMENT	1986	17289

NAD27

Geodetic Position						Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 40.86100	92 36 13.62000			.100	1	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2747944.407	587916.055	1738806.373	17154559.322	.131	3	GPS - OPUS	2020	GPSBM
2747944.422	587916.058	1738806.389	17154559.325	.131	3	GPS - OPUS	2020	GPSBM
2747944.450	587916.053	1738806.417	17154559.319	.131	3	GPS - RTRN	2020	RTRN2020
2747944.492	587916.068	1738806.458	17154559.335	.016		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2747944.429	587916.079	1738806.396	17154559.345	.016		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2747944.445	587916.065	1738806.412	17154559.331	.033	C	ADJUSTMENT	2003	GPS1848
2747944.445	587916.065	1738806.412	17154559.331	.033	C	GPS - STATIC	2002	HTWIB
2747944.445	587916.065	1738806.412	17154559.331	.033	C	ADJUSTMENT	1999	17648
2747944.445	587916.065	1738806.412	17154559.331	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2747944.154	587916.022	1738806.121	17154559.289	.033	1	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone						Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2123328.621	259855.050			.100	1	CLASSICAL SURVEY	1956	11100

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAX-SJ2193-3S-13JUL2020.jpg	S	Jul 13, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAX-SJ2193-2-13JUL2020.jpg		Jul 13, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SAX-SJ2193-1-13JUL2020.jpg		Jul 13, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SAX AZ MK

NGS Name: SAX AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2746](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	55 N	18 W	471215.00	923612.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2002	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	AZIMUTH MARK DISK	MNDT

Description: Stamping: SAX 1952

36.0 FEET EAST OF THE EAST RAIL OF THE RAILROAD, 31.0 FEET WEST OF THE CENTERLINE OF COUNTY ROUTE 7 AND 3.0 FEET EAST OF A WITNESS POST.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.775 12B = -97.779 09 = -97.677 03 = -97.506



Mn/DOT Name: SAX RM 1

NGS Name: SAX RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2747](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	55 N	18 W	471240.61	923613.10		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2002	NOT FOUND	Horz=YES Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	REFERENCE MARK DISK	MNDT

Description: (2019)

Stamping: SAX NO 1 1952

4.0 MILES NORTH OF KELSEY, 3.02 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 52, NORTH OF KELSEY.

Station Notes

IN 1992 THE GEODETIC UNIT FOUND SAX RM 2 HAD BEEN DISTURBED BY DITCH DREDGING AND SAX RM 1 AND STATION Y 28 COULD NOT BE FOUND.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.805 12B = -97.805 09 = -97.710 03 = -97.542



Mn/DOT Name: SAX RM 2

NGS Name: SAX RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2748](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	55 N	18 W	471241.36	923615.06		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2002	DISTURBED	Horz=YES Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

MNDT

Description: (2019)

Stamping: SAX NO 1 1952

4.0 MILES NORTH OF KELSEY, 3.02 MILES NORTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 52, NORTH OF KELSEY.

Station Notes

IN 1992 THE GEODETIC UNIT FOUND SAX RM 2 HAD BEEN DISTURBED BY DITCH DREDGING AND SAX RM 1 AND STATION Y 28 COULD NOT BE FOUND.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.805 12B = -97.805 09 = -97.710 03 = -97.542



Mn/DOT Name: SHEA

NGS Name: SHEA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9912](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	51 N	20 W	465215.53	925126.46	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 19 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** SHEA 2017

4.75 MILES SOUTHEAST OF FLOODWOOD, 4.2 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 225.35, 42.2 FEET NORTHEAST OF TRUNK HIGHWAY 2, 2.0 FEET SOUTHWEST OF A WITNESS POST.

Station Pair: RANTA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1249.486	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1249.377	.262			1154.529	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -94.862 12B = -94.846 09 = -94.760 03 = -94.645

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 52 15.52886	92 51 26.45791			398105.239	180865.384	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2685362.671	463493.917			1676083.166	17030269.912	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHEA-DQ9912-3NE-14AUG2017.jpg	NE	Aug 14, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHEA-DQ9912-2-14AUG2017.jpg		Aug 14, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHEA-DQ9912-1-14AUG2017.jpg		Aug 14, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SHINOB MNDT

NGS Name: SHINOB

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0769](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1055
USGS Quad: BROOKSTON

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	3	50 N	18 W	465114.39	923558.42	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	GOOD	Horz=YES Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (2001) Stamping: SHINOB 1974

0.8 MILE SOUTH OF BROOKSTON, 0.2 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 238.0, 116.7 FEET NORTH OF TRUNK HIGHWAY 2, 184.42 FEET EAST OF SHINOB MNDT RM 1, 42.8 FEET NORTHWEST OF A POWER POLE NUMBER GL179, 36.68 FEET WEST-NORTHWEST OF SHINOB MNDT RM 2, 15.1 FEET NORTH OF AN EAST-WEST POWER LINE, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1294.171	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1294.112	.016	2/1					VERTICAL ADJUSTMENT	2011	00000672
1294.144	.016	2/1					VERTICAL CONTROL SURVEY	2007	VBROO
1294.072	.016	2					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1293.580	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1294.226	.262			1199.591	.197	2011	GPS - RTRN	2017	RTRN2017
				1199.423	.009	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
				1199.512	.009	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1294.059	.131			1199.650	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1294.059	.131			1199.650	.066	1996	GPS - STATIC	2003	HGRAND
1294.072	.131			1199.597	.066	1996	HORIZONTAL ADJUSTMENT	2002	GPS1733
1294.059	.131			1199.650	.066	1996	GPS - STATIC	1999	HBROO
1294.059	.197			1199.620	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.636 12B = -94.636 09 = -94.537 03 = -94.636

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 14.39416	92 35 58.42219	462576.530	174442.286	.131	3	GPS - RTRN	2017	RTRN2017
46 51 14.39460	92 35 58.42152	462576.577	174442.330	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 14.39473	92 35 58.42239	462576.516	174442.343	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 14.39438	92 35 58.42224	462576.527	174442.308	.033	C	ADJUSTMENT	2004	GPS1957
46 51 14.39438	92 35 58.42224	462576.527	174442.308	.033	C	GPS - STATIC	2003	HGRAND
46 51 14.39438	92 35 58.42224	462576.527	174442.308	.033	1	ADJUSTMENT	2002	GPS1733
46 51 14.39438	92 35 58.42224	462576.526	174442.309	.033	C	GPS - STATIC	1999	HBROO
46 51 14.39622	92 35 58.42229	462576.524	174442.494	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 14.39024	92 35 58.42399	462576.405	174441.889	.066	2	ADJUSTMENT	1986	17289

NAD27

Geodetic Position		X	Y	Acc	Order	Determination Method	Project Info	
Latitude	Longitude						Year	Reference
46 51 14.59250	92 35 57.72573			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2749884.467	457610.006	1740568.586	17024301.642	.131	3	GPS - RTRN	2017	RTRN2017
2749884.513	457610.051	1740568.633	17024301.687	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2749884.452	457610.064	1740568.572	17024301.699	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2749884.463	457610.028	1740568.583	17024301.664	.033	C	ADJUSTMENT	2004	GPS1957
2749884.463	457610.028	1740568.583	17024301.664	.033	C	GPS - STATIC	2003	HGRAND
2749884.463	457610.028	1740568.583	17024301.664	.033	1	ADJUSTMENT	2002	GPS1733
2749884.463	457610.028	1740568.583	17024301.664	.033	C	GPS - STATIC	1999	HBROO
2749884.458	457610.215	1740568.578	17024301.850	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2749884.344	457609.608	1740568.463	17024301.244	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Project Info	
X	Y						Year	Reference
2125269.925	129546.475			.100	2	CLASSICAL SURVEY	1977	15924

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB-RN0769-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB-RN0769-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB-RN0769-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SHINOB MNDT RM 1

NGS Name: SHINOB RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0768](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	3	50 N	18 W	465114.86	923600.99	2	3	1974	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 5 IN.	NO MAG MATERIAL
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
ROCK (0 TO 1 METERS)				REFERENCE MARK DISK				MNDT							

Description: (1974)

Stamping: SHINOB NO 1 1974

0.8 MILE SOUTH OF BROOKSTON, 0.2 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 238.0, 111.0 FEET NORTH OF TRUNK HIGHWAY 2, 217.8 FEET WEST-NORTHWEST OF SHINOB MNDT RM 2, 184.0 FEET WEST OF STATION SHINOB MNDT, 10.5 FEET NORTH OF AN EAST-WEST POWER LINE, 2.1 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1292.852	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963
1292.845	.016	2/1					VERTICAL ADJUSTMENT	2011	00000672
1292.881	.016	2/1					VERTICAL CONTROL SURVEY	2007	VBROO
1292.845	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1292.353	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1292.914	.262			1198.278	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.636 12B = -94.636 09 = -94.540 03 = -94.376

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 51 14.85629	92 36 00.99047			462398.110	174489.449	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2749705.659	457655.672			1740389.920	17024347.533	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_1-RN0768-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_1-RN0768-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_1-RN0768-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SHINOB MNDT RM 2

NGS Name: SHINOB RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0770](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NE	3	50 N	18 W	465114.15	923558.03	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1974	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1974)

Stamping: SHINOB NO 2 1974

0.8 MILE SOUTH OF BROOKSTON, 0.2 MILE EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 31 (THE JUNCTION IS 1.0 MILE SOUTH OF BROOKSTON), AT TRUNK HIGHWAY 2 MILEPOINT 238.0, 100.0 FEET NORTH OF TRUNK HIGHWAY 2, 217.8 FEET EAST-SOUTHEAST OF SHINOB MNDT RM 1, 36.8 FEET SOUTHEAST OF STATION SHINOB MNDT, 6.7 FEET WEST-SOUTHWEST OF A POWER POLE NUMBER GL179, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1293.928	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1293.921	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1293.957	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1293.757	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1293.262	.016	2				VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1293.954	.262		1199.322	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.636 12B = -94.632 09 = -94.537 03 = -94.373

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Project Info	
Latitude	Longitude	X	Y				Year	Reference
46 51 14.15090	92 35 58.02779	462603.896	174417.587	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2749912.039	457585.538	1740596.113	17024277.146	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_2-RN0770-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_2-RN0770-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SHINOB_RM_2-RN0770-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SIMI MNDT

NGS Name: SIMI

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: DE9563	Get Map
NW	29	52 N	20 W	465745.79	925359.76	2	C	NGS Quad / Sta Num : 46092444/ USGS Quad: FLOODWOOD	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1993	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: SIMI 1993

2.2 MILES NORTH-NORTHEAST OF FLOODWOOD, 2.65 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD TO TRUNK HIGHWAY 73 MILEPOINT 45.9, THEN 0.25 MILE EAST AND NORTH ON SIMI ROAD, 13.0 FEET WEST OF SIMI ROAD, 38.6 FEET WEST OF A FENCE, 38.0 FEET WEST OF A WITNESS POST.

Station Pair: MUSHRAT MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1251.881	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1251.828	.262		1156.146	.197	2011	GPS - RTRN		2017	RTRN2017
			1156.153	.010	2011	HORIZONTAL ADJUSTMENT		2012	GPS2800
			1156.244	.010	2007	HORIZONTAL ADJUSTMENT		2007	GPS2300
1251.835	.131		1156.303	.066	1996	HORIZONTAL ADJUSTMENT		2003	GPS1769
1251.868	.131		1156.303	.066	1996	GPS - STATIC		2002	HFLOO

Geoid Separations(ft): GEOID18 = -95.702 12B = -95.682 09 = -95.620 03 = -95.482

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		<u>Year</u>	<u>Reference</u>
46 57 45.79172	92 53 59.76171	387645.300	214385.053	.131	3	GPS - RTRN		2017	RTRN2017
46 57 45.79213	92 53 59.76121	387645.334	214385.094	.007		ADJUSTMENT		2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		<u>Year</u>	<u>Reference</u>
46 57 45.79220	92 53 59.76207	387645.275	214385.101	.010		ADJUSTMENT		2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>						<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>		<u>Year</u>	<u>Reference</u>
46 57 45.79194	92 53 59.76164	387645.304	214385.075	.033	C	ADJUSTMENT		2003	GPS1769
46 57 45.79194	92 53 59.76164	387645.304	214385.073	.033	C	GPS - STATIC		2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674624.142	496924.317	1665393.256	17063700.068	.131	3	GPS - RTRN	2017	RTRN2017
2674624.176	496924.359	1665393.290	17063700.109	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674624.117	496924.365	1665393.231	17063700.117	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2674624.146	496924.339	1665393.260	17063700.090	.033	C	ADJUSTMENT	2003	GPS1769
2674624.146	496924.339	1665393.260	17063700.090	.033	C	GPS - STATIC	2002	HFLOO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SIMI-DE9563-3E-10JUL2017.jpg	E	Jul 10, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SIMI-DE9563-2-10JUL2017.jpg		Jul 10, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SIMI-DE9563-1-10JUL2017.jpg		Jul 10, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SIMION

NGS Name: SIMION

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1655](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/1021
USGS Quad: BROOKSTON

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	24	50 N	18 W	464748.71	923318.67		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 8 IN.	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (2019) **Stamping:** SIMION 1952

7.0 MILES NORTHWEST OF CLOQUET, 6.7 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 THEN 2.0 MILES SOUTH ON COUNTY ROAD 31 THEN 3.85 MILES EAST AND SOUTH ON COUNTY ROAD 80, 38.0 FEET WEST OF COUNTY ROAD 80, 65.0 FEET WEST OF A POWER POLE NUMBER 2, 4.0 FEET NORTHEAST OF A WITNESS POST, 77.07 FEET SOUTHWEST OF SIMION RM 1, 96.05 FEET NORTHWEST OF SIMION RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.546	.131			1267.724	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1361.513							RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -94.012 12B = -94.006 09 = -93.924 03 = -93.750

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 47 48.70733	92 33 18.67110			473652.189	153584.518	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)				St Louis County - South Zone				Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 47 48.70137	92 33 18.67188			473652.134	153583.915	.033	1	ADJUSTMENT	1986	17289

NAD27								Project Info		
Geodetic Position				X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude									
46 47 48.89800	92 33 17.97700					.100	1	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2761134.592	436845.946			1751785.027	17003531.281	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)				UTM - Zone 15				Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2761134.542	436845.342			1751784.976	17003530.677	.033	1	ADJUSTMENT	1986	17289

NAD27								Project Info		
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year	Reference
X	Y									
2136520.272	108781.761					.100	1	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: SIMION AZ MK

NGS Name: SIMION AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2779](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	24	50 N	18 W	464820.00	923318.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	AZIMUTH MARK DISK	NGS

Description:

Stamping: SIMION 1952

7.0 MILES NORTHWEST OF CLOQUET, 6.7 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 THEN 2.0 MILES SOUTH ON COUNTY ROAD 31 THEN 3.25 MILES EAST AND SOUTH ON COUNTY ROAD 80, 36.0 FEET EAST OF THE APPROXIMATE CENTERLINE OF A ROAD, 10.0 FEET SOUTH-SOUTHEAST OF A POWER POLE WITH A TRANSFORMER, 3.0 FEET EAST OF A FENCE AND 2.0 FEET SOUTH OF A WITNESS POST.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -94.104 12B = -94.098 09 = -94.009 03 = -93.835



Mn/DOT Name: SIMION RM 1

NGS Name: SIMION RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2780](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	24	50 N	18 W	464749.21	923317.84		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description:

Stamping: SIMION NO 1 1952

7.0 MILES NORTHWEST OF CLOQUET, 6.7 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 THEN 2.0 MILES SOUTH ON COUNTY ROAD 31 THEN 3.85 MILES EAST AND SOUTH ON COUNTY ROAD 80, 20.0 FEET EAST OF THE APPROXIMATE CENTERLINE OF COUNTY ROAD 80 AND 14.0 FEET WEST OF A FENCE.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -94.012 12B = -94.006 09 = -93.924 03 = -93.750



Mn/DOT Name: SIMION RM 2

NGS Name: SIMION RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2781](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	24	50 N	18 W	464747.93	923317.87		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description:

Stamping: SIMION NO 1 1952

7.0 MILES NORTHWEST OF CLOQUET, 6.7 MILES WEST ON TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33 THEN 2.0 MILES SOUTH ON COUNTY ROAD 31 THEN 3.85 MILES EAST AND SOUTH ON COUNTY ROAD 80, 20.0 FEET EAST OF THE APPROXIMATE CENTERLINE OF COUNTY ROAD 80 AND 14.0 FEET WEST OF A FENCE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.009 12B = -94.002 09 = -93.920 03 = -93.747



Mn/DOT Name: SKID MNDT

NGS Name: SKID

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DG4251](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	52 N	21 W	465727.27	925824.57	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2001	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (2003) Stamping: SKID 2001

4.0 MILES NORTHWEST OF FLOODWOOD, 3.95 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 217.10, 78.5 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 22.5 FEET NORTHEAST OF A GATE POST, 13.0 FEET SOUTHEAST OF AN ENTRANCE, 22.3 FEET NORTHEAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
1266.441	.016	2/1						VERTICAL ADJUSTMENT	2011	00000675		
1266.441	.016	2/1						VERTICAL CONTROL SURVEY	2003	VGRAND		

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>				<u>Year</u>	<u>Reference</u>		
			1170.762	.013	2011			HORIZONTAL ADJUSTMENT	2012	GPS2800		
			1170.854	.014	2007			HORIZONTAL ADJUSTMENT	2007	GPS2300		
1266.434	.131		1170.943	.066	1996			HORIZONTAL ADJUSTMENT	2004	GPS1957		
1266.434	.131		1170.943	.066	1996			GPS - STATIC	2003	HGRAND		

Geoid Separations(ft): GEOID18 = -95.600 12B = -95.584 09 = -95.515 03 = -95.390

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 27.26922	92 58 24.57362	369264.355	212622.436	.013				ADJUSTMENT	2012	GPS2800	

<u>NAD83(2007)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 27.26933	92 58 24.57450	369264.294	212622.448	.013				ADJUSTMENT	2007	GPS2300	

<u>NAD83(1996)</u>		<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>		<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>	
46 57 27.26912	92 58 24.57406	369264.324	212622.426	.033	C			ADJUSTMENT	2004	GPS1957	
46 57 27.26912	92 58 24.57406	369264.324	212622.426	.033	C			GPS - STATIC	2003	HGRAND	



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2656259.238	495008.895	1647033.548	17061809.407	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2656259.177	495008.906	1647033.487	17061809.418	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2656259.207	495008.885	1647033.518	17061809.397	.033	C	ADJUSTMENT	2004	GPS1957
2656259.207	495008.885	1647033.518	17061809.397	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:			
Monument:			
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SKID-DG4251-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SKID MNDT RESET

NGS Name: SKID RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9926](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	26	52 N	21 W	465727.27	925824.57	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: SKID 2001 2017

4.0 MILES NORTHWEST OF FLOODWOOD, 3.95 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 217.10, 78.5 FEET SOUTHWEST OF TRUNK HIGHWAY 2, 22.5 FEET NORTHEAST OF A GATE POST, 13.0 FEET SOUTHEAST OF AN ENTRANCE, 22.3 FEET NORTHEAST OF A WITNESS POST.

Station Pair: RUD MNDT RESET - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1266.225	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1266.159	.262			1170.575	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -95.600 12B = -95.584 09 = -95.515 03 = -95.390

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference	
46 57 27.26909	92 58 24.57401	369264.328	212622.424	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Year	Reference
2656259.211	495008.882	1647033.521	17061809.394	.131	3	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SKID_RESET-DQ9926-3SW-24JUL2017.jpg	SW	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SKID_RESET-DQ9926-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/SKID_RESET-DQ9926-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: STA 1248+53

NGS Name: STA 1248+53

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	53 N	21 W	470419.00	925849.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	MNDT

Description: (1953)

Stamping:

10.0 MILES NORTH OF FLOODWOOD, AT TRUNK HIGHWAY 73 STATION 1248+53, IN THE SOUTH END OF THE EAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1250.949	.033	3				VERTICAL CONTROL SURVEY		1953	CS6928

Geoid Separations(ft): GEOID18 = -96.591 12B = -96.581 09 = -96.535 03 = -96.352

* No Horizontal Positions in the Database *



Mn/DOT Name: STA 1367+05

NGS Name: STA 1367+05

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	53 N	21 W	470302.00	925648.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	SURVEY DISK	MNDT

Description: (1953)

Stamping:

8.0 MILES NORTH OF FLOODWOOD, IN THE SOUTH END OF THE EAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1248.351	.033	3				VERTICAL CONTROL SURVEY	1953 CS6928

Geoid Separations(ft): GEOID18 = -96.466 12B = -96.453 09 = -96.414 03 = -96.230

* No Horizontal Positions in the Database *



Mn/DOT Name: STA 1409+75

NGS Name: STA 1409+75

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5131](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

				Reference	Reference	Vert	Horz
1/4	Sec	Twp	Rng	Latitude	Longitude	Order	Order
SE	25	53 N	21 W	470225.94	925612.48	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1953	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	NO MAG MATERIAL

Monument Type	Disk Type	Mon. Agency
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1953)

Stamping:

7.0 MILES NORTH OF FLOODWOOD, IN THE EAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order /(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1243.275	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order /(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1242.330	.033	3					VERTICAL CONTROL SURVEY	1953	CS6928

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order /(Class)		Height	Acc	Adj	Determination Method	Year	Reference
1243.269	.262			1146.887	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.397 12B = -96.378 09 = -96.338 03 = -96.155

Lat/Lon and County Coordinates (Feet)

NAD83(2011)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	Year
Latitude	Longitude								Reference
47 02 25.93699	92 56 12.47912			378615.730	242824.029	.131	3	GPS - RTRN	2017 RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	Year
X	Y								Reference
2665358.631	525285.695			1656168.602	17092061.980	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1409+75-DR5131-3NE-12JUL2017.jpg	NE	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1409+75-DR5131-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1409+75-DR5131-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: STA 1550+50

NGS Name: STA 1550+50

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5128](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	7	52 N	20 W	470015.13	925506.77	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1953	2017	GOOD	Horz=NO Vert=NO	YES		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	MNDT

Description: (1953)

Stamping:

5.5 MILES NORTH OF FLOODWOOD, IN THE SOUTH END OF THE EAST HEADWALL OF A TRUNK HIGHWAY 73 BOX CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1245.421	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1244.840	.033	3				VERTICAL CONTROL SURVEY		1953	CS6928

Geoid Separations(ft): GEOID18 = -96.086 12B = -96.066 09 = -96.017 03 = -95.856

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1550+50-DR5128-3NE-12JUL2017.jpg	NE	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1550+50-DR5128-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STA_1550+50-DR5128-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: STONEY MN137

NGS Name: STONEY

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9156](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	27	50 N	18 W	464652.11	923549.97		C

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2001	2020	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER W/BAR MAGNET

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (<10 FT) (DEPTH 8 FT)	SURVEY DISK	MN-137

Description: (2019) **Stamping:** STONEY 2001

5.5 MILES SOUTH OF BROOKSTON, 5.1 MILES SOUTH ALONG COUNTY ROAD 31 SOUTH FROM THE JUNCTION OF COUNTY ROAD 31 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 2.0 MILEPOINT 238.2, 60.0 FEET WEST OF COUNTY ROAD 31 (TWIN LAKES ROAD), 55.0 FEET NORTH OF COUNTY ROAD 851 (PINE DRIVE), 2.0 FEET SOUTH OF A WITNESS POST.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1319.853	.262		1225.975	.197	2011	GPS - OPUS	2020	GPSBM
1319.830	.262		1225.952	.197	2011	GPS - OPUS	2020	GPSBM
1319.745	.262		1225.867	.197	2011	GPS - RTRN	2016	RTRN2016
			1225.893	.010	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1225.975	.010	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1319.748	.131		1226.103	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1319.748	.131		1226.103	.066	1996	GPS - STATIC	2003	HSTLO

Geoid Separations(ft): GEOID18 = -93.878 12B = -93.878 09 = -93.802 03 = -93.628

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 46 52.11232	92 35 49.96900	463114.174	147867.418	.131	3	GPS - OPUS	2020	GPSBM
46 46 52.11228	92 35 49.96882	463114.187	147867.414	.131	3	GPS - OPUS	2020	GPSBM
46 46 52.11266	92 35 49.96854	463114.206	147867.453	.131	3	GPS - RTRN	2016	RTRN2016
46 46 52.11240	92 35 49.96823	463114.228	147867.426	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 46 52.11255	92 35 49.96907	463114.169	147867.441	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 46 52.11229	92 35 49.96891	463114.180	147867.415	.033	C	ADJUSTMENT	2003	GPS1931
46 46 52.11229	92 35 49.96891	463114.180	147867.415	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2750644.839	431040.647	1741292.020	16997743.153	.131	3	GPS - OPUS	2020	GPSBM
2750644.851	431040.643	1741292.033	16997743.149	.131	3	GPS - OPUS	2020	GPSBM
2750644.870	431040.682	1741292.052	16997743.188	.131	3	GPS - RTRN	2016	RTRN2016
2750644.892	431040.656	1741292.074	16997743.162	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2750644.833	431040.670	1741292.015	16997743.177	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
X	Y	X	Y				Year	Reference
2750644.845	431040.644	1741292.026	16997743.150	.033	C	ADJUSTMENT	2003	GPS1931
2750644.845	431040.644	1741292.026	16997743.150	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STONEY-DF9156-3N-06JUL2020.jpg	N	Jul 6, 2020
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STONEY-DF9156-2-06JUL2020.jpg		Jul 6, 2020
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STONEY-DF9156-1-06JUL2020.jpg		Jul 6, 2020

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: STOORE

NGS Name: STOORE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1840](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	55 N	17 W	471614.69	922844.75	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 12 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** STOORE 2017

14.0 MILES SOUTH OF EVELETH, 9.7 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 37 (THE JUNCTION IS 5.0 MILES SOUTH OF EVELETH), AT TRUNK HIGHWAY 53 MILEPOINT 46.15, 28.9 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 80.0 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 20.4 FEET NORTH OF A GRAVEL PIT ENTRANCE EXTENDED, 5.0 FEET EAST OF A WITNESS POST.

Station Pair: ZEBOTT - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1391.746	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj		Year	Reference	
1391.779	.262			1293.843	.197	2011	GPS - RTRN	2017	RTRN2017	

Geoid Separations(ft): GEOID18 = -97.939 12B = -97.939 09 = -97.880 03 = -97.710

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - Central Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference	
47 16 14.69303	92 28 44.74955	492775.682	107569.800	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Year	Reference
2778805.144	609827.040	1769686.105	17176421.172	.131	3	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STOORE-DR1840-3W-18OCT2017.jpg	W	Oct 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STOORE-DR1840-2-18OCT2017.jpg		Oct 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STOORE-DR1840-1-18OCT2017.jpg		Oct 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: STYLES

NGS Name: STYLES

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	52 N	17 W	470034.40	922816.23	2	3

NGS ACRN: DR1864	Get Map
NGS Quad / Sta Num : 47092233/	
USGS Quad: CANYON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 14 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: STYLES 2017

2.05 MILES SOUTH OF CANYON, 2.1 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 27.90, 49.8 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 72.7 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 99.0 FEET NORTH OF A CROSSOVER, 0.9 MILE NORTH OF COUNTY ROAD 734 (SHIPLEY ROAD), 1.5 FEET EAST OF A WITNESS POST.

Station Pair: UNGER - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1398.340	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1398.380	.262		1302.494	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.886 12B = -95.882 09 = -95.751 03 = -95.561

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 34.40182	92 28 16.22652	494717.136	231146.995	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2781546.964	514580.622	1772296.622	17081205.122	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STYLES-DR1864-3S-17OCT2017.jpg	S	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STYLES-DR1864-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/STYLES-DR1864-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: SUNSET

NGS Name: SUNSET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1031](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/1024
USGS Quad: INDEPENDENCE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	23	51 N	17 W	465324.84	922811.97	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2008	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	STEEL ROD ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1978) **Stamping:** SUNSET 1952

4.5 MILES WEST OF TWIG, 2.5 MILES NORTHWEST OF SAGINAW, 3.3 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 90.0 FEET EAST OF TRUNK HIGHWAY 33, 18.0 FEET EAST OF THE EDGE OF A CUT BANK, 3.0 FEET NORTH OF A WITNESS POST, 155.00 FEET SOUTHEAST OF SUNSET RM 1, 180.36 FEET NORTHEAST OF SUNSET RM 2, 63.89 FEET EAST-NORTHEAST OF SUNSET RM 3.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1403.954	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1403.701	.016	2					VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1403.967	.197			1309.410	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.754 12B = -94.750 09 = -94.632 03 = -94.445

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 53 24.84078	92 28 11.97471	495000.707	187623.882	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 53 24.83515	92 28 11.97602	495000.616	187623.311	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 53 25.04800	92 28 11.28400			.100	2	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2782196.315	471063.060	1772885.235	17037704.169	.066	2	ADJUSTMENT	1999	17648		

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference		
2782196.229	471062.489	1772885.147	17037703.599	.066	2	ADJUSTMENT	1986	17289		

NAD27		MN State Plane - North Zone					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2157582.295	143000.456			.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: SUNSET AZ MK

NGS Name: SUNSET AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2861](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	51 N	17 W	465324.84	922811.96		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

AZIMUTH MARK DISK

Mon. Agency

MNDT

Description: (1952)

Stamping: SUNSET 1952

2.7 MILES NORTH OF SAGINAW, 3.6 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 59.0 FEET WEST OF THE APPROXIMATE CENTERLINE OF THE HIGHWAY, 48.0 FEET NORTH OF THE APPROXIMATE CENTERLINE OF COUNTY ROAD 7, 3.0 FEET SOUTH-SOUTHEAST OF A FENCE CORNER AND 2.5 FEET EAST OF A WITNESS POST.

Station Notes

IN 1978 THIS STATION WAS REPLACED BY STATION 6911 P (RN1034).

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.750 12B = -94.747 09 = -94.629 03 = -94.442



Mn/DOT Name: SUNSET RM 1

NGS Name: SUNSET RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1032](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	23	51 N	17 W	465325.28	922814.11	2		1952	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1978)

Stamping: SUNSET NO 1 1952

2.5 MILES NORTHWEST OF SAGINAW, 3.3 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 59.1 FEET WEST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 14.55, 155.0 FEET NORTHWEST OF STATION SUNSET, 103.7 FEET NORTH-NORTHWEST OF SUNSET RM 3, 160.0 FEET NORTH OF SUNSET RM 2, 2.9 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1397.940	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1397.684	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -94.750 12B = -94.750 09 = -94.632 03 = -94.445

* No Horizontal Positions in the Database *



Mn/DOT Name: SUNSET RM 2

NGS Name: SUNSET RM 2

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	51 N	17 W	465323.71	922813.98	2	

NGS ACRN: [RN1030](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2008	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: (1978)

Stamping: SUNSET NO 2 1952

2.5 MILES NORTHWEST OF SAGINAW, 3.3 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 33 MILEPOINT 14.55, 49.5 FEET WEST OF TRUNK HIGHWAY 33, 24.8 FEET WEST-NORTHWEST OF THE WEST LEG OF A NO PASSING SIGN, 180.4 FEET SOUTHWEST OF STATION SUNSET, 127.2 FEET SOUTHWEST OF SUNSET RM 3, 160.0 FEET SOUTH OF SUNSET RM 1, 3.1 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1397.809	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1397.553	.016	2				VERTICAL CONTROL SURVEY	1978	L24513

Geoid Separations(ft): GEOID18 = -94.754 12B = -94.750 09 = -94.632 03 = -94.445

* No Horizontal Positions in the Database *



Mn/DOT Name: SUNSET RM 3

NGS Name: SUNSET RM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1033](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NW	23	51 N	17 W	465324.71	922812.87	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1978	2008	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	STEEL ROD IMBED IN MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	MNDT

Description: (1978)

Stamping: SUNSET 1952 1978 NO 3

4.5 MILES WEST OF TWIG, 2.5 MILES NORTHWEST OF SAGINAW, 3.3 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 27.2 FEET EAST OF TRUNK HIGHWAY 33, 63.8 FEET WEST-SOUTHWEST OF A WITNESS POST, 103.71 FEET SOUTHEAST OF SUNSET RM 1, 127.15 FEET NORTHEAST OF SUNSET RM 2, 68.89 FEET EAST-NORTHEAST OF STATION SUNSET.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1392.067	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1391.812	.016	2					VERTICAL CONTROL SURVEY	1978	L24513

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1392.058	.197			1297.524	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.754 12B = -94.750 09 = -94.632 03 = -94.445

Lat/Lon and County Coordinates (Feet)

NAD83(1996)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 53 24.70874	92 28 12.87395			494938.243	187610.520	.066	2	ADJUSTMENT	17648

NAD83(1986)				St Louis County - South Zone				Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 53 24.70309	92 28 12.87543			494938.140	187609.947	.066	2	ADJUSTMENT	17289

NAD27								Project Info	
Geodetic Position				X	Y	Acc	Order	Determination Method	
Latitude	Longitude								Reference
46 53 24.91603	92 28 12.18255					.100	2	CLASSICAL SURVEY	16254

State Plane and UTM Coordinates (Feet)

NAD83(1996)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2782133.967	471049.174			1772822.893	17037690.376	.066	2	ADJUSTMENT	17648

NAD83(1986)				UTM - Zone 15				Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2782133.869	471048.601			1772822.795	17037689.803	.066	2	ADJUSTMENT	17289

NAD27								Project Info	
MN State Plane - North Zone				X	Y	Acc	Order	Determination Method	
X	Y								Reference
2157519.990	142986.574					.100	2	CLASSICAL SURVEY	16254



Mn/DOT Name: T 160

NGS Name: T 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0239](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	55 N	17 W	471520.00	922944.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1950	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1950) Stamping: T 160 1935

1.0 MILE SOUTH OF FENS THEN 5.1 MILES EAST OF A RAILROAD, 0.6 MILE WEST OF TRUNK HIGHWAY 53, 150.0 FEET WEST OF A LONG CURVE, 36.0 FEET SOUTH OF A ROAD.

Station Notes

THE ROAD IS NOW A FOUR WHEELER TRAIL.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1348.422	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1347.730	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1347.730	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.907 12B = -97.907 09 = -97.841 03 = -97.664

* No Horizontal Positions in the Database *



Mn/DOT Name: T 163

NGS Name: T 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0177](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	53 N	17 W	470223.00	922814.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966) Stamping: T 163 1935

9.2 MILES SOUTH OF COTTON, 9.2 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 115.0 FEET EAST ALONG HARRIS ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.562	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1355.056	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -96.174 12B = -96.184 09 = -96.033 03 = -95.846

* No Horizontal Positions in the Database *



Mn/DOT Name: T 163 RESET 1966

NGS Name: T 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0178](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	26	53 N	17 W	470223.54	922813.60	2	C	1966	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1999)

Stamping: T 163 RESET 1966

IN CANYON, AT THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 30.0, 75.0 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 45.0 FEET NORTH OF COUNTY ROAD 737 EAST, 77.0 FEET NORTH-NORTHWEST OF A TELEPHONE CABLE PEDESTAL NUMBER A 16 1, 43.0 FEET EAST-NORTHEAST OF A STOP SIGN, 1.6 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.571	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1354.590	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1354.581	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG
<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1353.961	.007	1				VERTICAL CONTROL SURVEY	1966	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1354.705	.262		1258.521	.197	2011	GPS - RTRN	2017	RTRN2017
			1258.396	.016	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1258.488	.017	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1354.426	.131		1258.564	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848
1354.426	.131		1258.564	.066	1996	GPS - STATIC	2002	HTWIB

Geoid Separations(ft): GEOID18 = -96.178 12B = -96.184 09 = -96.033 03 = -95.850

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 23.54259	92 28 13.60173	494901.930	242205.217	.131	3	GPS - RTRN	2017	RTRN2017
47 02 23.54281	92 28 13.60305	494901.839	242205.239	.013		ADJUSTMENT	2012	GPS2800
<u>NAD83(2007)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 23.54293	92 28 13.60395	494901.777	242205.251	.013		ADJUSTMENT	2007	GPS2300
<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 23.54271	92 28 13.60370	494901.794	242205.229	.033	C	ADJUSTMENT	2003	GPS1848
47 02 23.54271	92 28 13.60370	494901.796	242205.231	.033	C	GPS - STATIC	2002	HTWIB
<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 02 23.53993	92 28 13.60410	494901.766	242204.945	.033	C	GPS - STATIC	1991	H1991

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781638.802	525639.374	1772403.702	17092259.509	.131	3	GPS - RTRN	2017	RTRN2017
2781638.711	525639.395	1772403.610	17092259.531	.013		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781638.648	525639.407	1772403.548	17092259.542	.013		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781638.666	525639.385	1772403.565	17092259.520	.033	C	ADJUSTMENT	2003	GPS1848
2781638.666	525639.385	1772403.565	17092259.520	.033	C	GPS - STATIC	2002	HTWIB

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2781638.640	525639.103	1772403.540	17092259.239	.033	C	GPS - STATIC	1991	H1991

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_163_RESET-SJ0178-3E-18SEP2017.jpg	E	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_163_RESET-SJ0178-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_163_RESET-SJ0178-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: T 271

NGS Name: T 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0702](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	20	52 N	19 W	465807.00	924608.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: T 271 1948

10.0 MILES NORTHEAST OF FLOODWOOD, 1.15 MILES WEST ON COUNTY ROAD 165 FROM THE JUNCTION OF COUNTY ROAD 165 AND COUNTY ROAD 5, 0.1 MILE WEST OF A LARGE PIPE CULVERT, 37.0 FEET NORTH OF COUNTY ROAD 165, 19.0 FEET EAST OF A FARM DRIVEWAY NORTH, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1277.812	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1277.215	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1277.215	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.790 12B = -95.774 09 = -95.695 03 = -95.544

* No Horizontal Positions in the Database *



Mn/DOT Name: T 272

NGS Name: T 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0342](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	15	53 N	18 W	470455.54	923555.71	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties	Mon. Agency
1948	2007	GOOD	Horz=NO Vert=YES	YES		FLUSH	NO MAG MATERIAL	NGS

Monument Type
BRIDGE ABUTMENT

Disk Type
BENCH MARK DISK

Description: (1988)

Stamping: T 272 1948

0.95 MILE SOUTH ON COUNTY ROAD 7 FROM THE RAILROAD STATION AT PAYNE, 0.2 MILE NORTH OF RAILROAD MILEPOST 40, IN THE WEST END OF THE SOUTH ABUTMENT OF A COUNTY ROAD 7 BRIDGE OVER THE WHITEFACE RIVER, 84.0 FEET EAST OF THE EAST RAIL OF A RAILROAD TRACKS, 16.5 FEET WEST OF COUNTY ROAD 7, 1.5 FEET WEST OF A RAILING.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1300.391	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1300.391	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1300.391	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1299.817	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1299.817	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.821 12B = -96.811 09 = -96.699 03 = -96.512

* No Horizontal Positions in the Database *

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_272-SJ0342-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_272-SJ0342-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_272-SJ0342-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: T 273

NGS Name: T 273

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0529](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	53 N	21 W	470445.00	925952.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: T 273 1948

10.9 MILES NORTHWEST ALONG TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL IN FLOODWOOD, THEN 1.7 MILES NORTHWEST ON COUNTY ROAD 508, 1.0 MILE SOUTHEAST OF THE JUNCTION OF COUNTY ROAD 508 AND COUNTY ROAD 133 AND THE CEDAR VALLEY TOWNSHIP HALL, 0.9 MILE NORTHWEST OF A COUNTY ROAD 508 BRIDGE, 30.0 FEET NORTHEAST OF A COUNTY ROAD 508 (OLD TRUNK HIGHWAY 73), 89.0 FEET NORTH-NORTHEAST OF A POWER POLE, 7.0 FEET SOUTHEAST OF A DIM TRAIL NORTHEAST, 1.0 FOOT SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1255.670	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1254.958	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1254.958	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.607 12B = -96.601 09 = -96.555 03 = -96.378

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_273-SJ0529-3NE-13JUL2017.jpg	NE	Jul 13, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_273-SJ0529-2-13JUL2017.jpg		Jul 13, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_273-SJ0529-1-13JUL2017.jpg		Jul 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: T 274

NGS Name: T 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0389](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	18	54 N	19 W	470922.50	924811.80	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	FAIR	Horz=NO Vert=YES	YES		PROJECTS 1 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: T 274 1948

0.7 MILE SOUTH ON COUNTY ROAD 5 FROM THE HIGH SCHOOL AT TOIVOLA, 0.35 MILE NORTHWEST OF AN EAST-WEST CROSSROAD, 42.0 FEET NORTHEAST OF COUNTY ROAD 5, 17.0 FEET NORTHWEST OF AN ENTRANCE, 154.0 FEET NORTH OF A FARM ROAD WEST, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Station Notes

THE CONCRETE HAS BEEN CHIPPED OFF, BUT THE MARK IS SOLID.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1280.342	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1280.342	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1280.342	.016	2/1				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1279.689	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1279.689	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.421 12B = -97.421 09 = -97.352 03 = -97.155

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_274-SJ0389-3W-23MAY2007.jpg	W	May 23, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_274-SJ0389-2-23MAY2007.jpg		May 23, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_274-SJ0389-1-23MAY2007.jpg		May 23, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: T 279

NGS Name: T 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1330](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	7	54 N	21 W	471023.91	930240.89	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1993)

Stamping: T 279 1948

7.6 MILES SOUTH OF HIBBING, 1.0 MILE EAST OF THE ITASCA-SAINT LOUIS COUNTY LINE, 9.8 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 16 IN HIBBING, THEN 2.2 MILES NORTHWEST ON COUNTY ROAD 184 (FLOODWOOD RIVER ROAD), 44.0 FEET WEST OF TRUNK HIGHWAY 73, 64.0 FEET NORTH OF A ROAD WEST, 63.0 FEET NORTH-NORTHEAST OF COUNTY ROAD 184 (FLOODWOOD RIVER ROAD), 43.0 FEET WEST-SOUTHWEST OF COUNTY ROAD 443 (MERRILL ROAD), 5.0 FEET SOUTHEAST OF AN INTERNATIONAL HARVESTER SIGN, 5.0 FEET NORTHEAST OF A POWER POLE, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1319.663	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1318.902	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1318.902	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN
1318.902	.007	1					VERTICAL CONTROL SURVEY	1952	Q470932

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1319.659	.262			1222.701	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.958 12B = -96.958 09 = -96.896 03 = -96.755

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 10 23.89303	93 02 40.81214	352085.926	291436.070	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
2638427.856	573671.745	1629310.820	17140464.319	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_279-SJ1330-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_279-SJ1330-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_279-SJ1330-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: T 28

NGS Name: T 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0340](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	53 N	18 W	470340.00	923556.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1948	POOR	Horz=? Vert=YES	NO		PROJECTS 10 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: T 28 1934

2.25 MILES SOUTH ON A RAILROAD FROM THE RAILROAD STATION AT PAYNE, 0.5 MILE SOUTH OF COUNTY ROAD 133, 50.5 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 54.0 FEET WEST OF COUNTY ROAD 7, ON THE TOP OF A RIDGE BETWEEN 2 DITCHES, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE MONUMENT IS LOOSE AND MAY BE BROKEN BELOW THE GROUND.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1301.231	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1300.644	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1300.644	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.614 12B = -96.607 09 = -96.489 03 = -96.309

* No Horizontal Positions in the Database *



Mn/DOT Name: T 30

NGS Name: T 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1210](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	6	51 N	20 W	465538.00	925505.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	NOT FOUND	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
UNKNOWN	BENCH MARK DISK	NGS

Description: (1934)

Stamping:

IN FLOODWOOD, IN THE NORTHWEST QUADRANT OF THE JUNCTION OF COUNTY ROAD 30 AND RAILROAD STREET IN FLOODWOOD.

Station Notes

THE MONUMENT TYPE AND DISK TYPE ARE BASED OFF OF SURROUNDING SIMILAR MARKS, THEY COULD BE DIFFERENT.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1254.807	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025	

Geoid Separations(ft): GEOID18 = -95.357 12B = -95.338 09 = -95.262 03 = -95.151

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/T_30-RN1210-3W-10JUL2017.jpg	W	Jul 10, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TBM 06 2 L23566

NGS Name: TBM 06 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9078](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	17	52 N	21 W	465923.00	930112.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

6.31 MILES NORTHWEST OF FLOODWOOD, 6.85 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.850 12B = -95.840 09 = -95.771 03 = -95.636



Mn/DOT Name: TBM 06 3 L23566

NGS Name: TBM 06 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9079](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	52 N	21 W	465846.00	930011.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description: (2019)

Stamping:

5.26 MILES NORTHWEST OF FLOODWOOD, 5.5 MILES NORTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND WEST 7TH AVENUE, THEN 325.0 FEET SOUTHWEST.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.774 12B = -95.764 09 = -95.695 03 = -95.561



Mn/DOT Name: TBM 06 4 L23566

NGS Name: TBM 06 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9080](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	22	52 N	21 W	465814.00	925932.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

4.47 MILES NORTHWEST OF FLOODWOOD, 4.7 MILES NORTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND WEST 7TH AVENUE

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.702 12B = -95.692 09 = -95.623 03 = -95.489



Mn/DOT Name: TBM 06 5 L23566

NGS Name: TBM 06 5

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9081](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	27	52 N	21 W	465735.00	925839.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description: (2012)

Stamping:

3.2 MILES NORTHWEST OF FLOODWOOD, 0.7 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 WEST FROM THE JUNCTION OF TRUNK HIGHWAY. 2 WEST AND RUDOLPH ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.617 12B = -95.603 09 = -95.531 03 = -95.407



Mn/DOT Name: TBM 06 6 L23566

NGS Name: TBM 06 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9082](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	52 N	21 W	465711.00	925731.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description: (2012)

Stamping:

2.3 MILES NORTHWEST OF FLOODWOOD, 0.4 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 WEST FROM THE JUNCTION OF TRUNK HIGHWAY 2 WEST AND SAVANNA ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.571 12B = -95.554 09 = -95.482 03 = -95.361



Mn/DOT Name: TBM 06 7 L23566

NGS Name: TBM 06 7

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9083](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	52 N	21 W	465651.00	925639.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

2.15 MILES NORTHWEST OF FLOODWOOD, 1.04 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, THEN TURN RIGHT AND CONTINUE 1.17 MILE NORTHWEST ALONG COUNTY ROAD 260 (ST. VINCENT ROAD).

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.528 12B = -95.512 09 = -95.439 03 = -95.318



Mn/DOT Name: TBM 06 8 L23566

NGS Name: TBM 06 8

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9084](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	6	51 N	20 W	465608.00	925540.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
MN DT

Description:

Stamping:

0.59 MILE NORTHWEST OF FLOODWOOD, 0.7 MILE NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND WEST 7TH AVENUE, THEN 187.0 FEET NORTHEAST ON ST. VINCENT ROAD, THEN 101.0 FEET SOUTHEAST OF ST. VINCENT ROAD IN THE 50.0 FEET ZONE OF THE RAILROAD TRACK.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.430 12B = -95.413 09 = -95.338 03 = -95.220



Mn/DOT Name: TBM 07 1 L23566

NGS Name: TBM 07 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9085](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	51 N	20 W	465458.00	925420.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

0.67 MILE SOUTHEAST OF FLOODWOOD, 0.67 MILE SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.259 12B = -95.243 09 = -95.164 03 = -95.052



Mn/DOT Name: TBM 07 10 L23566

NGS Name: TBM 07 10

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9093](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	3	50 N	18 W	465115.00	923612.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

11.6 MILES SOUTHEAST OF GOWAN, 11.92 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.639 12B = -94.639 09 = -94.540 03 = -94.380



Mn/DOT Name: TBM 07 11 L23566

NGS Name: TBM 07 11

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9097](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	50 N	18 W	465107.00	923520.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.30 MILES SOUTHEAST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 0.7 MILE EAST ON TRUNK HIGHWAY 2E.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -94.606 12B = -94.606 09 = -94.504 03 = -94.340



Mn/DOT Name: TBM 07 12 L23566

NGS Name: TBM 07 12

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9098](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	5	50 N	17 W	465048.00	923130.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

4.01 MILES SOUTHEAST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 3.8 MILES EAST ON TRUNK HIGHWAY 2E.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.462 12B = -94.452 09 = -94.360 03 = -94.183



Mn/DOT Name: TBM 07 13 L23566

NGS Name: TBM 07 13

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9099](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	50 N	17 W	465049.00	923009.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

5.01 MILES SOUTHEAST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 4.9 MILES EAST ON TRUNK HIGHWAY 2E.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.426 12B = -94.416 09 = -94.324 03 = -94.144



Mn/DOT Name: TBM 07 14 L23566

NGS Name: TBM 07 14

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9100](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
NE	3	50 N	17 W	465044.00	922835.00			1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	MNDT
<u>Monument Type</u> IRON ROD																
<u>Disk Type</u> UNMONUMENTED																

Description:

Stamping:

17.71 MILES SOUTHEAST OF GOWAN, 17.98 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.360 12B = -94.344 09 = -94.255 03 = -94.068



Mn/DOT Name: TBM 07 15 L23566

NGS Name: TBM 07 15

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9101](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	50 N	17 W	465044.00	922752.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description: (2019)

Stamping:

6.78 MILES SOUTHEAST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 6.7 MILES EAST ON TRUNK HIGHWAY 2E, THEN 315.0 FEET NORTH, MOST LIKELY TO THE EAST SIDE OF A DRIVEWAY.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.331 12B = -94.317 09 = -94.226 03 = -94.039



Mn/DOT Name: TBM 07 2 L23566

NGS Name: TBM 07 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9086](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	17	51 N	20 W	465413.00	925328.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

2.22 MILES SOUTHEAST OF FLOODWOOD, 2.1 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2E FROM THE JUNCTION OF TRUNK HIGHWAY 2E AND WEST 7TH AVENUE

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.154 12B = -95.134 09 = -95.052 03 = -94.941



Mn/DOT Name: TBM 07 3 L23566

NGS Name: TBM 07 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9087](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	21	51 N	20 W	465258.00	925211.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.67 MILES NORTHWEST OF GOWAN, 1.59 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.970 12B = -94.954 09 = -94.869 03 = -94.757



Mn/DOT Name: TBM 07 4 L23566

NGS Name: TBM 07 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9088](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	6	50 N	19 W	465106.00	924820.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
MN DT

Description:

Stamping:

2.08 MILES SOUTHEAST OF GOWAN, 2.37 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.662 09 = -94.577 03 = -94.458



Mn/DOT Name: TBM 07 5 L23566

NGS Name: TBM 07 5

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9089](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	33	51 N	19 W	465112.00	924505.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

4.59 MILES SOUTHEAST OF GOWAN, 4.93 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.665 09 = -94.580 03 = -94.455



Mn/DOT Name: TBM 07 6 L23566

NGS Name: TBM 07 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9090](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	34	51 N	19 W	465116.00	924355.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

6.14 MILES SOUTHWEST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 4.9 MILES WEST ON TRUNK HIGHWAY 2E.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.665 09 = -94.586 03 = -94.458



Mn/DOT Name: TBM 07 7 L23566

NGS Name: TBM 07 7

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9091](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	19 W	465117.00	924230.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

6.66 MILES SOUTHEAST OF GOWAN, 6.96 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 IN GOWAN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.675 12B = -94.665 09 = -94.583 03 = -94.452



Mn/DOT Name: TBM 07 8 L23566

NGS Name: TBM 07 8

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1063](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	50 N	19 W	465119.00	924111.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	2017	NOT FOUND	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
PILES AND POLES	SPIKE	MNDT

Description:

Stamping:

4.6 MILES WEST-SOUTHWEST FROM BROOKSTON, STATION TBM 07 8 L23566 IS LOCATED ABOUT 4.2 MILES WEST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION WITH COUNTY ROAD 31, JUST SOUTH OF BROOKSTON AND ABOUT 0.6 MILE EAST OF THE ENTRANCE TO THE ARROWHEAD TOWN HALL, 400.0 FEET WEST OF TRUNK HIGHWAY 2.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1333.144	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.586 03 = -94.449

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 07 9 L23566

NGS Name: TBM 07 9

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9092](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	33	51 N	18 W	465118.00	923738.00			1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	
<u>Monument Type</u> IRON ROD																
<u>Disk Type</u> UNMONUMENTED																
<u>Mon. Agency</u> MNMT																

Description:

Stamping:

1.43 MILES SOUTHWEST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 1.1 MILES WEST ON TRUNK HIGHWAY 2E.

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -94.659 12B = -94.659 09 = -94.563 03 = -94.409



Mn/DOT Name: TBM 08 1 L23563

NGS Name: TBM 08 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ4026](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	1	50 N	17 W	465041.00	922639.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

7.73 MILES SOUTHEAST OF BROOKSTON, 1.0 MILE SOUTH ALONG COUNTY HIGHWAY 31/2ND AVENUE FROM THE JUNCTION OF COUNTY HIGHWAY 31/2ND AVENUE AND MCCAMUS ROAD, THEN 7.6 MILES EAST ON TRUNK HIGHWAY 2E.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1347.212	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -94.271 12B = -94.258 09 = -94.163 03 = -93.973

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 1 L L12572-6

NGS Name: TBM 1 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1477](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	53 N	19 W	470410.00	924440.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

0.6 MILE SOUTHWEST OF MEADOWLAND, 0.6 MILE WEST ALONG COUNTY HIGHWAY 133 FROM THE JUNCTION OF
COUNTY HIGHWAY 133 AND CENTRAL AVENUE

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1275.798	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.765 12B = -96.758 09 = -96.673 03 = -96.493

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 1 L7034-10

NGS Name: TBM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BC6115](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	9	53 N	17 W	470515.00	923047.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

3.88 MILES NORTHWEST OF CANYON, 3.23 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, THEN 1.94 MILES WEST ALONG COUNTY ROAD 232.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -96.732 12B = -96.735 09 = -96.598 03 = -96.411



Mn/DOT Name: TBM 1 L7034-13

NGS Name: TBM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BC7617](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	30	52 N	17 W	465754.00	923204.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

1.97 MILES SOUTHEAST OF ALBORN, 0.93 MILE SOUTHEAST ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 166, SOUTHEAST OF ALBORN, THEN CONTINUE 1.06 MILES SOUTHEAST ALONG COUNTY ROAD 47, THEN 0.11 MILE NORTH ALONG NORTH SCHELIN ROAD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.610 12B = -95.600 09 = -95.476 03 = -95.295



Mn/DOT Name: TBM 1 L7034-7

NGS Name: TBM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BC4982](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	54 N	17 W	471008.00	923039.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

1.55 MILES WEST OF COTTON, 1.63 MILES WEST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52
AND TRUNK HIGHWAY 53.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.454 12B = -97.454 09 = -97.349 03 = -97.155



Mn/DOT Name: TBM 1 VWITT

NGS Name: TBM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	16	53 N	17 W	470409.10	922936.70		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

2.3 MILES NORTHWEST OF CANYON, 2.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, THEN 1.0 MILE WEST ON COUNTY ROAD 133, 31.0 FEET NORTH OF COUNTY ROAD 133.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.516 12B = -96.522 09 = -96.374 03 = -96.191



Mn/DOT Name: TBM 10 VWITT

NGS Name: TBM 10

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	13	53 N	19 W	470418.20	924052.60			2007	2007	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION	
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>								
PILES AND POLES				SPIKE				MN DT								

Description: (2007)

Stamping:

2.5 MILES EAST OF MEADOWLANDS, 2.5 MILES EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND WESTERN AVENUE (ANDREW'S JUNCTION ROAD) IN MEADOWLANDS, THE SOUTH SIDE OF COUNTY ROAD 133, AND 50.0 FEET WEST OF COUNTY ROAD 209 EXTENDED.

Station Notes

THE MARK IS A RAILROAD SPIKE IN THE NORTH SIDE OF A POWER POLE WITH GUY WIRES.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.785 12B = -96.778 09 = -96.680 03 = -96.496



Mn/DOT Name: TBM 11 A L24513

NGS Name: TBM 11 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7855](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	51 N	17 W	465134.00	922738.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
MN DT

Description:

Stamping:

0.78 MILES WEST OF SAGINAW, 0.6 MILE SOUTH ALONG COUNTY ROAD 875 FROM THE JUNCTION OF COUNTY ROAD 875 AND COUNTY ROAD 46 IN SAGINAW, THEN 0.7 MILE WEST-NORTHWEST ALONG COUNTY ROAD 873, THEN 0.33 MILE NORTH ALONG TRUNK HIGHWAY 33

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.445 12B = -94.436 09 = -94.337 03 = -94.147



Mn/DOT Name: TBM 11 B L24513

NGS Name: TBM 11 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7856](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	51 N	17 W	465210.00	922740.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.06 MILES NORTHWEST OF SAGINAW, 0.82 MILE NORTHWEST ALONG COUNTY ROAD 46 FROM THE JUNCTION OF COUNTY ROAD 46 AND COUNTY ROAD 875 IN SAGINAW, THEN 0.23 MILE NORTH TO EXIT FROM COUNTY ROAD 46 TO TRUNK HIGHWAY 33, THEN 0.3 MILE NORTH OF TRUNK HIGHWAY 33, THEN MAKE A U-TURN, 87.45 SOUTHWEST OF SMITH ROAD, THEN 0.2 MILE SOUTH ON TRUNK HIGHWAY 33, 0.07 MILE WEST FROM THE CENTERLINE OF TRUNK HIGHWAY 33.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.537 12B = -94.531 09 = -94.426 03 = -94.235



Mn/DOT Name: TBM 11 C L24513

NGS Name: TBM 11 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7857](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	23	51 N	17 W	465302.00	922800.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

MNDT

Description:

Stamping:

2.02 MILES NORTHWEST OF SAGINAW, 0.82 MILE NORTHWEST ALONG COUNTY ROAD 46 FROM THE JUNCTION OF COUNTY ROAD 46 AND COUNTY ROAD 875 IN SAGINAW, THEN 0.23 MILE NORTH TO EXIT FROM COUNTY ROAD 46 TO TRUNK HIGHWAY 33, THEN 1.25 MILES NORTH-NORTHWEST ON TRUNK HIGHWAY 33.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.685 12B = -94.678 09 = -94.567 03 = -94.380



Mn/DOT Name: TBM 11 D L24513

NGS Name: TBM 11 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7858](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	51 N	17 W	465407.00	922815.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
MNMT

Description:

Stamping:

3.18 MILES NORTHWEST OF SAGINAW, 0.82 MILE NORTHWEST ALONG COUNTY ROAD 46 FROM THE JUNCTION OF COUNTY ROAD 46 AND COUNTY ROAD 875 IN SAGINAW, THEN 0.23 MILE NORTH TO EXIT FROM COUNTY ROAD 46 TO TRUNK HIGHWAY 33, THEN 2.51 MILES NORTH-NORTHWEST ON TRUNK HIGHWAY 33, 203.0 FEET WEST OF BERG ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -94.865 12B = -94.869 09 = -94.744 03 = -94.554



Mn/DOT Name: TBM 11 E L24513

NGS Name: TBM 11 E

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7859](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	3	51 N	17 W	465554.00	922816.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description: (2012)

Stamping:

1.9 MILES SOUTH OF INDEPENDENCE, 1.0 MILE SOUTHWEST ALONG TRUNK HIGHWAY 33 SOUTH FROM THE JUNCTION OF TRUNK HIGHWAY 33 SOUTH AND NEW INDEPENDENCE ROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.154 12B = -95.154 09 = -95.026 03 = -94.832



Mn/DOT Name: TBM 11 F L24513

NGS Name: TBM 11 F

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AK7860](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	35	52 N	17 W	465701.00	922748.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1978	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

6.07 MILES SOUTH OF CANYON, 6.0 MILES SOUTH-SOUTHEAST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 153 IN CANYON, THEN 0.49 MILE SOUTHWEST ALONG TRUNK HIGHWAY 33.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.311 12B = -95.308 09 = -95.180 03 = -94.987



Mn/DOT Name: TBM 11 VWITT

NGS Name: TBM 11

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	24	53 N	19 W	470414.80	924206.90		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	YES			SEE DESCRIPTION

Monument Type
PILES AND POLES

Disk Type
SPIKE

Mon. Agency
MN DT

Description: (2007)

Stamping:

1.5 MILES EAST OF MEADOWLANDS, 1.5 MILES EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND WESTERN AVENUE (ANDREW'S JUNCTION ROAD) IN MEADOWLANDS, IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF COUNTY ROAD 133 AND COUNTY ROAD 47.

Station Notes

THE MARK IS A RAILROAD SPIKE IN THE NORTH SIDE OF A POWER POLE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.781 12B = -96.775 09 = -96.676 03 = -96.496



Mn/DOT Name: TBM 12 VWITT

NGS Name: TBM 12

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	16	53 N	19 W	470410.30	924439.40			2007	2007	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION	
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>								
PILES AND POLES				SPIKE				MNMT								

Description: (2007)

Stamping:

0.5 MILE WEST OF MEADOWLANDS, 0.5 MILE EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND WESTERN AVENUE (ANDREW'S JUNCTION ROAD) IN MEADOWLANDS, IN THE NORTHEAST QUADRANT OF THE INTERSECTION OF COUNTY ROAD 133 AND COUNTY ROAD 200.

Station Notes

THE MARK IS A RAILROAD SPIKE IN THE SOUTH SIDE OF A POWER POLE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.768 12B = -96.758 09 = -96.673 03 = -96.493



Mn/DOT Name: TBM 13 L L12572-11

NGS Name: TBM 13 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1483](#)
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	21	52 N	19 W	465809.00	924438.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
NGS

Description:

Stamping:

8.77 MILES NORTHEAST OF FLOODWOOD, 8.03 MILE EAST ALONG COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 IN FLOODWOOD, THEN 2.97 MILES NORTH ALONG COUNTY ROAD 5, THEN 0.04 MILE WEST ALONG COUNTY ROAD 165.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1283.298	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -95.787 12B = -95.774 09 = -95.689 03 = -95.538

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 13 VWITT

NGS Name: TBM 13

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	53 N	19 W	470318.00	924436.10		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
PILES AND POLES

Disk Type
SPIKE

Mon. Agency
MNMT

Description: (2007)

Stamping:

1.1 MILES SOUTHWEST OF MEADOWLANDS, 0.5 MILE EAST ALONG COUNTY ROAD 133 FROM THE JUNCTION OF COUNTY ROAD 133 AND WESTERN AVENUE (ANDREW'S JUNCTION ROAD) IN MEADOWLANDS, THEN 1.0 MILE SOUTH ALONG COUNTY ROAD 200, IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF COUNTY ROAD 200 AND ANDREW'S JUNCTION ROAD.

Station Notes

THE MARK IS A RAILROAD SPIKE IN THE WEST SIDE OF A POWER POLE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.630 12B = -96.621 09 = -96.535 03 = -96.358



Mn/DOT Name: TBM 14 L L12572-3

NGS Name: TBM 14 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1473](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	8	53 N	21 W	470506.00	930058.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

NGS

Description:

Stamping:

5.40 MILE NORTHEAST OF WAWINA, 4.88 MILES NORTH AND EAST ALONG COUNTY ROAD 25 FROM THE JUNCTION OF COUNTY ROAD 25 AND TRUNK HIGHWAY 2 IN WAWINA, THEN CONTINUE 1.94 MILES EAST ALONG COUNTY ROAD 133.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1261.513	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.614 12B = -96.607 09 = -96.558 03 = -96.388

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 15 L L12572-6

NGS Name: TBM 15 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1479](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	25	53 N	21 W	470310.00	925709.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

NGS

Description:

Stamping:

8.72 MILES NORTH OF FLOODWOOD, 9.72 MILES NORTHWEST ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 8 IN FLOODWOOD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1248.971	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.479 12B = -96.466 09 = -96.424 03 = -96.240

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 16 L L12572-5

NGS Name: TBM 16 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1476](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	18	54 N	19 W	471001.00	924831.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type

IRON ROD

Disk Type

UNMONUMENTED

Mon. Agency

NGS

Description:

Stamping:

0.11 MILE EAST OF TOIVOLA, 0.11 MILE EAST ALONG COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 IN TOIVOLA.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1267.639	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -97.477 12B = -97.477 09 = -97.408 03 = -97.214

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 2 L L12572-10

NGS Name: TBM 2 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1481](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	6	51 N	20 W	465543.00	925502.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
NGS

Description:

Stamping:

IN FLOODWOOD, 131.0 FEET EAST ALONG 6TH AVENUE FROM THE JUNCTION OF 6TH AVENUE AND RAILROAD STREET,
THEN 267.0 FEET NORTH OF A ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1255.962	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -95.371 12B = -95.354 09 = -95.279 03 = -95.164

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 2 L7034-1

NGS Name: TBM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BC6114](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	53 N	17 W	470631.00	922817.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

4.16 MILES SOUTH OF COTTON, 4.22 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -96.831 12B = -96.837 09 = -96.703 03 = -96.509



Mn/DOT Name: TBM 2 VWITT

NGS Name: TBM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	17	53 N	17 W	470409.30	923051.30		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

3.0 MILES NORTHWEST OF CANYON, 2.0 MILES NORTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, THEN 2.0 MILES WEST ON COUNTY ROAD 133, 20.7 FEET NORTH OF COUNTY ROAD 133, 2.7 FEET SOUTH OF THE SOUTH LEG OF AN "ADOPT A HIGHWAY" SIGN.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.558 12B = -96.565 09 = -96.420 03 = -96.237



Mn/DOT Name: TBM 20 L L12572-3

NGS Name: TBM 20 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AX3993](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	4	53 N	21 W	470610.00	930039.00			1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
IRON ROD				UNMONUMENTED				NGS							

Description:

Stamping:

13.26 MILES NORTH OF FLOODWOOD, 12.6 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, THEN 1.4 MILES WEST ON WAWINA ROAD, THEN 1.3 MILES NORTH ON CEDAR VALLEY ROAD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -96.726 12B = -96.719 09 = -96.673 03 = -96.502



Mn/DOT Name: TBM 3 L L12572-10

NGS Name: TBM 3 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1482](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	6	51 N	20 W	465541.00	925452.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type
IRON ROD

Disk Type
UNMONUMENTED

Mon. Agency
NGS

Description:

Stamping:

IN FLOODWOOD, 0.7 MILE NORTH ALONG ELM STREET FROM THE JUNCTION OF ELM STREET AND COUNTY ROAD 30 IN FLOODWOOD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1245.808	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

Geoid Separations(ft): GEOID18 = -95.367 12B = -95.348 09 = -95.272 03 = -95.157

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 3 L7034-1

NGS Name: TBM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1039](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	52 N	17 W	465733.00	922721.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

6.23 MILES NORTHWEST OF TWIG, 6.2 MILE NORTHWEST OF TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 885 (INDUSTRIAL ROAD) IN TWIG, 0.2 MILE NORTHEAST OF A GRAVEL ROAD, 80.0 FEET WEST OF A GRAVEL ROAD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Project Info		
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1308.646	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

Geoid Separations(ft): GEOID18 = -95.374 12B = -95.367 09 = -95.243 03 = -95.046

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 3 VWITT

NGS Name: TBM 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	18	53 N	17 W	470410.20	923204.60		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

3.5 MILES SOUTHEAST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, THEN 3.0 MILES EAST ALONG COUNTY ROAD 133, 24.4 FEET NORTH OF COUNTY ROAD 133.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.601 12B = -96.601 09 = -96.463 03 = -96.283



Mn/DOT Name: TBM 31 L L12572-3

NGS Name: TBM 31 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1471](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	8	55 N	21 W	471559.00	930128.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

23.39 MILES NORTHWEST OF FLOODWOOD, 25.35 MILES NORTHWEST ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND COUNTY ROAD 8 IN FLOODWOOD.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1336.694	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -97.257 12B = -97.280 09 = -97.168 03 = -97.093

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 32 L L12572-3

NGS Name: TBM 32 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AX3992](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	32	55 N	21 W	471156.00	930134.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

16.31 MILES SOUTHWEST OF HIBBING, 14.9 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND WEST 41ST STREET, THEN 783.0 FEET WEST OF TRUNK HIGHWAY 73.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -97.077 12B = -97.083 09 = -97.011 03 = -96.880



Mn/DOT Name: TBM 33 A L23563

NGS Name: TBM 33 A

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9124](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	11	50 N	17 W	465013.00	922709.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

7.99 MILES NORTH OF CLOQUET, 7.49 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 45 IN CLOQUET.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.226 12B = -94.212 09 = -94.124 03 = -93.930



Mn/DOT Name: TBM 33 B L23563

NGS Name: TBM 33 B

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9125](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	14	50 N	17 W	464901.00	922701.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

6.62 MILES NORTH OF CLOQUET, 6.85 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 45 IN CLOQUET.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.048 12B = -94.029 09 = -93.947 03 = -93.753



Mn/DOT Name: TBM 33 C L23563

NGS Name: TBM 33 C

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9126](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
NE	26	50 N	17 W	464731.00	922659.00			1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION	IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

4.88 MILES NORTH OF CLOQUET, 5.1 MILES NORTH ALONG TRUNK HIGHWAY 33/SUNNYSIDE DRIVE FROM THE JUNCTION OF TRUNK HIGHWAY 33/SUNNYSIDE DRIVE AND CLOQUET AVENUE, THEN 141.0 FEET WEST OF TRUNK HIGHWAY 33/SUNNYSIDE DRIVE.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -93.819 12B = -93.802 09 = -93.717 03 = -93.527



Mn/DOT Name: TBM 33 D L23563

NGS Name: TBM 33 D

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9127](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	50 N	17 W	464629.00	922658.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

3.73 MILES NORTH OF CLOQUET, 3.93 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK
HIGHWAY 33 AND TRUNK HIGHWAY 45 IN CLOQUET.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -93.655 12B = -93.638 09 = -93.553 03 = -93.366



Mn/DOT Name: TBM 35 L3601

NGS Name: TBM 35

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BI8598](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	51 N	18 W	465247.00	923611.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

0.83 MILE NORTH OF BROOKSTON, 0.9 MILE NORTH ALONG 2ND AVENUE/ALBORN-BROOKSTON ROAD FROM THE JUNCTION OF 2ND AVENUE AND ST. LOUIS STREET, THEN 59.0 FEET WEST OF THE ROAD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.882 12B = -94.878 09 = -94.780 03 = -94.616



Mn/DOT Name: TBM 36 L3601

NGS Name: TBM 36

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BI8599](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	11	51 N	18 W	465442.00	923446.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

1.38 MILES SOUTHWEST OF CULVER, 1.0 MILE WEST ALONG COUNTY HIGHWAY 8 FROM THE JUNCTION OF COUNTY HIGHWAY 8 AND COUNTY ROAD 7 (THE JUNCTION IS EAST OF CULVER), THEN 1.0 MILE SOUTH ALONG COUNTY ROAD 31, THEN 0.11 MILE WEST ALONG EKLUND ROAD.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.154 12B = -95.154 09 = -95.042 03 = -94.872



Mn/DOT Name: TBM 39 L L12572-3

NGS Name: TBM 39 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1472](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	7	54 N	21 W	471025.00	930240.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

4.36 MILES NORTHEAST OF GOODLAND, 3.43 MILES EAST ALONG COUNTY ROAD 20 FROM THE JUNCTION OF COUNTY ROAD 20 AND TRUNK HIGHWAY 65 (THE JUNCTION IS NORTH OF GOODLAND), THEN 0.62 MILE NORTHEAST ALONG COUNTY ROAD 18, THEN 0.52 MILE EAST ALONG COUNTY ROAD 184, THEN 0.06 MILE NORTHWEST ALONG COUNTY ROAD 443.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1319.679	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.958 12B = -96.958 09 = -96.896 03 = -96.758

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 4 VWITT

NGS Name: TBM 4

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	13	53 N	18 W	470411.50	923323.60		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

2.7 MILES SOUTHEAST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, THEN 2.0 MILES EAST ALONG COUNTY ROAD 133, 22.9 FEET NORTH OF COUNTY ROAD 133, 3.7 FEET SOUTHEAST OF A "TOWNSHIP OF MEADOWLANDS" SIGN POST.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.640 12B = -96.637 09 = -96.506 03 = -96.329



Mn/DOT Name: TBM 5 L3629

NGS Name: TBM 5

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BJ8805](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	35	51 N	17 W	465145.00	922715.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

0.5 MILE NORTHWEST OF SAGINAW, 0.53 MILE NORTHWEST ALONG COUNTY ROAD 46 FROM THE JUNCTION OF COUNTY ROAD 46 AND VIBERT ROAD IN SAGINAW,

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.458 12B = -94.445 09 = -94.344 03 = -94.157



Mn/DOT Name: TBM 5 VWITT

NGS Name: TBM 5

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	14	53 N	18 W	470412.70	923437.90		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

2.0 MILES SOUTHEAST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, THEN 1.0 MILE EAST ALONG COUNTY ROAD 133, 28.0 FEET NORTH OF COUNTY ROAD 133, 14.4 FEET EAST OF AN ENTRANCE.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.673 12B = -96.670 09 = -96.545 03 = -96.365



Mn/DOT Name: TBM 6 L3629

NGS Name: TBM 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [BJ8806](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	18	51 N	17 W	465425.00	923221.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1934	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

0.82 MILE NORTHWEST OF BURNETT, 0.81 MILE NORTHWEST ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 694 IN BURNETT.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.056 12B = -95.059 09 = -94.941 03 = -94.760



Mn/DOT Name: TBM 6 VWITT

NGS Name: TBM 6

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	14	53 N	18 W	470411.40	923554.30		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
OBJECT DRIVEN INTO THE GROUND	METAL ROD	MNDT

Description: (2007)

Stamping:

1.8 MILES SOUTH OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, 84.0 FEET EAST OF COUNTY ROAD 7, 28.6 FEET NORTH OF COUNTY ROAD 133, BETWEEN THE HEADWALL OF THE BOX CULVERTS.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.699 12B = -96.693 09 = -96.575 03 = -96.394



Mn/DOT Name: TBM 7 L L12572-6

NGS Name: TBM 7 L

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [ZZ1478](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	19	53 N	19 W	470409.00	924736.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	NGS

Description:

Stamping:

2.88 MILES WEST OF MEADOWLAND, 2.9 MILES WEST ALONG COUNTY HIGHWAY 133 FROM THE JUNCTION OF COUNTY HIGHWAY 133 AND CENTRAL AVENUE

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1271.123	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -96.745 12B = -96.729 09 = -96.663 03 = -96.483

* No Horizontal Positions in the Database *



Mn/DOT Name: TBM 7 VWITT

NGS Name: TBM 7

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	15	53 N	18 W	470409.60	923708.60		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
OBJECT DRIVEN INTO THE GROUND	METAL ROD	MNDT

Description: (2007)

Stamping:

2.0 MILES SOUTHWEST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, THEN 1.0 MILE WEST ALONG COUNTY ROAD 133, 44.5 FEET NORTH OF COUNTY ROAD 133, 10.5 FEET EAST OF AN ENTRANCE.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.716 12B = -96.706 09 = -96.598 03 = -96.414



Mn/DOT Name: TBM 8 VWITT

NGS Name: TBM 8

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	17	53 N	18 W	470416.70	923826.30		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

Monument Type

OBJECT DRIVEN INTO THE GROUND

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2007)

Stamping:

2.6 MILES SOUTHWEST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 FROM PAYNE, THEN 2.0 MILES WEST ALONG COUNTY ROAD 133, 34.4 FEET NORTH OF COUNTY ROAD 133, 11.7 FEET EAST OF AN ENTRANCE AND A TRAIL.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.755 12B = -96.745 09 = -96.644 03 = -96.456



Mn/DOT Name: TBM 9 VWITT

NGS Name: TBM 9

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	17	53 N	18 W	470418.60	923940.50		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2007	2007	GOOD	Horz=NO Vert=NO	NO		RECESSED 2 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
OBJECT DRIVEN INTO THE GROUND	METAL ROD	MNDT

Description: (2007)

Stamping:

3.4 MILES SOUTHWEST OF PAYNE, 1.8 MILES SOUTH ALONG COUNTY ROAD 7 IN PAYNE, THEN 3.0 MILES WEST ALONG COUNTY ROAD 133, 64.4 FEET NORTH OF COUNTY ROAD 133, 15.5 FEET EAST OF COUNTY ROAD 211, 1.4 FEET SOUTHWEST OF A "COUNTY ROAD 211" SIGN POST.

Station Notes

THE MARK IS AN IRON PIN.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.775 12B = -96.765 09 = -96.666 03 = -96.483



Mn/DOT Name: TBM K 1 L23566

NGS Name: TBM K 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9096](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	29	51 N	18 W	465222.00	923846.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

2.03 MILES NORTHWEST OF BROOKSTON, 0.07 MILE NORTHWEST ALONG MACCAMUS ROAD FROM THE JUNCTION OF
MCCAMUS ROAD AND COUNTY ROAD 31 IN BROOKSTON, THEN 0.34 MILE NORTHWEST ALONG ST. LOUIS STREET, THEN
1.60 MILES NORTHWEST ALONG COUNTY ROAD 856.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.832 12B = -94.826 09 = -94.734 03 = -94.593



Mn/DOT Name: TBM K 2 L23566

NGS Name: TBM K 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9095](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	28	51 N	18 W	465218.00	923758.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

1.39 MILES NORTHWEST OF BROOKSTON, 0.07 MILE NORTHWEST ALONG MACCAMUS ROAD FROM THE JUNCTION OF
MCCAMUS ROAD AND COUNTY ROAD 31 IN BROOKSTON, THEN 0.34 MILE NORTHWEST ALONG ST. LOUIS STREET, THEN
0.96 MILE NORTHWEST ALONG COUNTY ROAD 856.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.816 12B = -94.813 09 = -94.721 03 = -94.570



Mn/DOT Name: TBM K 3 L23566

NGS Name: TBM K 3

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AL9094](#) [Get Map](#)
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	28	51 N	18 W	465214.00	923712.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1974	1974	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
IRON ROD	UNMONUMENTED	MNDT

Description:

Stamping:

0.78 MILE NORTHWEST OF BROOKSTON, 0.07 MILE NORTHWEST ALONG MACCAMUS ROAD FROM THE JUNCTION OF
MCCAMUS ROAD AND COUNTY ROAD 31 IN BROOKSTON, THEN 0.34 MILE NORTHWEST ALONG ST. LOUIS STREET, THEN
0.36 MILE NORTHWEST ALONG COUNTY ROAD 856.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -94.803 12B = -94.800 09 = -94.708 03 = -94.550



Mn/DOT Name: TELLOR

NGS Name: TELLOR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9907](#) [Get Map](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	31	51 N	19 W	465109.30	924733.41	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 22 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** TELLOR 2017

7.7 MILES SOUTHEAST OF FLOODWOOD, 7.85 MILES SOUTHEAST AND EAST ALONG TRUNK HIGHWAY 2 FROM THE EAST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 228.95, 43.2 FEET NORTH OF TRUNK HIGHWAY 2, 1.5 FEET SOUTH OF A WITNESS POST.

Station Pair: MECKOLA - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1324.820	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1324.682	.262		1230.017	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.580 03 = -94.465

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 51 09.29674	92 47 33.40579	414269.097	174077.462	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
2701582.354	456841.148	1692286.802	17023598.557	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TELLOR-DQ9907-3N-07AUG2017.jpg	N	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TELLOR-DQ9907-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TELLOR-DQ9907-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TOIVOLA

NGS Name: TOIVOLA

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2199](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/1019
USGS Quad: TOIVOLA

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	12	54 N	20 W	471003.34	924904.40		1

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 3 IN.	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952) **Stamping:** TOIVOLA 1952

IN TOIVOLA, JUST WEST OF A LOOKOUT TOWER, 71.0 FEET WEST OF BUILDING NUMBER 527, 16.0 FEET EAST OF A FENCE LINE AND A WITNESS POST, 116.01 FEET WEST-NORTHWEST OF TOIVOLA RM 1, 83.25 FEET NORTHWEST OF TOIVOLA RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1286.087	.131			1188.787	.066	1996	HORIZONTAL ADJUSTMENT	1999	17648

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1286.087							RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -97.467 12B = -97.467 09 = -97.401 03 = -97.208

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 10 03.34298	92 49 04.40037	408483.548	289007.574	.033	1	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 10 03.34201	92 49 04.40402	408483.295	289007.477	.033	1	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 10 03.56300	92 49 03.70300			.100	1	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2694838.328	571712.847	1685697.874	17138432.665	.033	1	ADJUSTMENT	1999	17648		

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2694838.076	571712.748	1685697.622	17138432.566	.033	1	ADJUSTMENT	1986	17289		

NAD27		MN State Plane - North Zone					Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2070221.935	243650.898			.100	1	CLASSICAL SURVEY	1954	10724	



Mn/DOT Name: TOIVOLAAZ MK

NGS Name: TOIVOLAAZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2912](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	12	54 N	20 W	471002.00	924916.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	AZIMUTH MARK DISK	NGS

Description: (2019) Stamping: TOIVOLA 1952

0.15 MILE WEST OF STATION TOIVOLA, 36.0 FEET NORTHEAST OF THE ROAD INTERSECTION, 3.0 FEET NORTH OF A WITNESS POST, 2.0 FEET NORTHEAST OF A FENCE CORNER.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.460 12B = -97.460 09 = -97.395 03 = -97.201



Mn/DOT Name: TOIVOLA LOOKOUT TOWER

NGS Name: TOIVOLA LOOKOUT TOWER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ2198](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/1035
USGS Quad: TOIVOLA

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	12	54 N	20 W	471003.43	924902.50		4

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1952	GOOD	Horz=NO Vert=NO	NO			SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
SEE DESCRIPTIVE TEXT	LOOKOUT TOWER	NGS

Description: (1952) **Stamping:**
ON THE TOIVOLA LOOKOUT TOWER.

* No Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.467 12B = -97.467 09 = -97.401 03 = -97.208

Lat/Lon and County Coordinates (Feet)

Geodetic Position				St Louis County - South Zone			Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 10 03.43180	92 49 02.49684	408615.123	289015.956	.328	4	ADJUSTMENT	1999	17648	
Geodetic Position				St Louis County - South Zone			Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 10 03.43048	92 49 02.50107	408614.830	289015.824	.328	4	ADJUSTMENT	1986	17289	
Geodetic Position							Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
47 10 03.65300	92 49 01.79900			.100	4	CLASSICAL SURVEY	1954	10724	

State Plane and UTM Coordinates (Feet)

MN State Plane - North Zone				UTM - Zone 15			Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2694969.816	571722.326	1685829.327	17138441.967	.328	4	ADJUSTMENT	1999	17648	
MN State Plane - North Zone				UTM - Zone 15			Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2694969.524	571722.192	1685829.035	17138441.833	.328	4	ADJUSTMENT	1986	17289	
MN State Plane - North Zone							Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2070353.459	243660.497			.100	4	CLASSICAL SURVEY	1954	10724	



Mn/DOT Name: TOIVOLA RM 1

NGS Name: TOIVOLA RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2913](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	12	54 N	20 W	471003.08	924902.77		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	REFERENCE MARK DISK	NGS

Description: Stamping: TOIVOLA NO 1 1952

1.5 FEET SOUTH OF A TOOL BUILDING, 19.0 FEET SOUTHEAST OF BUILDING NUMBER 211, AND 21.0 FEET EAST OF A DRIVEWAY.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.467 12B = -97.467 09 = -97.401 03 = -97.208



Mn/DOT Name: TOIVOLA RM 2

NGS Name: TOIVOLA RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ2914](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>	<u>Mon. Agency</u>
SE	12	54 N	20 W	471002.68	924903.70			1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION	NGS
Monument Type CONCRETE MONUMENT (CAST-IN-PLACE)																
Disk Type REFERENCE MARK DISK																

Description: **Stamping:** TOIVOLA NO 2 1952
35.0 FEET SOUTH OF BUILDING NUMBER 271, AND 12.0 FEET EAST OF A DRIVEWAY.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.467 12B = -97.467 09 = -97.401 03 = -97.208



Mn/DOT Name: TONIK MNDT

NGS Name: TONIK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AC5027](#)

[Get Map](#)

NGS Quad / Sta Num : 46092442/

USGS Quad: GOWAN

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
SE	32	51 N	19 W	465110.47	924624.72	2	B

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1995	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	MARKER IS STEEL ROD

Monument Type

STEEL ROD (NO SLEEVE) (DEPTH 16 FT)

Disk Type

METAL ROD

Mon. Agency

MNDT

Description: (2019)

Stamping: TONIK 1995

8.5 MILES SOUTHEAST OF FLOODWOOD, 8.75 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE SOUTH JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 229.8, 86.0 FEET NORTH OF TRUNK HIGHWAY 2, 147.3 FEET WEST-SOUTHWEST OF A POWER POLE, 14.9 FEET NORTH-NORTHEAST OF THE WEST END OF A 21.0 INCH DIAMETER METAL CULVERT, 10.3 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1325.089	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1325.083	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1325.083	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1325.083			1230.398	.007	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119
1325.083	.131		1230.582	.066	1996	GPS - STATIC	2017	HMNCORS07
1325.083			1230.398	.007	2011	GPS - STATIC	2017	HMNPH
1325.237	.262		1230.568	.197	2011	GPS - RTRN	2017	RTRN2017
1324.988	.262		1230.316	.197	2011	GPS - RTRN	2015	RTRN2015
			1230.398	.006	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1230.490	.007	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1325.030	.098		1230.582	.049	1996	GPS - STATIC	2004	GPS1954
1325.063	.131		1230.644	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1325.096	.098		1230.582	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1325.063	.131		1230.644	.066	1996	GPS - STATIC	2003	HGRAND
1325.096	.131		1230.582	.066	1996	GPS - STATIC	2003	HSTLO
1325.063	.131		1230.582	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1325.063	.131		1230.582	.066	1996	GPS - STATIC	2002	HFLOO
1325.129	.131		1230.644	.066	1996	GPS - STATIC	1999	HBROO
1325.096	.098		1230.582	.049	1996	GPS - STATIC	1997	GPS805-B
1325.096	.131		1230.582	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -94.678 12B = -94.668 09 = -94.583 03 = -94.462

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.46763	92 46 24.72442	419043.426	174175.811	.007		ADJUSTMENT	2018	GPS3119
46 51 10.46763	92 46 24.72442	419043.426	174175.811	.007	C	GPS - STATIC	2017	HMNPH
46 51 10.46772	92 46 24.72530	419043.365	174175.821	.131	3	GPS - RTRN	2017	RTRN2017
46 51 10.46716	92 46 24.72472	419043.405	174175.764	.131	3	GPS - RTRN	2015	RTRN2015
46 51 10.46763	92 46 24.72442	419043.426	174175.811	.003		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.46775	92 46 24.72528	419043.367	174175.824	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	2017	HMNCORS07
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.016	B	GPS - STATIC	2004	GPS1954
46 51 10.46729	92 46 24.72476	419043.402	174175.777	.033	C	ADJUSTMENT	2004	GPS1957
46 51 10.46729	92 46 24.72476	419043.402	174175.777	.016	B	ADJUSTMENT	2003	GPS1931
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	2003	HGRAND
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	2003	HSTLO
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	ADJUSTMENT	2003	GPS1769
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	2002	HFLOO
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	1999	HBROO
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.016	B	GPS - STATIC	1997	GPS805-B
46 51 10.46729	92 46 24.72475	419043.403	174175.777	.033	C	GPS - STATIC	1997	GPS805-C

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2706355.639	456979.351	1697058.144	17023730.316	.007		ADJUSTMENT	2018	GPS3119
2706355.639	456979.351	1697058.144	17023730.316	.007	C	GPS - STATIC	2017	HMNPH
2706355.578	456979.360	1697058.082	17023730.325	.131	3	GPS - RTRN	2017	RTRN2017
2706355.618	456979.303	1697058.123	17023730.268	.131	3	GPS - RTRN	2015	RTRN2015
2706355.639	456979.351	1697058.144	17023730.316	.003		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2706355.579	456979.363	1697058.084	17023730.327	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2706355.616	456979.316	1697058.121	17023730.281	.033	C	GPS - STATIC	2017	HMNCORS07
2706355.616	456979.316	1697058.121	17023730.281	.016	B	GPS - STATIC	2004	GPS1954
2706355.615	456979.316	1697058.120	17023730.281	.033	C	ADJUSTMENT	2004	GPS1957
2706355.615	456979.316	1697058.120	17023730.281	.016	B	ADJUSTMENT	2003	GPS1931
2706355.616	456979.317	1697058.121	17023730.281	.033	C	GPS - STATIC	2003	HGRAND
2706355.616	456979.316	1697058.121	17023730.281	.033	C	GPS - STATIC	2003	HSTLO
2706355.616	456979.316	1697058.121	17023730.281	.033	C	ADJUSTMENT	2003	GPS1769
2706355.616	456979.316	1697058.121	17023730.281	.033	C	GPS - STATIC	2002	HFLOO
2706355.616	456979.316	1697058.121	17023730.281	.033	C	GPS - STATIC	1999	HBROO
2706355.616	456979.316	1697058.121	17023730.281	.016	B	GPS - STATIC	1997	GPS805-B
2706355.616	456979.316	1697058.121	17023730.281	.033	C	GPS - STATIC	1997	GPS805-C

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TONIK-AC5027-3N-25JUL2017.jpg	N	Jul 25, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TONIK-AC5027-2-25JUL2017.jpg		Jul 25, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TONIK-AC5027-1-25JUL2017.jpg		Jul 25, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TT 10 RMC

NGS Name: TT 10 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	51 N	21 W	465250.00	925828.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 10 RMC 1958

3.0 MILES SOUTH AND 3.0 MILES WEST OF FLOODWOOD, 60.0 FEET NORTH AND 16.0 FEET WEST OF COUNTY ROAD 831 AT A DRIVE EAST, 2.0 FEET SOUTHEAST OF A FENCE CORNER.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1282.583	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT	

Geoid Separations(ft): GEOID18 = -94.898 12B = -94.888 09 = -94.796 03 = -94.698

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 11 RMC

NGS Name: TT 11 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	34	51 N	21 W	465155.00	925944.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 11 RMC 1958

4.0 MILES SOUTH AND 4.0 MILES WEST OF FLOODWOOD, 0.5 MILE WEST OF THE ANDREW HEISKARIS FARMHOUSE, AT A SOUTHWEST CORNER OF A CLEARED FIELD, 6.0 FEET SOUTH AND 2.0 FEET EAST OF A FENCE CORNER, 27.0 FEET EAST OF A SPOIL BANK.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1271.825	.033	3				VERTICAL CONTROL SURVEY		1968	USGS-VERT

Geoid Separations(ft): GEOID18 = -94.741 12B = -94.737 09 = -94.639 03 = -94.540

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 11 T

NGS Name: TT 11 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	27	50 N	18 W	464653.00	923549.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1952) Stamping: TT 11 T 1952

4.0 MILES NORTH AND 6.0 MILES WEST OF CLOQUET, 85.0 FEET NORTH AND 85.0 FEET WEST OF THE CROSSROADS
(COUNTY ROAD 31 AND COUNTY ROAD 851), 2.0 FEET WEST OF A NORTH-SOUTH FENCE, 113.0 FEET SOUTHEAST OF A
CORNER OF A SCHOOL BUILDING, ON LINE WITH THE SOUTH FACE OF A BUILDING.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1320.601	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -93.881 12B = -93.881 09 = -93.806 03 = -93.632

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 12 RMC

NGS Name: TT 12 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	21	50 N	21 W	464837.00	925949.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 12 RMC 1958

8.0 MILES SOUTH AND 4.0 MILES WEST OF FLOODWOOD, 0.5 MILE WEST OF THE T G LE BRUN FARMHOUSE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1279.561	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.206 12B = -94.212 09 = -94.104 03 = -94.009

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 12 T

NGS Name: TT 12 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	50 N	18 W	464834.00	923549.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1952) Stamping: TT 12 T 1952

6.0 MILES NORTH AND 6.0 MILES WEST OF CLOQUET, 140.0 FEET SOUTH AND 29.0 FEET WEST OF COUNTY ROAD 31 AT A TEE-ROAD WEST, 300.0 FEET SOUTHWEST OF A HOUSE, 2.0 FEET WEST OF A RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1321.621	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT
1321.602	.033	3				VERTICAL CONTROL SURVEY	1957 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.180 12B = -94.176 09 = -94.091 03 = -93.920

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 13 RMC

NGS Name: TT 13 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	14	50 N	21 W	464835.00	925715.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 13 RMC 1958

8.0 MILES SOUTH AND 2.0 MILES WEST OF FLOODWOOD, 32.0 FEET NORTH OF A ROAD, ON THE TOP OF A SMALL KNOLL,
4.0 FEET WEST OF A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1265.404	.033	3				VERTICAL CONTROL SURVEY	1968	USGS-VERT

Geoid Separations(ft): GEOID18 = -94.226 12B = -94.226 09 = -94.124 03 = -94.025

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 13 T

NGS Name: TT 13 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092412/
USGS Quad: BROOKSTON

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	50 N	18 W	465010.00	923549.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1960	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	USGS

Description: (2008)

Stamping: TT 13 T 1952

8.0 MILES NORTH AND 6.0 MILES WEST OF CLOQUET. 800.0 FEET SOUTH AND 29.0 FEET EAST OF THE CORNER OF SECTIONS 2,3,10 AND 11. 207.0 FEET SOUTHWEST OF A STONE ROOT CELLAR. 168.0 FEET NORTHWEST OF THE OLD HOUSE FOUNDATION.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1318.252	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.452 12B = -94.452 09 = -94.353 03 = -94.193

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 14 RMC

NGS Name: TT 14 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	26	50 N	21 W	464653.00	925801.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 14 RMC 1958

10.0 MILES SOUTH AND 2.0 MILES WEST OF FLOODWOOD, 32.0 FEET NORTH AND 36.0 FEET WEST OF COUNTY ROAD 51 AT A TEE-ROAD NORTH, 4.0 FEET SOUTHWEST OF A POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1308.761	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -93.914 12B = -93.917 09 = -93.819 03 = -93.717

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 14 T

NGS Name: TT 14 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	51 N	18 W	465351.00	923603.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (2019)

Stamping: TT 14 T 1952

2.2 MILES NORTH OF BROOKSTON, 33.0 FEET SOUTH AND 437.0 FEET EAST OF THE JUNCTION OF COUNTY ROAD 31 (SOUTH AND EAST) AND COUNTY ROAD 857 (WEST), 42.0 FEET WEST OF A GATE TO A CEMETERY, 400.0 FEET NORTHEAST OF THE CULVER TOWN HALL, 2.0 FEET NORTH OF A SOUTH RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1309.591	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.039 12B = -95.039 09 = -94.934 03 = -94.773

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 15 T USGS

NGS Name: TT 15 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1653](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/1010
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	51 N	18 W	465446.68	923431.68		2

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1992	GOOD	Horz=? Vert=YES	NO		PROJECTS 12 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	USGS

Description: (2008)

Stamping: 1318 TT 15 T 1952

4.0 MILES SOUTH OF ALBORN, 0.95 MILE WEST OF COUNTY ROAD 7, 0.95 MILE SOUTH OF COUNTY ROAD 8, 38.0 FEET EAST OF COUNTY ROAD 31, 34.0 FEET SOUTH-SOUTHEAST OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1318.478	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1318.993	.197		1224.020	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.164 12B = -95.164 09 = -95.049 03 = -94.878

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 46.68121	92 34 31.68026	468640.016	195940.327	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 46.67534	92 34 31.68133	468639.941	195939.732	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 54 46.88800	92 34 30.99500			.100	2	CLASSICAL SURVEY	1956	11100

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2755767.384	479157.698	1746478.591	17045832.019	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2755767.314	479157.103	1746478.520	17045831.424	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2131152.184	151094.940			.100	2	CLASSICAL SURVEY	1956	11100



Mn/DOT Name: TT 16 RMC

NGS Name: TT 16 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092334/
USGS Quad: UPSTEAD LAKE

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SE	18	55 N	20 W	471447.00	925535.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ROCK (0 TO 1 METERS)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 16 RMC 1958

5.3 MILES NORTH AND 5.4 MILES WEST OF TOIVOLA, 61 RAILS SOUTH OF RAILROAD MILEPOST 4, 14 RAILS SOUTH OF A HANDCAR SIDING WEST, 35.0 FEET WEST OF THE WEST RAIL OF A RAILROAD, IN THE TOP OF A 4.0 FEET BY 2.0 FEET WHITE GRANITE BOULDER.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1302.278	.033	3				VERTICAL CONTROL SURVEY		1958	USGS-VERT

Geoid Separations(ft): GEOID18 = -97.480 12B = -97.483 09 = -97.408 03 = -97.293

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 16 T

NGS Name: TT 16 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	51 N	18 W	465620.00	923510.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (2008)

Stamping: TT 16 T 1952

2.5 MILES SOUTH AND 0.2 MILE WEST OF ALBORN, 550.0 FEET SOUTH AND 30.0 FEET EAST OF COUNTY ROAD 570 AT A TEE-ROAD EAST (COUNTY ROAD 143).

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1341.356	.033	3				VERTICAL CONTROL SURVEY		1962	USGS-VERT

Geoid Separations(ft): GEOID18 = -95.420 12B = -95.410 09 = -95.298 03 = -95.134

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 17 RMC

NGS Name: TT 17 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092334/
USGS Quad: UPSTEAD LAKE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	31	55 N	20 W	471232.00	925530.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 17 RMC 1958

3.0 MILES NORTH AND 5.3 MILES WEST OF TOIVOLA, 224.0 FEET SOUTH OF RAILROAD MILEPOST 1, AND 34.0 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 4.0 FEET EAST OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1302.422	.033	3				VERTICAL CONTROL SURVEY	1958 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.388 12B = -97.392 09 = -97.323 03 = -97.175

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 17 T

NGS Name: TT 17 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	22	55 N	19 W	471334.00	924334.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (2019)

Stamping: TT 17 T 1952

11.0 MILES NORTH AND 0.5 MILE EAST OF MEADOWLANDS, 240.0 FEET NORTH AND 42.0 FEET WEST OF COUNTY ROAD 83
AT A TEE-ROAD WEST, 2.0 FEET WEST OF A WEST RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1296.126	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.818 12B = -97.811 09 = -97.746 03 = -97.588

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 18 RMC

NGS Name: TT 18 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092334/
USGS Quad: UPSTEAD LAKE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	5	54 N	20 W	471108.00	925418.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 18 RMC 1958

1.5 MILES NORTH AND 4.5 MILES WEST OF TOIVOLA, 29 RAILS NORTH OF RAILROAD MILEPOST 22, 52.0 FEET SOUTH AND 42.0 FEET EAST OF A RAILROAD AT A DRAIN CROSSING, 3.0 FEET WEST OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1290.700	.033	3				VERTICAL CONTROL SURVEY	1958 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.372 12B = -97.372 09 = -97.313 03 = -97.132

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 18 T

NGS Name: TT 18 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	27	55 N	19 W	471240.00	924448.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (2019)

Stamping: TT 18 T 1952

10.0 MILES NORTH AND 0.5 MILE WEST OF MEADOWLAND, 38.0 FEET NORTH AND 174.0 FEET EAST OF COUNTY ROAD 83
AT A TEE-ROAD NORTH, 3.0 FEET NORTH OF A NORTH RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1287.445	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.752 12B = -97.749 09 = -97.677 03 = -97.513

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 19 RMC

NGS Name: TT 19 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	53 N	21 W	470446.72	925902.48		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	2017	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	USGS

Description: Stamping: TT 19 RMC 1958

10.6 MILES NORTH OF FLOODWOOD, 12.1 MILES NORTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, 76.0 FEET NORTH OF A DRIVEWAY, 48.0 FEET EAST OF TRUNK HIGHWAY 73.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.634 12B = -96.627 09 = -96.581 03 = -96.401

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_19_RMC-3S-13JUL2017.jpg	S	Jul 13, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TT 19 T

NGS Name: TT 19 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	54 N	19 W	471145.00	924606.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1952)

Stamping: TT 19 T 1952

9.0 MILES NORTH AND 1.5 MILES WEST OF MEADOWLANDS, 191.0 FEET SOUTH AND 23.0 FEET EAST OF A NORTH-SOUTH ROAD AT A TEE LANE WEST, 400.0 FEET NORTHWEST OF A HOUSE, 400.0 FEET SOUTHEAST OF AN OLD LOG HOUSE, 215.0 FEET SOUTH OF A FENCE CORNER, 13.0 FEET WEST OF A POWER POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1290.873	.033	3				VERTICAL CONTROL SURVEY	1958 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.670 12B = -97.670 09 = -97.598 03 = -97.421

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 20 RMC

NGS Name: TT 20 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	12	52 N	20 W	470534.01	924901.34		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	USGS

Description: **Stamping:** TT 20 RMC 1958

4.1 MILES NORTHWEST MEADOWLANDS, 2.2 MILES WEST ALONG TRUNK HIGHWAY 133 FROM THE JUNCTION OF TRUNK HIGHWAY 133 AND TRUNK HIGHWAY 29 WEST OF MEADOWLANDS, THEN 2.0 MILES NORTH ON TRUNK HIGHWAY 5, THEN 1.1 MILES WEST ON COUNTY ROAD 193 (BAILEY ROAD), THEN 0.3 MILE SOUTH ON COUNTY ROAD 195 (CONDOR ROAD), 6.0 FEET SOUTH AND 15.0 FEET WEST OF A TEE-ROAD, AT A FENCE WEST, 6.0 FEET SOUTH AND 1.0 FOOT EAST OF A FENCE CORNER, GRID AZIMUTH TO CENTER BALL ON THE EAST GABLE OF A BARN 700.0 FEET DISTANT "16 30 45", GRID AZIMUTH TO THE CENTER OF THE SOUTH EAVE ON A HOUSE ABOUT 500.0 FEET DISTANT "15 09 45".

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -96.936 12B = -96.916 09 = -96.863 03 = -96.673



Mn/DOT Name: TT 20 T

NGS Name: TT 20 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	28	54 N	19 W	470818.00	924604.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (2019)

Stamping: TT 20 T 1952

5.0 MILES NORTH AND 1.5 MILES WEST OF MEADOWLANDS, 27.0 FEET SOUTH AND 285.0 FEET EAST OF A POINT OF THE INTERSECTION OF THE ROADS NORTH AND EAST, 2.0 FEET SOUTH OF A SOUTH RIGHT-OF-WAY FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1280.263	.033	3				VERTICAL CONTROL SURVEY		1958	USGS-VERT

Geoid Separations(ft): GEOID18 = -97.336 12B = -97.329 09 = -97.260 03 = -97.067

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 21 RMC

NGS Name: TT 21 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	25	54 N	20 W	470755.93	924919.37		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CULVERT - ANY SIZE, ANY TYPE

Disk Type

SURVEY DISK

Mon. Agency

USGS

Description:

Stamping: TT 21 RMC 1958

2.4 MILES SOUTH TOIVOLA, 4.2 MILES SOUTH ALONG TRUNK HIGHWAY 5 FROM THE JUNCTION OF TRUNK HIGHWAY 5 AND ARKOLA ROAD IN TOIVOLA, THEN 2.0 MILES NORTHWEST ALONG THE RAILROAD TRACKS TO THE MARK, 23 RAILS SOUTH OF MILEPOST 17, 15.0 FEET NORTHEAST OF THE NORTHEAST RAIL, ON THE SOUTHEAST CULVERT UNDER THE DULUTH MESABI AND IRON RANGE RAILROAD.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.237 12B = -97.231 09 = -97.172 03 = -96.972



Mn/DOT Name: TT 21 T

NGS Name: TT 21 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	54 N	19 W	470756.00	924336.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1952)

Stamping: TT 21 T 1952

4.5 MILES NORTH AND 0.5 MILE EAST OF MEADOWLANDS, 356.0 FEET NORTH AND 38.0 FEET WEST OF A NORTH-SOUTH ROAD AT A TEE-ROAD EAST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1285.224	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.316 12B = -97.310 09 = -97.234 03 = -97.040

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 22 RMC

NGS Name: TT 22 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	54 N	20 W	470857.05	925055.24		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ROCK (0 TO 1 METERS)	BENCH MARK DISK	USGS

Description:

Stamping: TT 22 RMC 1958

2.1 MILES SOUTHWEST TOIVOLA, 4.2 MILES SOUTH ALONG TRUNK HIGHWAY 5 FROM THE JUNCTION OF TRUNK HIGHWAY 5 AND ARKOLA ROAD IN TOIVOLA, THEN 3.8 MILES NORTHWEST ALONG THE RAILROAD TRACKS, 30.0 FEET SOUTH OF THE NORTHWEST RAIL, 60 RAILS SOUTHEAST ALONG THE RAILROAD TRACKS FROM MILEPOST 19, SET IN THE TOP OF A BOULDER.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -97.310 12B = -97.306 09 = -97.250 03 = -97.054



Mn/DOT Name: TT 22 T

NGS Name: TT 22 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	53 N	19 W	470556.00	924329.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1952)

Stamping: TT 22 T 1952

2.0 MILES NORTH AND 0.5 MILE EAST OF MEADOWLANDS, 48.0 FEET NORTH AND 179.0 FEET WEST OF COUNTY ROAD 29
AT A CROSSROAD, 200.0 FEET SOUTHEAST OF A HOUSE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1278.751	.033	3				VERTICAL CONTROL SURVEY	1967 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.040 12B = -97.034 09 = -96.952 03 = -96.758

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 23 RMC

NGS Name: TT 23 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	51 N	20 W	465353.00	925052.82		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	2017	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE POST (PREFABRICATED)	BENCH MARK DISK	USGS

Description: **Stamping:** TT 23 RMC 1958

3.3 MILES SOUTHEAST OF FLOODWOOD, 3.2 MILES EAST ALONG COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 (5TH AVENUE) AND TRUNK HIGHWAY 73 IN FLOODWOOD, THEN 1.8 MILES SOUTH ON HINGELEY ROAD, 57.0 FEET WEST OF HINGELEY ROAD, 27.0 FEET SOUTH A FENCE WEST, 1.0 FOOT EAST OF A FENCE LINE.

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.108 12B = -95.092 09 = -95.016 03 = -94.895



Mn/DOT Name: TT 23 T

NGS Name: TT 23 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	4	51 N	19 W	465534.00	924443.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1952)

Stamping: TT 23 T 1952

4.0 MILES NORTH AND 6.5 MILES WEST OF BROOKSTON, 32.0 FEET NORTH AND 585.0 FEET WEST OF COUNTY ROAD 8 AT A TEE-ROAD NORTH (COUNTY ROAD 5), IN A SMALL CLEARING, 115.0 FEET EAST OF 36.0 INCH DIAMETER STEEL CULVERT.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1317.274	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.364 12B = -95.344 09 = -95.272 03 = -95.134

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 24 T

NGS Name: TT 24 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092414/
USGS Quad: BROOKSTON NW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	21	51 N	19 W	465322.00	924439.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

ROCK (0 TO 1 METERS)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1952)

Stamping: TT 24 T 1952

2.0 MILES NORTH AND 6.5 MILES WEST OF BROOKSTON, 0.4 MILE SOUTH OF THE NORTHEAST CORNER OF SECTION 21,
167.0 FEET WEST OF A NORTH-SOUTH TRAIL ON A SMALL KNOLL.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1341.566	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.019 12B = -95.003 09 = -94.928 03 = -94.796

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 25 T

NGS Name: TT 25 T

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN0751	Get Map
SW	35	51 N	19 W	465119.59	924320.22	2	C	NGS Quad / Sta Num : 46092413/ USGS Quad: MARTIN LAKE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2021	GOOD	Horz=YES Vert=YES	YES		PROJECTS 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	USGS

Description: (2005)

Stamping: TT 25 T 1952

2.3 MILES SOUTHEAST OF PAUPORES, 0.1 MILE NORTH ON COUNTY ROAD 845 FROM THE JUNCTION OF COUNTY ROAD 845 (MAKI ROAD) AND TRUNK HIGHWAY 2, AT TRUNK HIGHWAY 2 MILEPOINT 232.25, 24.0 FEET EAST OF COUNTY ROAD 845, 92.0 FEET SOUTH OF A DRIVE WEST, 119.4 FEET SOUTH-SOUTHEAST OF A POWER POLE, 3.1 FEET WEST OF A NORTH-SOUTH FENCE LINE, 1.2 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1366.684	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1366.585	.016	2/1				VERTICAL ADJUSTMENT	2011	00000672
1366.598	.016	2/1				VERTICAL CONTROL SURVEY	2007	VBROO
1366.536	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1365.899	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1366.116	.033	3				VERTICAL CONTROL SURVEY	1962	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1366.844	.262		1272.160	.197	2011	GPS - RTRN	2021	RTRN2021
1366.848	.262		1272.173	.197	2011	GPS - RTRN	2017	RTRN2017
			1271.835	.012	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1271.923	.012	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1366.533	.131		1272.041	.066	1996	HORIZONTAL ADJUSTMENT	2004	GPS1957
1366.533	.131		1272.041	.066	1996	GPS - STATIC	2003	HGRAND

Geoid Separations(ft): GEOID18 = -94.685 12B = -94.672 09 = -94.593 03 = -94.465

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
46 51 19.58991	92 43 20.22230	431870.781	175051.326			.131	3	GPS - RTRN	2021	RTRN2021
46 51 19.58885	92 43 20.22273	431870.750	175051.218			.131	3	GPS - RTRN	2017	RTRN2017
46 51 19.58994	92 43 20.22176	431870.818	175051.329			.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
46 51 19.59007	92 43 20.22262	431870.758	175051.342			.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
46 51 19.58987	92 43 20.22237	431870.776	175051.322			.033	C	ADJUSTMENT	2004	GPS1957
46 51 19.58987	92 43 20.22237	431870.776	175051.322			.033	C	GPS - STATIC	2003	HGRAND

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2719175.074	457961.994	1709873.202	17024695.291	.131	3	GPS - RTRN	2021	RTRN2021
2719175.045	457961.887	1709873.172	17024695.184	.131	3	GPS - RTRN	2017	RTRN2017
2719175.112	457961.997	1709873.239	17024695.294	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2719175.052	457962.010	1709873.180	17024695.307	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2719175.069	457961.990	1709873.197	17024695.287	.033	C	ADJUSTMENT	2004	GPS1957
2719175.069	457961.990	1709873.197	17024695.287	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_25_T-RN0751-3E-25JUL2021.jpg	E	Jul 25, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_25_T-RN0751-2-25JUL2021.jpg		Jul 25, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_25_T-RN0751-1-25JUL2021.jpg		Jul 25, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TT 25 WM

NGS Name: TT 25 WM

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:

[Get Map](#)

NGS Quad / Sta Num : 47093221/

USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	18	55 N	21 W	471447.91	930355.92		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1951	1951	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE POST (PREFABRICATED)

Disk Type

BENCH MARK DISK

Mon. Agency

USGS

Description:

Stamping: TT 25 WM 1951

2.4 MILES SOUTHWEST SILICA, 6.4 MILES NORTH ALONG COUNTY ROAD 16 FROM THE JUNCTION OF COUNTY ROAD 16 AND COUNTY ROAD 20 IN GOODLAND, THEN 1.2 MILES NORTHEAST ALONG COUNTY ROAD 565, THEN 0.9 MILE SOUTH ON COUNTY ROAD 944, 37.0 FEET EAST OF COUNTY ROAD 944, 970.0 FEET SOUTH OF A DRIVEWAY EAST TO A FARM, 8.0 FEET SOUTH AND 370.0 FEET EAST OF A ROAD AT A FENCE WEST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1366.962	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -97.077 12B = -97.103 09 = -96.991 03 = -96.916

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 26 T

NGS Name: TT 26 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0754](#) [Get Map](#)
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	12	50 N	19 W	464937.00	924205.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (2019)

Stamping: TT 26 T 1952

5.5 MILES SOUTHWEST OF BROOKSTON, 250.0 FEET NORTH AND 39.0 FEET WEST OF COUNTY ROAD 847 AT A FENCE WEST,
32.0 FEET NORTH OF A DRIVE TO A HOUSE, 150.0 FEET EAST OF THE NORTHEAST CORNER OF A LOG BARN, 15.0 FEET
NORTH OF A FENCE CORNER POST.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1386.923	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.393 12B = -94.390 09 = -94.311 03 = -94.170

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 27 T

NGS Name: TT 27 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092413/
USGS Quad: MARTIN LAKE

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	23	50 N	19 W	464752.00	924205.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (2019)

Stamping: TT 27 T 1952

5.0 MILES SOUTH AND 4.5 MILES WEST OF BROOKSTON, 187.0 FEET NORTH AND 22.0 FEET WEST OF COUNTY ROAD 847 AT A TEE-ROAD WEST, ON A RIGHT-OF-WAY FENCE LINE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1323.715	.033	3				VERTICAL CONTROL SURVEY	1962 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.098 12B = -94.101 09 = -94.016 03 = -93.878

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 3 T

NGS Name: TT 3 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0384](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	35	50 N	17 W	464646.05	922700.01	2		1952	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	USGS

Description: (2019) Stamping: TT 3T 1952 1278

4.0 MILES NORTH OF CLOQUET, 4.2 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM A TRUNK HIGHWAY 33 BRIDGE NUMBER 5272 OVER THE ST. LOUIS RIVER, 128.8 FEET WEST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 6.6, 195.0 FEET SOUTH OF THE COUNTY ROAD 56 EAST (SUNSET ROAD), 175.2 FEET SOUTH-SOUTHEAST OF THE PINE RIVER TOWN HALL, 17.8 FEET WEST OF THE SOUTHWEST CORNER OF AN 8.0 FEET BY 8.0 FEET METAL BUILDING, 0.8 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1278.383	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025	

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1278.114	.016	2					VERTICAL CONTROL SURVEY	1974	L23566	
1277.629	.033	3					VERTICAL CONTROL SURVEY	1957	USGS-VERT	

Geoid Separations(ft): GEOID18 = -93.704 12B = -93.691 09 = -93.605 03 = -93.418

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 4 RMC

NGS Name: TT 4 RMC

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	50 N	20 W	465014.00	925052.00		3

NGS ACRN: [RN0670](#)
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

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<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 6 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1958)

Stamping: TT 4 RMC 1958 1301

6.6 MILES SOUTHEAST OF FLOODWOOD, 1.9 MILES SOUTH ALONG COUNTY ROAD 86 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND COUNTY ROAD 86 (THE JUNCTION IS 4.9 MILES SOUTHEAST OF FLOODWOOD), 29.7 FEET EAST OF COUNTY ROAD 86, 274.5 FEET SOUTH OF LINDSTROM ROAD, 18.7 FEET SOUTH-SOUTHWEST OF A POWER POLE, 1.0 FOOT WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1301.395	.033	3				VERTICAL CONTROL SURVEY		1968	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1302.166	.262		1207.649	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.531 12B = -94.518 09 = -94.432 03 = -94.321

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
46 50 14.25868	92 50 53.09733	400360.840	168566.753	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Year</u>	<u>Reference</u>
2687720.686	451214.666	1678423.882	17017993.036	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_4_RMC-RN0670-3E-24JUL2017.jpg	E	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_4_RMC-RN0670-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_4_RMC-RN0670-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TT 4 T

NGS Name: TT 4 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	50 N	17 W	464830.00	922700.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1974)

Stamping: TT 4 T 1952

6.0 MILES NORTH OF CLOQUET, 206.0 FEET SOUTH AND 56.0 FEET EAST OF TRUNK HIGHWAY 33 AT A TEE-ROAD EAST, 34.0 FEET NORTH AND 56.0 FEET EAST OF A TEE-ROAD WEST, UNDER A POWER LINE, 350.0 FEET SOUTH-SOUTHWEST OF A HOUSE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1204.295	.033	3				VERTICAL CONTROL SURVEY	1957 USGS-VERT

Geoid Separations(ft): GEOID18 = -93.970 12B = -93.953 09 = -93.871 03 = -93.674

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 5 RMC

NGS Name: TT 5 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	16	50 N	20 W	464918.00	925212.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958) Stamping: 5 RMC 1958 1313

3.0 MILES SOUTH AND 1.0 MILE WEST OF THE GOWAN POST OFFICE, 156.0 FEET SOUTH AND 24.0 FEET WEST OF COUNTY ROAD 86 AT A TEE DRIVE WEST TO A FARMHOUSE, 2.0 FEET EAST OF A TELEPHONE POLE, 1.0 FOOT EAST OF A FENCE LINE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1313.108	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.370 12B = -94.360 09 = -94.271 03 = -94.160

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 5 T RESET

NGS Name: TT 5 T RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0051](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	2	50 N	17 W	465044.73	922730.98	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1975	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1978)

Stamping: TT 5 T 1952 RESET 1975

1.1 MILES SOUTHWEST OF SAGINAW, AT THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 33, 415.0 FEET NORTH OF TRUNK HIGHWAY 2, 98.0 FEET WEST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 11.3, 5.3 FEET SOUTHEAST OF A STEEL SIGN POST, 16.4 FEET SOUTHWEST OF A CABLE POST, 5.2 FEET WEST OF A WITNESS POST.

Station Notes

THE ROAD HAS BEEN WIDENED.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.457	.016	2/1					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.204	.016	2					VERTICAL CONTROL SURVEY	1980	L24513
1335.204	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.463	.262			1241.339	.197	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.317 12B = -94.304 09 = -94.212 03 = -94.022

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 44.73301	92 27 30.98230	497846.219	171401.492	.131	3	ADJUSTMENT	1999	17648

<u>NAD83(1986)</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 44.72700	92 27 30.98501	497846.031	171400.883	.131	3	ADJUSTMENT	1986	17289
46 50 44.81013	92 27 30.54692	497876.485	171409.303	.131	3	CLASSICAL SURVEY	1978	6911-18

<u>NAD27</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 50 44.93551	92 27 30.28436			.100	3	CLASSICAL SURVEY	1980	16254
46 50 44.93551	92 27 30.28436			.100	3	CLASSICAL SURVEY	1978	H1978



State Plane and UTM Coordinates (Feet)

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785178.047	454865.420	1775843.025	17021509.232	.131	3	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2785177.864	454864.810	1775842.841	17021508.622	.131	3	ADJUSTMENT	1986	17289
2785208.247	454873.485	1775873.224	17021517.251	.131	3	CLASSICAL SURVEY	1978	6911-18

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2160564.655	126802.420			.100	3	CLASSICAL SURVEY	1980	16254
2160564.658	126802.421			.100	3	CLASSICAL SURVEY	1978	H1978

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/TT_5_T_RESET-RN0051-3S-26JUL2017.jpg	S	Jul 26, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: TT 5 T USGS

NGS Name: TT 5 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0050](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/1021
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	2	50 N	17 W	465044.82	922730.54	2	2	1952	1978	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION
<u>Monument Type</u>				<u>Disk Type</u>				<u>Mon. Agency</u>							
CONCRETE MONUMENT (CAST-IN-PLACE)				SURVEY DISK				USGS							

Description: (1978)

Stamping: TT 5 T 1952 1335

9.5 MILES NORTH OF CLOQUET, 9.5 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 45 IN CLOQUET, MAKE A U-TURN, THEN 0.6 MILE SOUTH ALONG TRUNK HIGHWAY 33.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.460	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025
<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.204	.016	2					VERTICAL CONTROL SURVEY	1974	L23563
1334.981	.033	3					VERTICAL CONTROL SURVEY	1957	USGS-VERT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1335.463	.197			1241.343	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -94.317 12B = -94.304 09 = -94.212 03 = -94.022

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 44.81614	92 27 30.54421			497876.675	171409.911	.066	2	ADJUSTMENT	17648
<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 44.81013	92 27 30.54692			497876.486	171409.302	.066	2	ADJUSTMENT	17289
<u>NAD27</u>								<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								<u>Reference</u>
46 50 45.01872	92 27 29.84622					.100	2	CLASSICAL SURVEY	15924
46 50 45.01900	92 27 29.84600					.100	3	CLASSICAL SURVEY	USGS-HORZ

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2785208.431	454874.095			1775873.408	17021517.860	.066	2	ADJUSTMENT	17648
<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2785208.247	454873.485			1775873.224	17021517.250	.066	2	ADJUSTMENT	17289
<u>NAD27</u>								<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								<u>Reference</u>
2160595.046	126811.104					.100	2	CLASSICAL SURVEY	15924
2160595.061	126811.133					.100	3	CLASSICAL SURVEY	USGS-HORZ



Mn/DOT Name: TT 6 RMC

NGS Name: TT 6 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092442/
USGS Quad: GOWAN

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	27	50 N	20 W	464721.00	925216.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SEE DESCRIPTION	USGS

Description: (1958)

Stamping: 6 RMC 1958 1332

5.5 MILES SOUTH AND 1.0 MILE WEST OF THE GOWAN POST OFFICE, 280.0 FEET NORTH OF A CURVE IN COUNTY ROAD 86,
35.0 FEET EAST OF A ROAD, 3.0 FEET EAST OF A TELEPHONE POLE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1332.314	.033	3				VERTICAL CONTROL SURVEY		1968	USGS-VERT

Geoid Separations(ft): GEOID18 = -94.022 12B = -94.009 09 = -93.924 03 = -93.815

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 6 T

NGS Name: TT 6 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1026](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	15	51 N	17 W	465341.00	922816.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	SURVEY DISK	USGS

Description: (1952) Stamping: TT 6T 1952

12.0 MILES NORTH OF CLOQUET, 1.7 MILES NORTH OF GRAND LAKE, 42.0 FEET NORTH AND 150.0 FEET WEST OF A CROSSROADS, UNDER A POWER LINE, 150.0 FEET WEST OF TRUNK HIGHWAY 33, 200.0 FEET SOUTHEAST OF A HOUSE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1335.834	.033	3				VERTICAL CONTROL SURVEY	1957 USGS-VERT

Geoid Separations(ft): GEOID18 = -94.800 12B = -94.800 09 = -94.678 03 = -94.488

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 7 T

NGS Name: TT 7 T

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1039](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	3	51 N	17 W	465528.87	922814.24	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	2017	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 18 IN.	STEEL ROD IMBED IN MON

Monument Type
UNKNOWN

Disk Type
BENCH MARK DISK

Mon. Agency
USGS

Description: (1978)

Stamping: TT 7 T 1952

4.5 MILES NORTH OF SAGINAW, 5.7 MILES NORTH ON TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 2, 50.6 FEET WEST OF TRUNK HIGHWAY 33, AT TRUNK HIGHWAY 33 MILEPOINT 16.95, 383.0 FEET NORTH OF COUNTY ROAD 8, 49.0 FEET EAST-NORTHEAST OF A POWER POLE, 1.0 FOOT EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1306.864	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1306.605	.016	2				VERTICAL CONTROL SURVEY	1978 L24513
1306.218	.033	3				VERTICAL CONTROL SURVEY	1957 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.082 12B = -95.085 09 = -94.960 03 = -94.764

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 8 RMC

NGS Name: TT 8 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	11	51 N	21 W	465528.00	925710.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 8 RMC 1958

2.0 MILES WEST OF FLOODWOOD, AT THE JUNCTION OF COUNTY ROAD 186 AND COUNTY ROAD 832, 33.0 FEET WEST OF COUNTY ROAD 186, 268.0 FEET SOUTH OF COUNTY ROAD 832, 3.0 FEET NORTH OF A POWER POLE, 2.0 FEET EAST OF A FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1256.622	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.311 12B = -95.295 09 = -95.216 03 = -95.105

* No Horizontal Positions in the Database *



Mn/DOT Name: TT 9 RMC

NGS Name: TT 9 RMC

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN:
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	14	51 N	21 W	465348.00	925713.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1958	1958	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

CONCRETE MONUMENT (CAST-IN-PLACE)

Disk Type

SEE DESCRIPTION

Mon. Agency

USGS

Description: (1958)

Stamping: 9 RMC 1958

2.0 MILES SOUTH AND 2.0 MILES WEST OF FLOODWOOD, AT THE JUNCTION OF COUNTY ROAD 186 AND COUNTY ROAD 831, 21.0 FEET NORTH OF COUNTY ROAD 831, 147.0 FEET WEST OF COUNTY ROAD 186, 1.0 FOOT SOUTH OF A FENCE.

Leveling-Derived Orthometric Heights (Feet)

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1275.453	.033	3				VERTICAL CONTROL SURVEY	1968 USGS-VERT

Geoid Separations(ft): GEOID18 = -95.059 12B = -95.042 09 = -94.960 03 = -94.855

* No Horizontal Positions in the Database *



Mn/DOT Name: U 160

NGS Name: U 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0410](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	55 N	17 W	471519.94	923050.13	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: U 160 1935

1.0 MILES SOUTH OF FENS, THEN 4.2 MILES EAST OF A RAILROAD, 1.5 MILES WEST OF TRUNK HIGHWAY 53, 150.0 FEET EAST OF A LONG CURVE, 36.0 FEET SOUTH OF A ROAD.

Station Notes

THE ROAD IS NOW A FOUR WHEELER TRAIL. NO ACCESSIBLE ROADS 07/26/21.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1342.005	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1341.310	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1341.310	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.923 12B = -97.923 09 = -97.854 03 = -97.680

* No Horizontal Positions in the Database *



Mn/DOT Name: U 163

NGS Name: U 163

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	11	52 N	17 W	470031.00	922816.00	2	

NGS ACRN: SJ0179	Get Map
NGS Quad / Sta Num : 47092233/	
USGS Quad: CANYON	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966)

Stamping: U 163 1935

2.1 MILES SOUTH OF CANYON, 5.8 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, THEN 3.7 MILES NORTH ALONG TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1401.772	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1401.270	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -95.876 12B = -95.876 09 = -95.741 03 = -95.551

* No Horizontal Positions in the Database *



Mn/DOT Name: U 271

NGS Name: U 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0703](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	30	52 N	19 W	465806.00	924707.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** U 271 1948

9.2 MILES NORTHEAST OF FLOODWOOD, 2.0 MILES WEST ON COUNTY ROAD 165 FROM THE JUNCTION OF COUNTY ROAD 165 AND COUNTY ROAD 5, 35.0 FEET SOUTH OF COUNTY ROAD 165, 59.0 FEET WEST OF AN ABANDONED CROSSROAD, 28.0 FEET WEST OF A FENCE CORNER, 97.0 FEET WEST OF THE SOUTH END OF A METAL CULVERT, 39.0 FEET SOUTHWEST OF THE SOUTH END OF A METAL CULVERT, 1.5 FEET NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1276.024	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1275.421	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1275.421	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.784 12B = -95.771 09 = -95.692 03 = -95.544

* No Horizontal Positions in the Database *



Mn/DOT Name: U 272

NGS Name: U 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0513](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	17	53 N	19 W	470410.00	924556.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: U 272 1948

1.5 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.5 MILE EAST OF A COUNTY ROAD 133 BRIDGE OVER THE ST. LOUIS RIVER, AT THE JUNCTION OF COUNTY ROAD 133 AND A CROSSROAD, 39.0 FEET NORTH OF COUNTY ROAD 133, 34.0 FEET WEST OF A ROAD NORTH, 4.5 FEET NORTHEAST OF A POWER POLE WITH A GUY WIRE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

BELIEVE TO BE REMOVED DUE TO ROAD CONSTRUCTION.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1272.317	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1271.694	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1271.694	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.762 12B = -96.748 09 = -96.673 03 = -96.493

* No Horizontal Positions in the Database *



Mn/DOT Name: U 273

NGS Name: U 273

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	53 N	21 W	470506.14	930057.47	2	

NGS ACRN: SJ1371	Get Map
NGS Quad / Sta Num : 47093222/	
USGS Quad: WAWINA	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: U 273 1948

10.9 MILES NORTHWEST ON TRUNK HIGHWAY 73 FROM THE HIGH SCHOOL AT FLOODWOOD THEN 2.7 MILES NORTHWEST ON COUNTY ROAD 508 (OLD TRUNK HIGHWAY 73), AT THE JUNCTION OF COUNTY ROAD 508 AND COUNTY ROAD 133, 130.0 FEET NORTHEAST OF COUNTY ROAD 508, 58.0 FEET NORTH OF COUNTY ROAD 133, 1.0 FOOT SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1261.802	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963
1261.772	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1261.044	.016	2/0				UNKNOWN/APPROXIMATE		1992	UNCHECKD
1261.044	.007	1				VERTICAL CONTROL SURVEY		1960	L28 MINN
1261.044	.007	1				VERTICAL CONTROL SURVEY		1952	Q470932

Geoid Separations(ft): GEOID18 = -96.617 12B = -96.607 09 = -96.558 03 = -96.391

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_273-SJ1371-3N-13JUL2017.jpg	N	Jul 13, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_273-SJ1371-2-13JUL2017.jpg		Jul 13, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_273-SJ1371-1-13JUL2017.jpg		Jul 13, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: U 274

NGS Name: U 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0388](#) [Get Map](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	13	54 N	20 W	470949.30	924837.50	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	GOOD	Horz=NO Vert=YES	NO		FLUSH	NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - MEDIUM	BENCH MARK DISK	NGS

Description: (1948)

Stamping: U 274 1948

AT TOIVOLA, 0.25 MILE SOUTH ON COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 52 EAST, IN THE WEST WALL OF THE HIGH SCHOOL, 1.4 FEET NORTH OF THE SOUTHWEST CORNER OF A SCHOOL, 137.0 FEET EAST OF COUNTY ROAD 5.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1287.675	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1287.675	.016	2/1				VERTICAL CONTROL SURVEY	2009 VWITT
1287.701	.016	2				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1287.045	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1287.045	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.457 12B = -97.454 09 = -97.388 03 = -97.195

* No Horizontal Positions in the Database *



Mn/DOT Name: U 28

NGS Name: U 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0343](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	10	53 N	18 W	470529.75	923555.97	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2007	GOOD	Horz=YES Vert=YES	YES		PROJECTS 3 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2007)

Stamping: U 28 1934

1.5 MILES NORTH OF COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND COUNTY ROAD 133, 0.13 MILE SOUTH OF A RAILROAD MILEPOST 41, 40.5 FEET WEST OF COUNTY ROAD 7, 96.0 FEET NORTH OF THE NORTH END OF A METAL CULVERT, 44.5 FEET NORTHEAST OF A TELEPHONE PEDESTAL, 57.5 FEET EAST OF THE EAST RAIL, 65.0 FEET SOUTHEAST OF A RAILROAD WHISTLE POST, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1308.541	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1308.541	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT
1308.396	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1307.825	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1307.825	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.913 12B = -96.903 09 = -96.791 03 = -96.604

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_28-SJ0343-3W-22MAY2007.jpg	W	May 22, 2007
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_28-SJ0343-2-22MAY2007.jpg		May 22, 2007
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/U_28-SJ0343-1-22MAY2007.jpg		May 22, 2007

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: U 30

NGS Name: U 30

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	NGS ACRN: RN0642 NGS Quad / Sta Num : 46092444/ USGS Quad: FLOODWOOD	Get Map
NW	36	52 N	21 W	465650.00	925638.00	2			

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974) Stamping: U 30 1934

2.0 MILES NORTHWEST OF FLOODWOOD, 1.9 MILES NORTHWEST ALONG THE GREAT NORTHERN RAILWAY FROM THE STATION IN FLOODWOOD, 0.4 MILE NORTHWEST OF RAILROAD MILEPOST 77, 0.55 MILE SOUTHEAST OF A NORTH-SOUTH GRAVEL ROAD CROSSING, AT A FIELD ROAD CROSSING, 300.0 FEET SOUTHWEST AND ACROSS THE TRACKS FROM A TWO STORY FARM HOUSE, 27.0 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE SOUTHWEST TRACK, 12.0 FEET SOUTHEAST OF THE CENTERLINE OF A FIELD ROAD, 2.5 FEET NORTHEAST OF A RIGHT-OF-WAY FENCE, 3.0 FEET EAST OF A GATE POST, 6.0 FEET WEST OF A TELEPHONE POLE, 2.0 FEET SOUTHEAST OF A WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1260.129	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

<u>NGVD29</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1259.469	.007	1				VERTICAL CONTROL SURVEY	1934 L13 MINN

Geoid Separations(ft): GEOID18 = -95.528 12B = -95.508 09 = -95.436 03 = -95.315

* No Horizontal Positions in the Database *



Mn/DOT Name: UNGER

NGS Name: UNGER

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1865](#) [Get Map](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	11	52 N	17 W	470011.07	922816.24	2	3	2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 17 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2019) Stamping: UNGER 2017

2.5 MILES SOUTH OF CANYON, 2.55 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 737 (HARRIS ROAD) IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 27.50, 65.2 FEET WEST OF NORTHBOUND TRUNK HIGHWAY 53, 56.9 FEET EAST OF SOUTHBOUND TRUNK HIGHWAY 53, 19.5 FEET SOUTH OF A DRIVEWAY NUMBER 6795 EXTENDED, 3.0 FEET NORTH OF A WITNESS POST.

Station Pair: STYLES - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1374.203	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1374.295	.262		1278.472	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.823 12B = -95.823 09 = -95.692 03 = -95.498

Lat/Lon and County Coordinates (Feet)

<u>NAD83(2011)</u>		<u>St Louis County - South Zone</u>		<u>Project Info</u>		
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
47 00 11.07429	92 28 16.24134	494715.470	228783.431	.131	3	GPS - RTRN

State Plane and UTM Coordinates (Feet)

<u>NAD83(2011)</u>		<u>UTM - Zone 15</u>		<u>Project Info</u>		
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>
2781565.163	512217.251	1772311.544	17078842.642	.131	3	GPS - RTRN

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/UNGER-DR1865-3S-17OCT2017.jpg	S	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/UNGER-DR1865-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/UNGER-DR1865-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: V 160

NGS Name: V 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0409](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NW	17	55 N	17 W	471519.78	923208.06	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1935	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: V 160 1935

1.0 MILES SOUTH OF THE FENS RAILROAD STATION THEN 3.2 MILES EAST, 60.0 FEET EAST OF THE CROSSROADS, 42.0 FEET SOUTH OF A ROAD, 36.0 FEET EAST OF A CULVERT.

Station Notes

NO ACCESSIBLE ROADS 07/26/21.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1334.108	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.419	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1333.419	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.933 12B = -97.933 09 = -97.861 03 = -97.693

* No Horizontal Positions in the Database *



Mn/DOT Name: V 163

NGS Name: V 163

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	52 N	17 W	465833.00	922812.00	2	

NGS ACRN: RN0135	Get Map
NGS Quad / Sta Num : 46092144/	
USGS Quad: INDEPENDENCE	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1966	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1966)

Stamping: V 163 1935

15.1 MILES SOUTH OF COTTON, 15.1 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON, THEN 1.4 MILES NORTH ALONG TRUNK HIGHWAY 53.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.633	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1333.154	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -95.574 12B = -95.567 09 = -95.436 03 = -95.243

* No Horizontal Positions in the Database *



Mn/DOT Name: V 163 RESET 1966

NGS Name: V 163 RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0136](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

[Get Map](#)

1/4	Sec	Twp	Rng	Reference	Reference	Vert	Horz
				Latitude	Longitude	Order	Order
NW	23	52 N	17 W	465832.05	922814.75	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1966	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1978)

Stamping: V 163 RESET 1966

17.5 MILES NORTH OF CLOQUET, 1.5 MILES NORTHWEST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 33 (THE JUNCTION IS 16.0 MILES NORTH OF CLOQUET), AT TRUNK HIGHWAY 53 MILEPOINT 25.55, 127.0 FEET WEST-SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.493	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1335.512	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1335.512	.016	2/1				VERTICAL CONTROL SURVEY	1992	VTWIG

NGVD29

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.063	.007	1				VERTICAL CONTROL SURVEY	1966	L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

Orthometric Height			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1335.503	.262		1239.935	.197	2011	GPS - RTRN	2017	RTRN2017
1335.621	.262		1240.057	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.574 12B = -95.567 09 = -95.436 03 = -95.243

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Determination Method	Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
46 58 32.05367	92 28 14.75401	494815.904	218750.585	.131	3	GPS - RTRN	2017	RTRN2017
46 58 32.05264	92 28 14.75291	494815.981	218750.481	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Determination Method	Project Info	
X	Y	X	Y	Acc	Order		Year	Reference
2781749.911	502186.085	1772482.323	17068815.152	.131	3	GPS - RTRN	2017	RTRN2017
2781749.988	502185.981	1772482.400	17068815.048	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/V_163_RESET-RN0136-3W-02AUG2017.jpg	W	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/V_163_RESET-RN0136-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/V_163_RESET-RN0136-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: V 271

NGS Name: V 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0704](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	24	52 N	20 W	465805.00	924819.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: V 271 1948

8.2 MILES NORTHEAST OF FLOODWOOD, AT THE JUNCTION OF COUNTY ROAD 166 AND COUNTY ROAD 170, 46.0 FEET WEST OF COUNTY ROAD 170 (MC GONAGLE ROAD), 21.0 FEET NORTH OF COUNTY ROAD 166, 15.0 FEET WEST OF A TELEPHONE POLE, 14.5 FEET WEST OF A FENCE CORNER, 1.5 FEET SOUTH OF A FENCE, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1263.528	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1262.924	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1262.924	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.781 12B = -95.764 09 = -95.692 03 = -95.544

* No Horizontal Positions in the Database *



Mn/DOT Name: V 272

NGS Name: V 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0514](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	17	53 N	19 W	470409.00	924634.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE FOOTING - LARGE	BENCH MARK DISK	NGS

Description: (1976) **Stamping:** V 272 1948

2.0 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, IN THE NORTH END OF THE WEST ABUTMENT OF A COUNTY ROAD 133 BRIDGE OVER THE ST. LOUIS RIVER, 11.0 FEET NORTH OF COUNTY ROAD 133, 2.2 FEET NORTH OF A BRIDGE RAIL.

Station Notes

THE STATION MAY BE REMOVED AS THE OLD BRIDGE WAS REPLACED BY BRIDGE 69506 IN 1976.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1260.296	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1259.673	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1259.673	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.758 12B = -96.742 09 = -96.670 03 = -96.489

* No Horizontal Positions in the Database *



Mn/DOT Name: V 274

NGS Name: V 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0472](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	10	54 N	18 W	471006.36	923658.62	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: V 274 1948

9.25 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 (EAST) -COUNTY ROAD 5 (NORTH-SOUTH) AND COUNTY ROAD 317 (WEST) AT TOIVOLA, AT A RAILROAD CROSSING, 202.0 FEET EAST OF THE EAST RAIL OF THE RAILROAD TRACKS, 29.0 FEET NORTH OF COUNTY ROAD 52, 153.0 FEET WEST OF A PRIVATE ROAD SOUTH EXTENDED, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1296.972	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1296.356	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1296.356	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.575 12B = -97.579 09 = -97.474 03 = -97.287

* No Horizontal Positions in the Database *



Mn/DOT Name: V 28

NGS Name: V 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0344](#) [Get Map](#)
NGS Quad / Sta Num : 47092322/
USGS Quad: PAYNE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	34	54 N	18 W	470716.85	923558.66	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1948	GOOD	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) **Stamping:** V 28 1934

2.2 MILES SOUTH ON A RAILROAD FROM THE RAILROAD STATION AT KELSEY, 0.1 MILE SOUTH OF A RAILROAD MILEPOST 43, 399.0 FEET NORTH OF A WHISTLE SIGN, 66.5 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 51.0 FEET WEST OF COUNTY ROAD 7, 2.0 FEET SOUTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.299	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1303.705	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1303.705	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.188 12B = -97.182 09 = -97.073 03 = -96.883

* No Horizontal Positions in the Database *



Mn/DOT Name: V 30

NGS Name: V 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0636](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	27	52 N	21 W	465803.50	925836.96	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	GOOD	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: V 30 1934

3.9 MILES NORTHWEST ON A RAILROAD FROM FLOODWOOD, 46.7 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE RAILROAD TRACKS, 0.5 FOOT SOUTHWEST OF A NORTHEAST RAILROAD RIGHT-OF-WAY FENCE, 193.0 FEET NORTH OF A TELEPHONE POLE NUMBER E34-A101, 0.45 MILE NORTHWEST OF RAILROAD MILEPOST 79, 1.0 FOOT NORTHWEST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1259.148	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1258.482	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1258.482	.007	1				VERTICAL CONTROL SURVEY	1960	L13 MINN

Geoid Separations(ft): GEOID18 = -95.699 12B = -95.686 09 = -95.620 03 = -95.482

* No Horizontal Positions in the Database *



Mn/DOT Name: VANBUR MNDT

NGS Name: VANBUR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9565](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SE	7	52 N	20 W	470002.02	925455.33		C	1993	2017	NOT FOUND	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET
				<u>Monument Type</u>	<u>Disk Type</u>				<u>Mon. Agency</u>						
				UNKNOWN	SURVEY DISK				MNDT						

Description: (2001)

Stamping: VANBUR 1993

4.7 MILES NORTH OF FLOODWOOD, 5.65 MILES NORTH ON TRUNK HIGHWAY 73 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 48.80, 30.0 FEET EAST-NORTHEAST OF TRUNK HIGHWAY 73, 9.0 FEET SOUTH-SOUTHEAST OF AN ENTRANCE, 160.4 FEET NORTHWEST OF A POWER POLE, 89.7 FEET SOUTH-SOUTHWEST OF A CABLE MARKER, 4.7 FEET EAST OF A WITNESS POST.

Station Notes

COULD NOT RESET THE STATION.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order /(Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1156.969	.010	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1157.065	.011	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1253.049	.131		1157.111	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1769
1253.049	.131		1157.111	.066	1996	GPS - STATIC	2002 HFLOO

Geoid Separations(ft): GEOID18 = -96.053 12B = -96.033 09 = -95.984 03 = -95.823

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 02.02364	92 54 55.33254	383872.613	228210.378	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 02.02367	92 54 55.33338	383872.555	228210.381	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 02.02346	92 54 55.33307	383872.576	228210.360	.033	C	ADJUSTMENT	2003	GPS1769
47 00 02.02346	92 54 55.33307	383872.575	228210.361	.033	C	GPS - STATIC	2002	HFLOO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2670736.655	510717.119	1661525.435	17077492.262	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2670736.597	510717.122	1661525.377	17077492.265	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2670736.618	510717.101	1661525.398	17077492.244	.033	C	ADJUSTMENT	2003	GPS1769
2670736.618	510717.101	1661525.398	17077492.244	.033	C	GPS - STATIC	2002	HFLOO



<u>Station Photos</u>		<u>Dir</u>	<u>Date</u>
<u>Type</u>	<u>File Name</u>		
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VANBUR-DE9565-3E-12JUL2017.jpg	E	Jul 12, 2017
Monument:			
Disk:			

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VARN MNDT

NGS Name: VARN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9158](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
SW	34	34 N	21 W	470634.73	925950.84		C	2001	2017	DESTROYED	Horz=NO Vert=NO	YES		RECESSED 1 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: VARN 2001

21.0 MILES SOUTH OF HIBBING, 21.0 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 57.55, 103.5 FEET NORTH OF COUNTY ROAD 183 (VAN HORN ROAD), 67.0 FEET WEST OF TRUNK HIGHWAY 73, 14.5 MILES NORTH OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 JUNCTION IN FLOODWOOD, 6.3 FEET EAST OF A FENCE LINE, 2.7 FEET EAST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1274.801	.131		1177.950	.007	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
1274.801	.131		1178.019	.066	2007	HORIZONTAL ADJUSTMENT	2011 GPS2802
1274.702	.131		1178.019	.066	2007	GPS - STATIC	2010 HASCA
			1178.072	.066	1996	GPS - STATIC	2010 HASCA
			1178.019	.010	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1274.735	.131		1178.072	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1931
1274.735	.131		1178.072	.066	1996	GPS - STATIC	2003 HSTLO

Geoid Separations(ft): GEOID18 = -96.791 12B = -96.785 09 = -96.739 03 = -96.565

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 06 34.72918	92 59 50.83880	363667.463	268131.359	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 06 34.72931	92 59 50.83977	363667.396	268131.373	.033	C	ADJUSTMENT	2011	GPS2802
47 06 34.72931	92 59 50.83977	363667.396	268131.373	.033	C	GPS - STATIC	2010	HASCA
47 06 34.72931	92 59 50.83977	363667.396	268131.373	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 06 34.72915	92 59 50.83949	363667.415	268131.356	.033	C	GPS - STATIC	2010	HASCA
47 06 34.72915	92 59 50.83949	363667.415	268131.356	.033	C	ADJUSTMENT	2003	GPS1931
47 06 34.72915	92 59 50.83949	363667.415	268131.356	.033	C	GPS - STATIC	2003	HSTLO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2650201.513	550466.074	1641050.104	17117252.193	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2650201.446	550466.087	1641050.037	17117252.206	.033	C	ADJUSTMENT	2011	GPS2802
2650201.446	550466.087	1641050.037	17117252.206	.033	C	GPS - STATIC	2010	HASCA
2650201.446	550466.087	1641050.037	17117252.206	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2650201.465	550466.071	1641050.056	17117252.190	.033	C	GPS - STATIC	2010	HASCA
2650201.465	550466.071	1641050.056	17117252.190	.033	C	ADJUSTMENT	2003	GPS1931
2650201.465	550466.071	1641050.056	17117252.190	.033	C	GPS - STATIC	2003	HSTLO

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN-DF9158-3W-19NOV2009.jpg	W	Nov 19, 2009
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN-DF9158-2-19NOV2009.jpg		Nov 19, 2009
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN-DF9158-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VARN MNDT RESET

NGS Name: VARN RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5139](#) [Get Map](#)
NGS Quad / Sta Num : 47092333/
USGS Quad: TOIVOLA SW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	34	34 N	21 W	470634.73	925950.83	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 4 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) Stamping: VARN 2001 2017

21.0 MILES SOUTH OF HIBBING, 21.0 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 57.55, 67.0 FEET WEST OF TRUNK HIGHWAY 73, 103.5 FEET NORTH OF COUNTY ROAD 183 (VAN HORN ROAD), 6.3 FEET EAST OF A FENCE LINE, 2.7 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1274.555	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963	

Geoid Separations(ft): GEOID18 = -96.791 12B = -96.785 09 = -96.739 03 = -96.565

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN_RESET-DR5139-3W-12JUL2017.jpg	W	Jul 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN_RESET-DR5139-2-12JUL2017.jpg		Jul 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VARN_RESET-DR5139-1-12JUL2017.jpg		Jul 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VATOR MNDT

NGS Name: VATOR

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DF9159](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>				
SE	35	50 N	17 W	464559.07	922701.97		C				
<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>				
2001	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET				

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	SURVEY DISK	MNDT

Description: (2001) Stamping: VATOR 2001

3.0 MILES NORTH OF CLOQUET, 3.0 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND A BRIDGE OVER THE ST. LOUIS RIVER IN CLOQUET, AT TRUNK HIGHWAY 33 MILEPOINT 5.8, 0.10 MILE NORTH OF THE ST. LOUIS/CARLTON COUNTY LINE (POHJOLA ROAD), 45.2 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 2.2 FEET WEST-SOUTHWEST OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
			1177.970	.008	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1178.055	.008	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1271.520	.131		1178.196	.066	1996	HORIZONTAL ADJUSTMENT	2003 GPS1931
1271.520	.131		1178.196	.066	1996	GPS - STATIC	2003 HSTLO

Geoid Separations(ft): GEOID18 = -93.579 12B = -93.563 09 = -93.478 03 = -93.294

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 45 59.06965	92 27 01.97291	499862.648	142458.653	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 45 59.06984	92 27 01.97374	499862.590	142458.672	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 45 59.06953	92 27 01.97360	499862.600	142458.641	.033	C	ADJUSTMENT	2003	GPS1931
46 45 59.06953	92 27 01.97360	499862.600	142458.641	.033	C	GPS - STATIC	2003	HSTLO

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787437.755	425940.545	1778060.982	16992593.969	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787437.698	425940.564	1778060.924	16992593.988	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787437.708	425940.533	1778060.934	16992593.957	.033	C	ADJUSTMENT	2003	GPS1931
2787437.708	425940.533	1778060.934	16992593.957	.033	C	GPS - STATIC	2003	HSTLO



Mn/DOT Name: VATOR MNDT RESET

NGS Name: VATOR RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1885](#) [Get Map](#)
NGS Quad / Sta Num : 46092143/
USGS Quad: SAGINAW

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	35	50 N	17 W	464559.07	922701.97	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 20 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: VATOR 2001 2017

3.0 MILES NORTH OF CLOQUET, 5.75 MILES NORTH ALONG TRUNK HIGHWAY 33 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND INTERSTATE HIGHWAY 35 IN CLOQUET, AT TRUNK HIGHWAY 33 MILEPOINT 5.75, 45.2 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 33, 2.2 FEET WEST-SOUTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1271.369	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1271.402	.262			1177.839	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -93.579 12B = -93.563 09 = -93.478 03 = -93.294

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 45 59.06944	92 27 01.97218	499862.699	142458.631	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		MN State Plane - North Zone		UTM - Zone 15		Project Info			
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2787437.807	425940.524	1778061.033	16992593.948	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VATOR_RESET-DR1885-3E-01AUG2017.jpg	E	Aug 1, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VATOR_RESET-DR1885-2-01AUG2017.jpg		Aug 1, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VATOR_RESET-DR1885-1-01AUG2017.jpg		Aug 1, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VINCENT

NGS Name: VINCENT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5155](#)
NGS Quad / Sta Num : 47093212/
USGS Quad: SILICA

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	4	55 N	21 W	471611.41	930125.70	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 47 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: VINCENT 2017

11.1 MILES SOUTH-SOUTHWEST OF HIBBING, 9.7 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 169 IN HIBBING, AT TRUNK HIGHWAY 73 MILEPOINT 69.1, 50.1 FEET EAST OF TRUNK HIGHWAY 73, 53.6 FEET NORTH OF THE NORTH ENTRANCE TO THE BIL-MARIS SUPPER CLUB, 1.5 FEET WEST OF A WITNESS POST.

Station Pair: OLIVER - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1342.084	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1342.008	.262		1244.715	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.273 12B = -97.296 09 = -97.185 03 = -97.109

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - Central Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 16 11.40738	93 01 25.70130	357532.513	107761.842	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15					Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2643582.294	608884.420	1634508.783	17175657.650	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VINCENT-DR5155-3E-02AUG2017.jpg	E	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VINCENT-DR5155-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VINCENT-DR5155-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: VOLA MNDT

NGS Name: VOLA

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	6	54 N	19 W	471141.73	924837.37	2	B

NGS ACRN: [AC5028](#)
NGS Quad / Sta Num : 47092331/
USGS Quad: TOIVOLA

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1995	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STEEL ROD (IN SLEEVE) (DEPTH 24 FT)	METAL ROD	MNDT

Description: (2002)

Stamping: VOLA 1995

2.0 MILES NORTH OF TOIVOLA, 1.9 MILES NORTH ALONG COUNTY ROAD 5 FROM THE JUNCTION OF COUNTY ROAD 5 AND COUNTY ROAD 817 IN TOIVOLA, 27.0 FEET EAST OF COUNTY ROAD 5, 139.0 FEET SOUTH OF AN ENTRANCE EXTENDED, 33.3 FEET SOUTH OF A POWER POLE, 4.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.491	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1292.494	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1292.550	.262		1194.945	.197	2011	GPS - OPUS	2021	GPSBM
			1194.893	.007	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
1292.484	.131		1194.981	.066	2007	HORIZONTAL ADJUSTMENT	2011	GPS2802
1292.484	.131		1194.981	.066	2007	GPS - STATIC	2010	HASCA
1292.484	.131		1195.024	.066	1996	GPS - STATIC	2010	HASCA
1292.451	.098		1194.981	.049	2007	HORIZONTAL ADJUSTMENT	2009	GPS2546
1292.451	.098		1194.981	.049	2007	GPS - STATIC	2009	HBMN1
1292.419	.098		1195.024	.049	1996	GPS - STATIC	2008	HBMN1
			1194.981	.008	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1292.451	.098		1195.024	.049	1996	GPS - STATIC	2004	GPS1954
1292.517	.098		1195.024	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1292.517	.131		1195.024	.066	1996	GPS - STATIC	2003	HSTLO
1292.556	.098		1195.024	.049	1996	GPS - STATIC	1997	GPS805-B
1292.556	.131		1195.024	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -97.605 12B = -97.605 09 = -97.536 03 = -97.359

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year
47 11 41.73274	92 48 37.36886	410397.248	298968.101	.131	3	GPS - OPUS	2021
47 11 41.73310	92 48 37.36880	410397.252	298968.137	.003		ADJUSTMENT	2012

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year
47 11 41.73320	92 48 37.36966	410397.193	298968.148	.033	C	ADJUSTMENT	2011
47 11 41.73320	92 48 37.36966	410397.193	298968.148	.033	C	GPS - STATIC	2010
47 11 41.73320	92 48 37.36966	410397.193	298968.148	.016	B	ADJUSTMENT	2009
47 11 41.73320	92 48 37.36966	410397.193	298968.148	.016	B	GPS - STATIC	2009
47 11 41.73320	92 48 37.36966	410397.193	298968.148	.007		ADJUSTMENT	2007

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.033	C	GPS - STATIC	2010
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.016	B	GPS - STATIC	2008
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.016	B	GPS - STATIC	2004
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.016	B	ADJUSTMENT	2003
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.033	C	GPS - STATIC	2003
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.016	B	GPS - STATIC	1997
47 11 41.73298	92 48 37.36925	410397.221	298968.125	.033	C	GPS - STATIC	1997

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year
2696668.681	581688.009	1687540.707	17148401.763	.131	3	GPS - OPUS	2021
2696668.685	581688.045	1687540.711	17148401.799	.003		ADJUSTMENT	2012

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year
2696668.625	581688.055	1687540.652	17148401.809	.033	C	ADJUSTMENT	2011
2696668.625	581688.055	1687540.652	17148401.809	.033	C	GPS - STATIC	2010
2696668.625	581688.055	1687540.652	17148401.809	.016	B	ADJUSTMENT	2009
2696668.625	581688.055	1687540.652	17148401.809	.016	B	GPS - STATIC	2009
2696668.625	581688.055	1687540.652	17148401.809	.007		ADJUSTMENT	2007

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year
2696668.654	581688.033	1687540.680	17148401.787	.033	C	GPS - STATIC	2010
2696668.654	581688.033	1687540.680	17148401.787	.016	B	GPS - STATIC	2008
2696668.654	581688.033	1687540.680	17148401.787	.016	B	GPS - STATIC	2004
2696668.654	581688.033	1687540.680	17148401.787	.016	B	ADJUSTMENT	2003
2696668.654	581688.033	1687540.680	17148401.787	.033	C	GPS - STATIC	2003
2696668.654	581688.033	1687540.680	17148401.787	.016	B	GPS - STATIC	1997
2696668.654	581688.033	1687540.680	17148401.787	.033	C	GPS - STATIC	1997

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VOLA-AC5028-3S-27JUL2021.jpg	S	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VOLA-AC5028-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/VOLA-AC5028-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: W 160

NGS Name: W 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0408](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	16	55 N	17 W	471523.00	923345.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 7 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: W 160 1935

1.0 MILES SOUTH ON RAILROAD FROM THE FENS RAILROAD STATION THEN 1.9 MILES EAST ON A GRASSY ROAD, 0.3 MILE EAST OF A SLIGHT CURVE, 33.0 FEET SOUTH OF A GRASSY ROAD, 9.0 FEET SOUTH OF THE SOUTH DITCH BANK, 18.0 FEET SOUTH-SOUTHEAST OF A CULVERT END.

Station Notes

NO ACCESSIBLE ROADS 07/26/21.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1328.564	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1327.875	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1327.875	.007	1				VERTICAL CONTROL SURVEY	1958	L63 MINN

Geoid Separations(ft): GEOID18 = -97.933 12B = -97.936 09 = -97.857 03 = -97.700

* No Horizontal Positions in the Database *



Mn/DOT Name: W 163

NGS Name: W 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0137](#) [Get Map](#)
NGS Quad / Sta Num : 46092144/
USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	26	52 N	17 W	465729.00	922735.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1955	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
STRUCTURE (MASSIVE)	BENCH MARK DISK	NGS

Description: (1955)

Stamping: W 163 1935

15.0 MILES SOUTH OF COTTON, 15.0 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN COTTON.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1308.675	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1308.213	.007	1				VERTICAL CONTROL SURVEY	1935	L63 MINN

Geoid Separations(ft): GEOID18 = -95.377 12B = -95.371 09 = -95.243 03 = -95.049

* No Horizontal Positions in the Database *



Mn/DOT Name: W 271

NGS Name: W 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0705](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
NE	36	52 N	20 W	465712.00	924821.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: W 271 1948

7.2 MILES NORTHEAST OF FLOODWOOD, AT THE JUNCTION OF COUNTY ROAD 170 (MC GONAGLE ROAD) AND A ROAD WEST, 2.0 MILES NORTH ON COUNTY ROAD 170 FROM THE JUNCTION OF COUNTY ROAD 170 AND COUNTY ROAD 8, 26.0 FEET WEST OF COUNTY ROAD 170, 71.0 FEET SOUTH OF A ROAD WEST, 59.0 FEET SOUTH OF THE SOUTH END OF A METAL CULVERT, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1280.329	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1279.719	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1279.719	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.636 12B = -95.613 09 = -95.541 03 = -95.407

* No Horizontal Positions in the Database *



Mn/DOT Name: W 272

NGS Name: W 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0515](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	19	53 N	19 W	470409.00	924729.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2007	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: W 272 1948

2.7 MILES WEST ON TRUNK HIGHWAY 133 THE FROM HIGH SCHOOL AT MEADOWLANDS, 0.7 MILE WEST OF A COUNTY ROAD 133 BRIDGE OVER THE ST. LOUIS RIVER, AT THE JUNCTION OF COUNTY ROAD 133 AND COUNTY ROAD 5 NORTH, 36.0 FEET SOUTH OF COUNTY ROAD 133, 15.0 FEET WEST OF AN ENTRANCE TO THE COMMUNITY BUILDING, 2.0 FEET NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1272.753	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1272.120	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1272.120	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.745 12B = -96.732 09 = -96.663 03 = -96.483

* No Horizontal Positions in the Database *



Mn/DOT Name: W 274

NGS Name: W 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0473](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	9	54 N	18 W	471006.58	923752.68	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: W 274 1948

8.55 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA,
0.7 MILE WEST OF A RAILROAD, AT THE JUNCTION OF COUNTY ROAD 52 AND A ROAD NORTH, 94.0 FEET NORTH OF
COUNTY ROAD 52, 18.0 FEET WEST OF A ROAD NORTH, 52.0 FEET NORTH OF A FENCE CORNER, 1.0 FOOT EAST OF A FENCE
LINE, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1296.815	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1296.195	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1296.195	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.582 12B = -97.582 09 = -97.480 03 = -97.296

* No Horizontal Positions in the Database *



Mn/DOT Name: W 275

NGS Name: W 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	22	52 N	21 W	465840.00	925937.00	2	

NGS ACRN: [RN0634](#)
NGS Quad / Sta Num : 46092444/
USGS Quad: FLOODWOOD

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1974	NOT FOUND	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1974)

Stamping: W 275 1948

5.05 MILES NORTHWEST ON A RAILROAD FROM THE FLOODWOOD RAILROAD STATION, 0.45 MILE SOUTHEAST OF RAILROAD MILEPOST 81, 795.0 FEET SOUTHEAST OF A BLOCK SIGNAL, 100.0 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST RAILROAD TRACKS, 27.0 FEET SOUTHWEST OF A GRASSY ROAD PARALLELING THE TRACKS, 13.0 FEET NORTHEAST OF A RAILROAD RIGHT-OF-WAY FENCE, 57.0 FEET NORTHEAST OF A TELEPHONE POLE NUMBER 3, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1259.187	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1258.524	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1258.524	.007	1				VERTICAL CONTROL SURVEY	1960	L13 MINN

Geoid Separations(ft): GEOID18 = -95.761 12B = -95.748 09 = -95.682 03 = -95.544

* No Horizontal Positions in the Database *



Mn/DOT Name: W 28

NGS Name: W 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0347](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	54 N	18 W	470905.11	923603.58	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1948	GOOD	Horz=NO Vert=NO	NO		PROJECTS 3 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) **Stamping:** W 28 1934

0.15 MILE SOUTH ON A RAILROAD FROM THE RAILROAD STATION AT KELSEY, 165.0 FEET SOUTH OF RAILROAD MILEPOST 45, 0.15 MILE SOUTH OF A ROAD CROSSING, 57.0 FEET EAST OF THE EAST RAIL OF THE EAST RAILROAD TRACK, 99.5 FEET EAST-SOUTHEAST OF THE SOUTHEAST CORNER OF A SECTION TOOL HOUSE, 1.5 FEET SOUTH OF A FOOT PATH, 69.0 FEET SOUTHEAST OF THE CENTER OF A CULVERT, 1.0 FOOT NORTH OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1300.667	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1299.968	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1300.060	.007	1				VERTICAL CONTROL SURVEY	1948	L28 MINN

Geoid Separations(ft): GEOID18 = -97.437 12B = -97.441 09 = -97.332 03 = -97.142

* No Horizontal Positions in the Database *



Mn/DOT Name: W 30

NGS Name: W 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0865](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SW	16	52 N	21 W	465911.00	930026.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1974	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1960) Stamping: W 30 1934

6.0 MILES NORTHWEST OF FLOODWOOD, 5.95 MILES NORTHWEST ALONG THE GREAT NORTHERN RAILWAY FROM THE STATION IN FLOODWOOD, 6.95 MILES SOUTHEAST OF THE STATION IN WAWINA, 0.45 MILE NORTHWEST OF RAILROAD MILEPOST 81, 0.2 MILE SOUTHEAST OF ISLAND FARM ROAD CROSSING AND RAILWAY STATION ISLAND, 315.0 FEET NORTHWEST OF A JOG IN THE RIGHT-OF-WAY FENCE, 42.5 FEET NORTHEAST OF THE NORTHEAST RAIL OF THE NORTHEAST TRACK, 87.0 FEET SOUTHWEST OF THE CENTERLINE OF AN ABANDONED ROAD PARALLELING THE TRACK, 56.0 FEET SOUTHWEST OF A RIGHT-OF-WAY FENCE, 1.5 FEET SOUTHEAST OF A TELEPHONE POLE, 2.0 FEET NORTHEAST OF A WOODEN WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1267.681	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1267.015	.007	1				VERTICAL CONTROL SURVEY	1934	L13 MINN

Geoid Separations(ft): GEOID18 = -95.836 12B = -95.827 09 = -95.758 03 = -95.620

* No Horizontal Positions in the Database *



Mn/DOT Name: WALLIN

NGS Name: WALLIN

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DQ9929](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	16	52 N	21 W	465855.94	930019.91	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 2 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 34 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** WALLIN 2017

5.8 MILES NORTHWEST OF FLOODWOOD, 5.95 MILES NORTHWEST ALONG TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73 IN FLOODWOOD, AT TRUNK HIGHWAY 2 MILEPOINT 214.75, 35.7 FEET NORTHEAST OF TRUNK HIGHWAY 2, 1.5 FEET SOUTHWEST OF A WITNESS POST.

Station Pair: FLYNN - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1265.454	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1265.401	.262		1169.611	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.797 12B = -95.790 09 = -95.718 03 = -95.584

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone				Determination Method		Project Info	
Latitude	Longitude	X	Y	Acc	Order			Year	Reference
46 58 55.93915	93 00 19.91416	361326.805	221661.325	.131	3	GPS - RTRN		2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method		Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		
2648247.181	503981.117	1639036.449	17070788.266	.131	3	GPS - RTRN	2017 RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WALLIN-DQ9929-3NE-07AUG2017.jpg	NE	Aug 7, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WALLIN-DQ9929-2-07AUG2017.jpg		Aug 7, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WALLIN-DQ9929-1-07AUG2017.jpg		Aug 7, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: WEGS MNDT

NGS Name: WEGS

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	2	52 N	17 W	470129.83	922813.79	2	B

NGS ACRN: [AC5029](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1992	2017	DESTROYED	Horz=NO Vert=NO	YES		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (<10 FT) (DEPTH 4 FT)	HORIZONTAL CONTROL DISK	MNDT

Description: (2008) Stamping: WEGS 1992

1.0 MILE SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 152 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.00, 75.3 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 111.7 FEET SOUTH OF A TELEPHONE CABLE MARKER, 66.7 FEET SOUTH-SOUTHWEST OF A POWER POLE, 59.8 FEET SOUTHEAST OF MILEPOST 29, 4.2 FEET SOUTH OF A RIGHT-OF-WAY, CONTROL ACCESS AND A POWER POST, 2.5 FEET WEST OF A WITNESS POST.

Station Notes

THE ROD WAS DRIVEN TO REFUSAL. THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1336.441	.016	2/1					VERTICAL ADJUSTMENT	2012	00000702	
1336.434	.016	2/1					VERTICAL CONTROL SURVEY	1992	VTWIG	

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>	
1336.441				1240.388	.009	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119	
1336.441	.131			1240.578	.066	1996	GPS - STATIC	2017	HMNCORS07	
1336.441				1240.388	.009	2011	GPS - STATIC	2017	HMNPH	
1336.497	.262			1240.463	.197	2011	GPS - RTRN	2015	RTRN2015	
				1240.388	.007	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800	
				1240.480	.008	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300	
1336.316	.098			1240.578	.049	1996	GPS - STATIC	2004	GPS1954	
1336.447	.098			1240.578	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931	
1336.316	.131			1240.578	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1848	
1336.447	.131			1240.578	.066	1996	GPS - STATIC	2003	HSTLO	
1336.316	.131			1240.578	.066	1996	GPS - STATIC	2002	HTWIB	
1336.349	.131			1240.549	.066	1996	GPS - STATIC	1999	HBROO	
1336.392	.098			1240.578	.049	1996	GPS - STATIC	1997	GPS805-B	
1336.392	.131			1240.578	.066	1996	GPS - STATIC	1997	GPS805-C	

Geoid Separations(ft): GEOID18 = -96.030 12B = -96.033 09 = -95.892 03 = -95.705



Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 29.82926	92 28 13.79363	494887.215	236762.915	.007		ADJUSTMENT	2018	GPS3119
47 01 29.82926	92 28 13.79363	494887.215	236762.915	.007	C	GPS - STATIC	2017	HMNPH
47 01 29.82866	92 28 13.79368	494887.212	236762.854	.131	3	GPS - RTRN	2015	RTRN2015
47 01 29.82926	92 28 13.79363	494887.215	236762.915	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 29.82938	92 28 13.79453	494887.153	236762.927	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	GPS - STATIC	2017	HMNCORS07
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.016	B	GPS - STATIC	2004	GPS1954
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.016	B	ADJUSTMENT	2003	GPS1931
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	ADJUSTMENT	2003	GPS1848
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	GPS - STATIC	2003	HSTLO
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	GPS - STATIC	2002	HTWIB
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	GPS - STATIC	1999	HBROO
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.016	B	GPS - STATIC	1997	GPS805-B
47 01 29.82910	92 28 13.79433	494887.167	236762.899	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 29.82540	92 28 13.79488	494887.130	236762.525	.033	C	GPS - STATIC	1993	H1993

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781669.829	520197.463	1772427.203	17086819.630	.007		ADJUSTMENT	2018	GPS3119
2781669.829	520197.463	1772427.203	17086819.630	.007	C	GPS - STATIC	2017	HMNPH
2781669.826	520197.402	1772427.200	17086819.569	.131	3	GPS - RTRN	2015	RTRN2015
2781669.829	520197.463	1772427.203	17086819.630	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781669.766	520197.474	1772427.141	17086819.642	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781669.780	520197.446	1772427.155	17086819.614	.033	C	GPS - STATIC	2017	HMNCORS07
2781669.780	520197.446	1772427.155	17086819.614	.016	B	GPS - STATIC	2004	GPS1954
2781669.780	520197.446	1772427.155	17086819.614	.016	B	ADJUSTMENT	2003	GPS1931
2781669.780	520197.446	1772427.155	17086819.614	.033	C	ADJUSTMENT	2003	GPS1848
2781669.780	520197.446	1772427.155	17086819.614	.033	C	GPS - STATIC	2003	HSTLO
2781669.780	520197.446	1772427.155	17086819.614	.033	C	GPS - STATIC	2002	HTWIB
2781669.780	520197.446	1772427.155	17086819.614	.033	C	GPS - STATIC	1999	HBROO
2781669.780	520197.446	1772427.155	17086819.614	.016	B	GPS - STATIC	1997	GPS805-B
2781669.780	520197.446	1772427.155	17086819.614	.033	C	GPS - STATIC	1997	GPS805-C

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2781669.745	520197.071	1772427.119	17086819.239	.033	C	GPS - STATIC	1993	H1993



Station Photos

<u>Type</u>	<u>File Name</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS-AC5029-3E-13NOV2008.jpg
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS-AC5029-2-13NOV2008.jpg
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS-AC5029-1-13NOV2008.jpg

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **

<u>Dir</u>	<u>Date</u>
E	Nov 13, 2008
	Nov 13, 2008
	Nov 13, 2008



Mn/DOT Name: WEGS MNDT RESET

NGS Name: WEGS RESET

County: ST. LOUIS, MN (Sheet 1)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NW	2	52 N	17 W	470129.83	922813.79	2	3

NGS ACRN: [DR1862](#)
NGS Quad / Sta Num : 47092233/
USGS Quad: CANYON

[Get Map](#)

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 4 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: WEGS 1992 2017

10.0 MILES SOUTH OF COTTON, 10.0 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND COUNTY ROAD 52 IN CANYON, AT TRUNK HIGHWAY 53 MILEPOINT 29.00, 75.3 FEET EAST OF NORTHBOUND TRUNK HIGHWAY 53, 66.7 FEET SOUTH-SOUTHWEST OF A POWER POLE WITH 2 GUY WIRES, 59.8 FEET SOUTHEAST OF MILEPOST 29, 4.2 FEET SOUTH OF A RIGHT-OF-WAY, CONTROL ACCESS AND A POWER POST, 2.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1336.293	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1336.362	.262		1240.329	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -96.030 12B = -96.033 09 = -95.892 03 = -95.705

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 01 29.82882	92 28 13.79304	494887.256	236762.870	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone		X	Y	Acc	Order		Year	Reference
2781669.870	520197.418	1772427.244	17086819.586	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS_RESET-DR1862-3E-18SEP2017.jpg	E	Sep 18, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS_RESET-DR1862-2-18SEP2017.jpg		Sep 18, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WEGS_RESET-DR1862-1-18SEP2017.jpg		Sep 18, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: WHITEFACE

NGS Name: WHITEFACE

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN1682](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/1022
USGS Quad: MCCARTY RIVER

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	25	52 N	20 W	465751.32	924821.37		2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	1952	GOOD	Horz=? Vert=YES	YES		PROJECTS 5 IN.	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	TRIANGULATION STATION DISK	NGS

Description: (1952) **Stamping:** WHITEFACE 1952

6.0 MILES NORTHEAST OF FLOODWOOD, NEAR THE MOUTH OF THE WHITEFACE RIVER, 5.1 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 THEN 2.8 MILES NORTH ON COUNTY ROAD 150, 7.0 FEET EAST OF A WITNESS POST, 43.0 FEET NORTHWEST OF A TELEPHONE POLE, 60.0 FEET WEST OF COUNTY ROAD 170 (MCGONAGLE ROAD), 113.41 FEET SOUTHEAST OF WHITEFACE RM 1, 88.52 FEET WEST OF WHITEFACE RM 2.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88							Project Info	
Orthometric Height			Ellipsoid (NAD83)			Determination Method	Year	Reference
Height	Acc	Order (/Class)	Height	Acc	Adj			
1281.753	.262		1186.008	.197	2011	GPS - RTRN	2021	RTRN2021
1279.525	.197		1183.938	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648
NGVD29							Project Info	
Orthometric Height			Ellipsoid (NAD83)			Determination Method	Year	Reference
Height	Acc	Order (/Class)	Height	Acc	Adj			
1279.492						RECIPROCAL VERTICAL ANGLE	1952	HORZ

Geoid Separations(ft): GEOID18 = -95.745 12B = -95.725 09 = -95.653 03 = -95.508

Lat/Lon and County Coordinates (Feet)

NAD83(2011)							Project Info	
Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Year	Reference
Latitude	Longitude	X	Y					
46 57 51.31750	92 48 21.37068	411120.138	214824.275	.131	3	GPS - RTRN	2021	RTRN2021
NAD83(1996)							Project Info	
Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Year	Reference
Latitude	Longitude	X	Y					
46 57 51.32159	92 48 21.37366	411119.933	214824.690	.066	2	ADJUSTMENT	1999	17648
NAD83(1986)							Project Info	
Geodetic Position		St Louis County - South Zone		Acc	Order	Determination Method	Year	Reference
Latitude	Longitude	X	Y					
46 57 51.31599	92 48 21.37555	411119.799	214824.124	.066	2	ADJUSTMENT	1986	17289
NAD27							Project Info	
Geodetic Position		X	Y	Acc	Order	Determination Method	Year	Reference
Latitude	Longitude							
46 57 51.52500	92 48 20.66500			.100	2	CLASSICAL SURVEY	1954	10724



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2698093.539	497559.182	1688853.707	17064303.699	.131	3	GPS - RTRN	2021	RTRN2021

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2698093.331	497559.596	1688853.500	17064304.113	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

MN State Plane - North Zone		UTM - Zone 15		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2698093.203	497559.028	1688853.370	17064303.546	.066	2	ADJUSTMENT	1986	17289

NAD27

MN State Plane - North Zone		<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	Project Info	
<u>X</u>	<u>Y</u>						<u>Year</u>	<u>Reference</u>
2073478.001	169496.271			.100	2	CLASSICAL SURVEY	1954	10724



Mn/DOT Name: WHITEFACE AZ MK

NGS Name: WHITEFACE AZ MK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3028](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

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<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	25	52 N	20 W	465744.00	924820.00		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

AZIMUTH MARK DISK

Mon. Agency

NGS

Description:

Stamping: WHITEFACE 1952

6.0 MILES NORTHEAST OF FLOODWOOD, NEAR THE MOUTH OF THE WHITEFACE RIVER, 5.1 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 THEN 2.6 MILES NORTH ON COUNTY ROAD 150, 3.0 FEET NORTH OF A WITNESS POST, 27.0 FEET NORTH OF THE CENTERLINE OF A DRIVEWAY AND 13.0 FEET WEST OF THE CENTERLINE OF COUNTY ROAD 170.

** No Horizontal or Vertical Positions in the Database **

Geoid Separations(ft): GEOID18 = -95.725 12B = -95.705 09 = -95.633 03 = -95.489



Mn/DOT Name: WHITEFACE RM 1

NGS Name: WHITEFACE RM 1

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3029](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	25	52 N	20 W	465752.04	924820.12		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: WHITEFACE NO 1 1952

6.0 MILES NORTHEAST OF FLOODWOOD, NEAR THE MOUTH OF THE WHITEFACE RIVER, 5.1 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 THEN 2.8 MILES NORTH ON COUNTY ROAD 150, 3.0 FEET WEST OF A RIGHT-OF-WAY FENCE AND 35.0 FEET WEST OF THE CENTERLINE OF COUNTY ROAD 170 (MCGONAGLE ROAD).

*** No Horizontal or Vertical Positions in the Database ***

Geoid Separations(ft): GEOID18 = -95.745 12B = -95.725 09 = -95.653 03 = -95.508



Mn/DOT Name: WHITEFACE RM 2

NGS Name: WHITEFACE RM 2

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [CJ3030](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	25	52 N	20 W	465751.03	924820.17		

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1952	1952	GOOD	Horz=? Vert=YES	NO			SEE DESCRIPTION

Monument Type

BLANK

Disk Type

REFERENCE MARK DISK

Mon. Agency

NGS

Description: (2019)

Stamping: WHITEFACE NO 2 1952

6.0 MILES NORTHEAST OF FLOODWOOD, NEAR THE MOUTH OF THE WHITEFACE RIVER, 5.1 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 THEN 2.8 MILES NORTH ON COUNTY ROAD 150, 1.0 FOOT WEST OF A RIGHT-OF-WAY FENCE AND 33.0 FEET EAST OF THE CENTERLINE OF COUNTY ROAD 170 (MCGONAGLE ROAD).

* No Horizontal or Vertical Positions in the Database *

Geoid Separations(ft): GEOID18 = -95.745 12B = -95.725 09 = -95.653 03 = -95.508



Mn/DOT Name: WITTIG MNDT

NGS Name: WITTIG

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [AC5031](#)
NGS Quad / Sta Num : 47092323/
USGS Quad: MEADOWLANDS

[Get Map](#)

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SW	34	53 N	19 W	470159.61	924435.00	2	B

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1995	2015	GOOD	Horz=YES Vert=YES	YES		FLUSH	MARKER IS STEEL ROD

Monument Type	Disk Type	Mon. Agency
STEEL ROD (IN SLEEVE) (DEPTH 28 FT)	METAL ROD	MNDT

Description: (2008) **Stamping:** WITTIG 1995

2.5 MILES SOUTH OF MEADOWLANDS, 2.0 MILES SOUTH ALONG COUNTY ROAD 29 FROM THE JUNCTION OF COUNTY ROAD 29 AND COUNTY ROAD 133 IN MEADOWLANDS, THEN 0.5 MILE SOUTH ON COUNTY ROAD 5, THEN CONTINUE SOUTH 31.5 FEET EAST OF COUNTY ROAD 5, 28.0 FEET SOUTH OF A GRAVEL ROAD (SWEDE TOWN ROAD), 172.0 FEET NORTH OF A POWER POLE, 47.2 FEET SOUTH OF A POWER POLE, 3.1 FEET NORTH OF A WITNESS POST.

Station Notes

THE STATION FILLS WITH WATER.

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1267.901	.016	2/1				VERTICAL ADJUSTMENT	2012	00000702
1267.904	.016	2/1				VERTICAL CONTROL SURVEY	2009	VWITT

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method	Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj		Year	Reference
1267.901			1171.517	.008	2011	HORIZONTAL ADJUSTMENT	2018	GPS3119
1267.901	.131		1171.641	.066	1996	GPS - STATIC	2017	HMNCORS07
1267.901			1171.517	.008	2011	GPS - STATIC	2017	HMNPH
1267.950	.262		1171.540	.197	2011	GPS - RTRN	2015	RTRN2015
			1171.517	.007	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1171.612	.007	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1267.780	.098		1171.641	.049	1996	GPS - STATIC	2004	GPS1954
1267.976	.098		1171.641	.049	1996	HORIZONTAL ADJUSTMENT	2003	GPS1931
1267.976	.131		1171.641	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1892
1267.976	.131		1171.641	.066	1996	GPS - STATIC	2003	HSTLO
1267.944	.131		1171.641	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1267.976	.131		1171.641	.066	1996	GPS - STATIC	2002	HAITK
1267.944	.131		1171.641	.066	1996	GPS - STATIC	2002	HFLOO
1267.927	.098		1171.641	.049	1996	GPS - STATIC	1997	GPS805-B
1267.927	.131		1171.641	.066	1996	GPS - STATIC	1997	GPS805-C

Geoid Separations(ft): GEOID18 = -96.420 12B = -96.414 09 = -96.319 03 = -96.151

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 59.61115	92 44 35.00015	426915.864	239916.386	.007		ADJUSTMENT	2018	GPS3119
47 01 59.61115	92 44 35.00015	426915.864	239916.386	.007	C	GPS - STATIC	2017	HMNPH
47 01 59.61035	92 44 34.99990	426915.881	239916.305	.131	3	GPS - RTRN	2015	RTRN2015
47 01 59.61115	92 44 35.00015	426915.864	239916.386	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 59.61120	92 44 35.00101	426915.805	239916.392	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

Geodetic Position		St Louis County - South Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	GPS - STATIC	2017	HMNCORS07
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.016	B	GPS - STATIC	2004	GPS1954
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.016	B	ADJUSTMENT	2003	GPS1931
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	ADJUSTMENT	2003	GPS1892
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	GPS - STATIC	2003	HSTLO
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	ADJUSTMENT	2003	GPS1769
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	GPS - STATIC	2002	HAITK
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	GPS - STATIC	2002	HFLOO
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.016	B	GPS - STATIC	1997	GPS805-B
47 01 59.61100	92 44 35.00087	426915.814	239916.371	.033	C	GPS - STATIC	1997	GPS805-C

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2713678.409	522781.044	1704465.845	17089494.567	.007		ADJUSTMENT	2018	GPS3119
2713678.409	522781.044	1704465.845	17089494.567	.007	C	GPS - STATIC	2017	HMNPH
2713678.427	522780.963	1704465.863	17089494.486	.131	3	GPS - RTRN	2015	RTRN2015
2713678.409	522781.044	1704465.845	17089494.567	.007		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2713678.349	522781.049	1704465.786	17089494.572	.007		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15				Project Info		
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2713678.359	522781.028	1704465.795	17089494.551	.033	C	GPS - STATIC	2017	HMNCORS07
2713678.359	522781.028	1704465.795	17089494.551	.016	B	GPS - STATIC	2004	GPS1954
2713678.359	522781.028	1704465.795	17089494.551	.016	B	ADJUSTMENT	2003	GPS1931
2713678.359	522781.028	1704465.795	17089494.551	.033	C	ADJUSTMENT	2003	GPS1892
2713678.359	522781.028	1704465.795	17089494.551	.033	C	GPS - STATIC	2003	HSTLO
2713678.359	522781.028	1704465.795	17089494.551	.033	C	ADJUSTMENT	2003	GPS1769
2713678.359	522781.028	1704465.795	17089494.551	.033	C	GPS - STATIC	2002	HAITK
2713678.359	522781.028	1704465.795	17089494.551	.033	C	GPS - STATIC	2002	HFLOO
2713678.359	522781.028	1704465.795	17089494.551	.016	B	GPS - STATIC	1997	GPS805-B
2713678.359	522781.028	1704465.795	17089494.551	.033	C	GPS - STATIC	1997	GPS805-C

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WITTIG-AC5031-3E-13NOV2008.jpg	E	Nov 13, 2008
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WITTIG-AC5031-2-13NOV2008.jpg		Nov 13, 2008
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/WITTIG-AC5031-1-13NOV2008.jpg		Nov 13, 2008

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: WOOD MNDT

NGS Name: WOOD

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0651](#) [Get Map](#)
NGS Quad / Sta Num : 46092444/1074
USGS Quad: FLOODWOOD

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	7	51 N	20 W	465523.01	925450.61	2	2	1974	1999	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	VERTICAL CONTROL DISK	MNDT

Description: (1999) Stamping: WOOD 1974

AT THE SOUTH EDGE OF FLOODWOOD, 0.05 MILE SOUTHEAST ON TRUNK HIGHWAY 2 FROM THE WEST JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, AT TRUNK HIGHWAY 2 MILEPOINT 220.8, 28.0 FEET NORTHEAST OF TRUNK HIGHWAY 2, 28.0 FEET SOUTHEAST OF A POWER POLE WITH A LIGHT, 7.0 FEET SOUTHEAST OF AN ENTRANCE, 6.2 FEET NORTH OF THE SOUTHWEST END OF A METAL CULVERT, 6.4 FEET WEST OF A WITNESS POST, FOUND THE MONUMENT OUT OF THE GROUND, REMOVED THE DISK.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1254.945	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1254.391	.016	2					VERTICAL CONTROL SURVEY	1974	L23566

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1254.952	.197			1159.784	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -95.321 12B = -95.302 09 = -95.226 03 = -95.115

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 55 23.01374	92 54 50.60851			384032.722	199939.650	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
46 55 23.00699	92 54 50.61124			384032.529	199938.967	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									
<u>Latitude</u>	<u>Longitude</u>								
46 55 23.21044	92 54 49.88995					.100	2	CLASSICAL SURVEY	1977 15924

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2671132.088	482449.852			1661883.716	17049236.306	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2671131.901	482449.168			1661883.527	17049235.622	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									
<u>X</u>	<u>Y</u>								
2046516.683	154385.841					.100	2	CLASSICAL SURVEY	1977 15924



Mn/DOT Name: X 160

NGS Name: X 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0407](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

	<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	
NE	14	55 N	18 W	
	471520.28	923515.73	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: X 160 1935

1.0 MILES SOUTH ON A RAILROAD FROM THE RAILROAD STATION IN FENS, THEN 0.7 MILE EAST ON A GRASSY ROAD, 41.0 FEET SOUTH OF A GRASSY ROAD, 15.0 FEET SOUTH OF THE SOUTH DITCH BANK, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

NO ACCESSIBLE ROADS 07/26/21.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1325.421	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1324.725	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1324.725	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.933 12B = -97.936 09 = -97.857 03 = -97.703

* No Horizontal Positions in the Database *



Mn/DOT Name: X 163

NGS Name: X 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0139](#)

[Get Map](#)

NGS Quad / Sta Num : 46092144/

USGS Quad: INDEPENDENCE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	36	52 N	17 W	465651.50	922647.88	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1978)

Stamping: X 163 1935

0.7 MILE SOUTHEAST ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 33 AND TRUNK HIGHWAY 53 IN INDEPENDENCE, 48.5 FEET SOUTHWEST OF SOUTHBOUND TRUNK HIGHWAY 53, AT TRUNK HIGHWAY 53 MILEPOINT 23.3, 500.0 FEET SOUTHEAST OF THE CREST OF A HILL, 107.0 FEET SOUTHEAST OF THE SOUTHWEST END OF A CONCRETE CULVERT, 1.5 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1375.148	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1375.158	.016	2/1				VERTICAL ADJUSTMENT	2012 00000702
1375.155	.016	2/1				VERTICAL CONTROL SURVEY	1992 VTWIG
1375.158	.016	2/1				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1374.702	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1374.899	.016	2				VERTICAL CONTROL SURVEY	1978 L24513
1374.702	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1375.338	.262		1280.112	.197	2011	GPS - RTRN	2017 RTRN2017

Geoid Separations(ft): GEOID18 = -95.233 12B = -95.229 09 = -95.105 03 = -94.908

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 56 51.49573	92 26 47.88368	500840.689	208561.388	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2787859.897	492048.310	1778575.779	17058672.918	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_163-RN0139-3SW-02AUG2017.jpg	SW	Aug 2, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_163-RN0139-2-02AUG2017.jpg		Aug 2, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_163-RN0139-1-02AUG2017.jpg		Aug 2, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: X 271

NGS Name: X 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0706](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	1	51 N	20 W	465616.72	924823.33	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: X 271 1948

6.15 MILES NORTHEAST OF FLOODWOOD, 0.95 MILE NORTH ON COUNTY ROAD 170 FROM THE JUNCTION OF COUNTY ROAD 8 AND COUNTY ROAD 170 (MC GONAGLE ROAD), AT A GRAVEL PIT, 128.0 FEET NORTH-NORTHWEST OF THE TOP OF A SMALL GRADE, 28.0 FEET WEST OF COUNTY ROAD 170, 68.0 FEET NORTHWEST OF AN ENTRANCE TO A GRAVEL PIT, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.849	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.229	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1298.229	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.485 12B = -95.469 09 = -95.394 03 = -95.262

* No Horizontal Positions in the Database *



Mn/DOT Name: X 272

NGS Name: X 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0516](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	24	53 N	20 W	470408.00	924822.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	DESTROYED	Horz=NO Vert=NO	YES			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: X 272 1948

3.4 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, AT THE JUNCTION OF COUNTY ROAD 133 AND A ROAD SOUTH AND A TRAIL NORTH, 56.0 FEET SOUTH OF COUNTY ROAD 133, 27.0 FEET WEST OF A ROAD SOUTH, 22.0 FEET SOUTH OF A TELEPHONE POLE, 66.0 FEET SOUTHWEST OF THE SOUTH END OF A CONCRETE CULVERT, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1265.342	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1264.709	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.735 12B = -96.716 09 = -96.660 03 = -96.476

* No Horizontal Positions in the Database *



Mn/DOT Name: X 274

NGS Name: X 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0474](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	54 N	18 W	471002.03	923910.67	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	NOT FOUND	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: X 274 1948

7.5 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA, 0.5 MILE WEST OF A CROSSROAD AND COUNTY ROAD 52 OFFSET, AT THE JUNCTION OF COUNTY ROAD 52 AND A ROAD SOUTH, 22.0 FEET SOUTH OF COUNTY ROAD 52, 112.0 FEET WEST OF A ROAD SOUTH, 66.5 FEET WEST OF A FENCE CORNER, 1.0 FOOT NORTH OF A FENCE, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1294.801	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1294.177	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1294.177	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.483 03 = -97.296

* No Horizontal Positions in the Database *



Mn/DOT Name: X 275

NGS Name: X 275

County: ST. LOUIS, MN (Sheet 1)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	17	52 N	21 W	465938.39	930145.60	2	C

NGS ACRN: [RN0864](#)
NGS Quad / Sta Num : 46093111/
USGS Quad: ISLAND

[Get Map](#)

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		PROJECTS 6 IN.	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2001)

Stamping: X 275 1948

7.35 MILES NORTHWEST OF FLOODWOOD, 2.1 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 200 (THE JUNCTION IS 10.0 MILES NORTHWEST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 213.4, 71.6 FEET NORTHEAST OF TRUNK HIGHWAY 2, 15.0 FEET NORTHWEST OF A FIELD ENTRANCE, 1.7 FEET NORTHWEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1269.817	.016	2/1				VERTICAL ADJUSTMENT	2021 00000963
1269.597	.016	2/1				VERTICAL ADJUSTMENT	2011 00000675
1269.597	.016	2/1				VERTICAL CONTROL SURVEY	2003 VGRAND
1269.505	.016	2				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1268.705	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1269.030	.016	2				VERTICAL CONTROL SURVEY	1974 L23566
1268.705	.007	1				VERTICAL CONTROL SURVEY	1952 L13 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1269.623	.262		1173.757	.197	2011	GPS - RTRN	2017 RTRN2017
			1173.659	.030	2011	HORIZONTAL ADJUSTMENT	2012 GPS2800
			1173.754	.032	2007	HORIZONTAL ADJUSTMENT	2007 GPS2300
1269.584	.131		1173.846	.066	1996	HORIZONTAL ADJUSTMENT	2004 GPS1957
1269.584	.131		1173.846	.066	1996	GPS - STATIC	2003 HGRAND

Geoid Separations(ft): GEOID18 = -95.879 12B = -95.866 09 = -95.797 03 = -95.663

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 38.38898	93 01 45.60213	355417.128	226005.250	.131	3	GPS - RTRN	2017 RTRN2017
46 59 38.38876	93 01 45.60119	355417.193	226005.227	.023		ADJUSTMENT	2012 GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 38.38890	93 01 45.60208	355417.131	226005.242	.023		ADJUSTMENT	2007 GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
46 59 38.38873	93 01 45.60168	355417.159	226005.224	.033	C	ADJUSTMENT	2004 GPS1957
46 59 38.38873	93 01 45.60168	355417.159	226005.224	.033	C	GPS - STATIC	2003 HGRAND

State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2642301.908	508275.602	1633099.167	17075088.650	.131	3	GPS - RTRN	2017	RTRN2017
2642301.974	508275.579	1633099.232	17075088.628	.023		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2642301.912	508275.593	1633099.170	17075088.642	.023		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2642301.939	508275.576	1633099.198	17075088.625	.033	C	ADJUSTMENT	2004	GPS1957
2642301.939	508275.576	1633099.198	17075088.625	.033	C	GPS - STATIC	2003	HGRAND

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_275-RN0864-3NE-24JUL2017.jpg	NE	Jul 24, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_275-RN0864-2-24JUL2017.jpg		Jul 24, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/X_275-RN0864-1-24JUL2017.jpg		Jul 24, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: X 279

NGS Name: X 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1369](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	7	54 N	21 W	471002.00	930355.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** X 279 1948

3.6 MILES NORTHEAST OF GOODLAND, AT THE ITASCA-SAINT LOUIS COUNTY LINE AND A 90 DEGREE TURN IN A ROAD AND A DIM ROAD EAST, 57.0 FEET EAST OF THE NORTH TANGENT OF A ROAD, 31.0 FEET NORTH OF A GRASSY ROAD EAST, 9.0 FEET NORTH OF A ROAD DITCH, 2.5 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1338.429	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1337.658	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1337.658	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN
1337.658	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Geoid Separations(ft): GEOID18 = -96.886 12B = -96.883 09 = -96.821 03 = -96.689

* No Horizontal Positions in the Database *



Mn/DOT Name: X 28

NGS Name: X 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0348](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	10	54 N	18 W	471046.00	923610.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1934) **Stamping:** X 28 1934

1.75 MILES NORTH ON A RAILROAD FROM THE RAILROAD STATION AT KELSEY, 492.0 FEET SOUTH OF A RAILROAD MILEPOST 47, AT A PRIVATE ROAD CROSSING, 28.0 FEET WEST OF THE WEST RAIL OF THE WEST RAILROAD TRACK, 48.0 FEET NORTH OF A PRIVATE ROAD, 41.0 FEET SOUTHEAST OF THE NORTHEAST CORNER OF A FARMHOUSE PORCH, 29.5 FEET NORTHEAST OF A WELL, 2.0 FEET SOUTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1309.873	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1309.256	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1309.256	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.638 12B = -97.644 09 = -97.536 03 = -97.352

* No Horizontal Positions in the Database *



Mn/DOT Name: X 30

NGS Name: X 30

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1980](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	8	52 N	21 W	470013.00	930208.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	2017	UNKNOWN	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
BLANK	BENCH MARK DISK	NGS

Description: Stamping: X 30 1934

8.0 MILES NORTHWEST OF FLOODWOOD, 8.0 MILES NORTH ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 73, 2090.0 FEET NORTHEAST OF TRUNK HIGHWAY 2 ON RAILROAD PROPERTY.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1267.370	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

Geoid Separations(ft): GEOID18 = -95.958 12B = -95.945 09 = -95.879 03 = -95.738

* No Horizontal Positions in the Database *



Mn/DOT Name: Y 160

NGS Name: Y 160

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0406](#) [Get Map](#)
NGS Quad / Sta Num : 47092312/
USGS Quad: ZIM

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	15	55 N	18 W	471512.00	923613.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	2005	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935) Stamping: Y 160 1935

1.0 MILE SOUTH ON A RAILROAD FROM THE RAILROAD STATION AT FENS, 185.0 FEET EAST OF THE EAST RAIL OF RAILROAD TRACKS, 116.0 FEET EAST OF COUNTY ROAD 7, 62.0 FEET EAST OF THE SOUTHEAST CORNER OF A BRIDGE, 16.0 FEET SOUTH OF A SIDE ROAD EAST, 68.5 FEET NORTH-NORTHWEST OF THE NORTHWEST CORNER OF A HOUSE.

Station Notes

FOUND THE MARK BROKEN OFF AND LAYING DOWN.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1320.634	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1319.919	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN
1319.919	.007	1				VERTICAL CONTROL SURVEY	1935 L63 MINN

Geoid Separations(ft): GEOID18 = -97.926 12B = -97.930 09 = -97.848 03 = -97.700

* No Horizontal Positions in the Database *



Mn/DOT Name: Y 271

NGS Name: Y 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0707](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	1	51 N	20 W	465529.00	924829.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=NO Vert=YES	YES		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: Y 271 1948

5.1 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 0.1 MILE WEST OF COUNTY ROAD 170 (MC GONAGLE ROAD), 32.0 FEET NORTH OF COUNTY ROAD 8, 60.0 FEET WEST-NORTHWEST OF THE NORTH END OF A METAL CULVERT, 2.0 FEET SOUTH OF A FENCE, 2.0 FEET WEST OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.909	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1304.285	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1304.285	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -95.364 12B = -95.341 09 = -95.269 03 = -95.141

* No Horizontal Positions in the Database *



Mn/DOT Name: Y 272

NGS Name: Y 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0517](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	13	53 N	20 W	470408.00	924926.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	NO	CO RD		NO MAG MATERIAL

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CULVERT - ANY SIZE, ANY TYPE	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Y 272 1948

4.2 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.35 MILE WEST OF A CROSSROAD, IN THE EAST END OF THE NORTH HEADWALL OF A COUNTY ROAD 133 BOX CULVERT, 18.0 FEET NORTH OF COUNTY ROAD 133.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1260.270	.016	2/0				VERTICAL ADJUSTMENT		1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1259.633	.016	2/0				UNKNOWN/APPROXIMATE		1992	UNCHECKD
1259.633	.007	1				VERTICAL CONTROL SURVEY		1960	L28 MINN

Geoid Separations(ft): GEOID18 = -96.729 12B = -96.709 09 = -96.657 03 = -96.470

* No Horizontal Positions in the Database *



Mn/DOT Name: Y 274

NGS Name: Y 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0475](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/1010
USGS Quad: MEADOWLANDS NW

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NW	18	54 N	18 W	471002.39	924037.03	2	2	1948	1952	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 4 IN.	STEEL SPIKE ADJ TO MON

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1952) Stamping: Y 274 1948

6.5 MILES EAST OF TOIVOLA, 6.5 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 5 AT TOIVOLA, 26.0 FEET SOUTH OF ARKOLA ROAD, 10.0 FEET WEST OF A WEST GATE POST, 2.0 FEET EAST OF A WITNESS POST, 49.92 FEET EAST OF STATION KELSEY.

Leveling-Derived Orthometric Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1300.503	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

<u>NGVD29</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1299.873	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1299.873	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

<u>NAVD88</u>				<u>Ellipsoid (NAD83)</u>				<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>		<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
1300.490	.197			1203.105	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.579 09 = -97.490 03 = -97.303

Lat/Lon and County Coordinates (Feet)

<u>NAD83(1996)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 10 02.39450	92 40 37.03017			443542.570	288778.459	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>St Louis County - South Zone</u>				<u>Project Info</u>	
<u>Geodetic Position</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>Latitude</u>	<u>Longitude</u>								
47 10 02.39318	92 40 37.03524			443542.220	288778.326	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>Geodetic Position</u>									<u>Year</u> <u>Reference</u>
<u>Latitude</u>	<u>Longitude</u>								
47 10 02.61900	92 40 36.34200					.100	2	CLASSICAL SURVEY	1954 10724

State Plane and UTM Coordinates (Feet)

<u>NAD83(1996)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2729894.708	571776.652			1720741.490	17138449.895	.066	2	ADJUSTMENT	1999 17648

<u>NAD83(1986)</u>				<u>UTM - Zone 15</u>				<u>Project Info</u>	
<u>MN State Plane - North Zone</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	
<u>X</u>	<u>Y</u>								
2729894.359	571776.517			1720741.141	17138449.760	.066	2	ADJUSTMENT	1986 17289

<u>NAD27</u>				<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>
<u>MN State Plane - North Zone</u>									<u>Year</u> <u>Reference</u>
<u>X</u>	<u>Y</u>								
2105278.721	243715.246					.100	2	CLASSICAL SURVEY	1954 10724



Mn/DOT Name: Y 275

NGS Name: Y 275

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1447](#) [Get Map](#)
NGS Quad / Sta Num : 47093222/
USGS Quad: WAWINA

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	7	52 N	21 W	470007.23	930246.84	2	3

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2017	GOOD	Horz=NO Vert=YES	YES		FLUSH	BAR MAG IN DRILL HOLE

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2002)

Stamping: Y 275 1948

8.8 MILES NORTHWEST OF FLOODWOOD, 1.15 MILES SOUTHEAST ALONG TRUNK HIGHWAY 2 FROM THE JUNCTION OF TRUNK HIGHWAY 2 AND TRUNK HIGHWAY 200 (THE JUNCTION IS 10.0 MILES NORTHWEST OF FLOODWOOD), AT TRUNK HIGHWAY 2 MILEPOINT 212.4, 73.1 FEET NORTHEAST OF TRUNK HIGHWAY 2, 39.0 FEET SOUTHEAST OF AN ENTRANCE, 1.7 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1273.160	.016	2/1				VERTICAL ADJUSTMENT	2021	00000963
1273.114	.016	2/1				VERTICAL ADJUSTMENT	2011	00000675
1273.114	.016	2/1				VERTICAL CONTROL SURVEY	2003	VGRAND
1273.065	.016	2				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1272.373	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1272.602	.016	2				VERTICAL CONTROL SURVEY	1974	L23566
1272.373	.007	1				VERTICAL CONTROL SURVEY	1952	L13 MINN
1272.373	.007	1				VERTICAL CONTROL SURVEY	1952	Q470932

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1273.252	.262		1177.337	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -95.928 12B = -95.912 09 = -95.846 03 = -95.712

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
47 00 07.22718	93 02 46.84126	351194.076	228958.904	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2638054.693	511193.946	1628857.445	17078011.264	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_275-SJ1447-3SE-12JUN2017.jpg	SE	Jun 12, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_275-SJ1447-2-12JUN2017.jpg		Jun 12, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_275-SJ1447-1-12JUN2017.jpg		Jun 12, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Y 28

NGS Name: Y 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0349](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/1017
USGS Quad: KELSEY

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	34	55 N	18 W	471239.38	923613.31	2	2

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1952	2005	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	SEE DESCRIPTION

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) **Stamping:** Y 28 1934

6.5 MILES NORTHWEST OF COTTON, 130.0 FEET SOUTH-SOUTHWEST OF THE SOUTHWEST CORNER OF THE SAX RAILROAD STATION, 2.95 MILES NORTH OF COUNTY ROAD 52, 40.0 FEET WEST OF THE WEST RAIL OF A RAILROAD, 8.0 FEET EAST OF THE EAST RAIL OF A RAILROAD SIDING, 1.0 FOOT SOUTH OF A WITNESS POST, 143.82 FEET SOUTHEAST OF STATION SAX.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1315.286	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1314.604	.007	1					VERTICAL CONTROL SURVEY	1941	L27 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1315.286	.197			1217.665	.131	1996	HORIZONTAL ADJUSTMENT	1999	17648

Geoid Separations(ft): GEOID18 = -97.805 12B = -97.805 09 = -97.710 03 = -97.542

Lat/Lon and County Coordinates (Feet)

NAD83(1996)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 39.38327	92 36 13.31402	461796.722	304641.051	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)		St Louis County - South Zone					Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 39.38288	92 36 13.31824	461796.430	304641.012	.066	2	ADJUSTMENT	1986	17289

NAD27							Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 12 39.61200	92 36 12.63100			.100	2	CLASSICAL SURVEY	1954	10724

State Plane and UTM Coordinates (Feet)

NAD83(1996)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2748013.554	587789.941	1738875.327	17154433.159	.066	2	ADJUSTMENT			1999	17648

NAD83(1986)		MN State Plane - North Zone		UTM - Zone 15					Project Info	
X	Y	X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2748013.263	587789.899	1738875.036	17154433.118	.066	2	ADJUSTMENT			1986	17289

NAD27		MN State Plane - North Zone					Project Info	
X	Y	X	Y	Acc	Order	Determination Method	Year	Reference
2123397.712	259728.949			.100	2	CLASSICAL SURVEY	1954	10724



Mn/DOT Name: Y 280

NGS Name: Y 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0560](#) [Get Map](#)
NGS Quad / Sta Num : 47092343/
USGS Quad: RILEY

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	5	55 N	20 W	471658.68	925418.40	2	

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
1948	2021	GOOD	Horz=YES Vert=YES	YES		FLUSH	STEEL SPIKE ADJ TO MON

Monument Type	Disk Type	Mon. Agency
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) **Stamping:** Y 280 1948

6.8 MILES NORTHEAST OF SILICA, 1.1 MILES NORTH ON TRUNK HIGHWAY 73 FROM A RAILROAD CROSSING AT SILICA THEN 5.7 MILES EAST ON COUNTY ROAD 442, 28.0 FEET SOUTH OF A ROAD, AT THE TOP OF A GRADE, 255.0 FEET EAST OF A SHARP BREAK IN A GRADE, 0.3 MILE WEST OF A ROAD SOUTH, 2.0 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1305.860	.016	2/0					VERTICAL ADJUSTMENT	1991	00000025

NGVD29				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1305.083	.016	2/0					UNKNOWN/APPROXIMATE	1992	UNCHECKD
1305.083	.007	1					VERTICAL CONTROL SURVEY	1960	L28 MINN

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order (/Class)		Height	Acc	Adj	Determination Method	Year	Reference
1305.877	.262			1208.193	.197	2011	GPS - OPUS	2021	GPSBM
1305.693	.262			1208.009	.197	2011	GPS - OPUS	2021	GPSBM

Geoid Separations(ft): GEOID18 = -97.684 12B = -97.687 09 = -97.605 03 = -97.513

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - Central Zone				Project Info		
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference
47 16 58.68487	92 54 18.40144	387030.263	112357.046	.131	3	GPS - OPUS	2021	GPSBM
47 16 58.68523	92 54 18.40086	387030.303	112357.082	.131	3	GPS - OPUS	2021	GPSBM

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15				Project Info		
MN State Plane - North Zone		X	Y	Acc	Order	Determination Method	Year	Reference
2673036.756	613725.972	1663959.194	17180459.293	.131	3	GPS - OPUS	2021	GPSBM
2673036.796	613726.008	1663959.234	17180459.330	.131	3	GPS - OPUS	2021	GPSBM

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_280-SJ0560-3S-27JUL2021.jpg	S	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_280-SJ0560-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Y_280-SJ0560-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: YANK MNDT

NGS Name: YANK

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0868](#) [Get Map](#)
NGS Quad / Sta Num : 46093111/1038
USGS Quad: ISLAND

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>	<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
NE	17	52 N	21 W	465951.07	930133.78		2	1974	1974	GOOD	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	TRAVERSE STATION DISK	MNDT

Description: (1974) Stamping: YANK 1974

1.2 MILES NORTHWEST OF ISLAND, 5.65 MILES SOUTHEAST ALONG A RAILROAD FROM A COUNTY ROAD 25 CROSSING IN WAWINA, 7.55 MILES NORTHWEST ALONG A RAILROAD FROM A TRUNK HIGHWAY 73 CROSSING IN FLOODWOOD, 3.9 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS, 49.6 FEET NORTH OF A TELEPHONE POLE NUMBER 20, 9.0 FEET SOUTHEAST OF A TRAIL, 14.2 FEET NORTH OF A STOP SIGN, 44.5 FEET SOUTH OF A STOP SIGN, 31.2 FEET NORTHEAST OF A WITNESS POST.

Station Notes

THE SURVEY MARK IS ON RAILROAD PROPERTY AND HAS BEEN ABANDONED FOR MNDOT GEODETIC USE.

* No Leveling-Derived Orthometric Heights in the Database *

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1266.074	.197		1170.329	.131	1996	HORIZONTAL ADJUSTMENT		1999	17648

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>		<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order / (Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>			<u>Year</u>	<u>Reference</u>
1264.991						RECIPROCAL VERTICAL ANGLE		1974	HORZ

Geoid Separations(ft): GEOID18 = -95.915 12B = -95.902 09 = -95.836 03 = -95.695

Lat/Lon and County Coordinates (Feet)

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 51.07004	93 01 33.78225	356245.959	227284.030	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>					<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 51.06410	93 01 33.77986	356246.120	227283.427	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>Geodetic Position</u>							<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
46 59 51.27535	93 01 33.03848			.100	2	CLASSICAL SURVEY	1977	15924

State Plane and UTM Coordinates (Feet)

NAD83(1996)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2643120.051	509561.156	1633918.630	17076372.624	.066	2	ADJUSTMENT	1999	17648

NAD83(1986)

<u>MN State Plane - North Zone</u>		<u>UTM - Zone 15</u>					<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2643120.217	509560.555	1633918.796	17076372.022	.066	2	ADJUSTMENT	1986	17289

NAD27

<u>MN State Plane - North Zone</u>							<u>Project Info</u>	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>	<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Year</u>	<u>Reference</u>
2018505.490	181497.832			.100	2	CLASSICAL SURVEY	1977	15924



Mn/DOT Name: Z 163

NGS Name: Z 163

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0712](#) [Get Map](#)
NGS Quad / Sta Num : 46092411/
USGS Quad: ALBORN

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	24	52 N	18 W	465808.84	923318.32	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1935	1948	GOOD	Horz=? Vert=YES	NO		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1935)

Stamping: Z 163 1935

1.05 MILES EAST ON COUNTY ROAD 47 FROM THE RAILROAD STATION AT ALBORN, 0.65 MILE EAST OF A SCHOOL, AT THE JUNCTION OF COUNTY ROAD 47 (EAST-WEST) -COUNTY ROAD 7 (SOUTH) AND COUNTY ROAD 220 (NORTH), 32.0 FEET NORTH OF COUNTY ROAD 47, 95.0 FEET WEST OF COUNTY ROAD 220, 59.0 FEET WEST OF A FENCE CORNER, 42.0 FEET EAST OF A POWER POLE, 1.5 FEET SOUTH OF A FENCE, 1.5 FEET WEST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1341.083	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1340.568	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1340.568	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.679 12B = -95.672 09 = -95.544 03 = -95.371

* No Horizontal Positions in the Database *



Mn/DOT Name: Z 271

NGS Name: Z 271

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [RN0708](#) [Get Map](#)
NGS Quad / Sta Num : 46092441/
USGS Quad: MCCARTY RIVER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SE	2	51 N	20 W	465529.79	924950.47	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	YES		PROJECTS 4 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (2019) Stamping: Z 271 1948

4.05 MILES EAST ON COUNTY ROAD 8 FROM THE JUNCTION OF COUNTY ROAD 8 AND TRUNK HIGHWAY 73 AT FLOODWOOD, 27.0 FEET NORTH OF COUNTY ROAD 8, 0.15 MILE WEST OF A SLIGHT COUNTY ROAD 8 CURVE, 40.0 FEET EAST OF A DIM TRAIL NORTH, 214.0 FEET EAST OF A ROAD NORTHEAST TO A GRAVEL PIT, 336.0 FEET EAST OF A DUMP ROAD, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.738	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1298.111	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1298.111	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -95.361 12B = -95.341 09 = -95.269 03 = -95.144

* No Horizontal Positions in the Database *



Mn/DOT Name: Z 272

NGS Name: Z 272

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0518](#) [Get Map](#)
NGS Quad / Sta Num : 47092332/
USGS Quad: ELMER

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	23	53 N	20 W	470407.26	925053.67	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1948	GOOD	Horz=? Vert=YES	YES		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Z 272 1948

5.4 MILES WEST ON COUNTY ROAD 133 FROM THE HIGH SCHOOL AT MEADOWLANDS, 0.5 MILE WEST OF THE JUNCTION OF COUNTY ROAD 133 AND A ROAD NORTH, 36.0 FEET SOUTH OF COUNTY ROAD 133, 16.0 FEET EAST OF A FIELD ROAD SOUTH, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1272.678	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1272.032	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1272.032	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -96.703 12B = -96.680 09 = -96.637 03 = -96.450

* No Horizontal Positions in the Database *



Mn/DOT Name: Z 274

NGS Name: Z 274

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0476](#) [Get Map](#)
NGS Quad / Sta Num : 47092324/
USGS Quad: MEADOWLANDS NW

				<u>Reference</u>	<u>Reference</u>	<u>Vert</u>	<u>Horz</u>
<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Order</u>	<u>Order</u>
SE	12	54 N	19 W	471003.17	924130.36	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	GOOD	Horz=NO Vert=YES	YES		PROJECTS 6 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948) Stamping: Z 274 1948

5.65 MILES EAST ON COUNTY ROAD 52 FROM THE JUNCTION OF COUNTY ROAD 52 AND COUNTY ROAD 5 AT TOIVOLA, 150.0 FEET WEST OF THE TOP OF A LOW GRADE AND A FOREST FIRE SIGN, 58.0 FEET NORTH OF COUNTY ROAD 52, 15.0 FEET WEST OF A DIM ROAD NORTH, 1.5 FEET SOUTH OF A WITNESS POST.

Station Notes

DUE TO TREE COVER, THIS SURVEY MARK HAS BEEN ABANDONED FOR MNDOT GEODETIC HORIZONTAL SURVEYS.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1299.400	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1298.767	.016	2/0				UNKNOWN/APPROXIMATE	1992	UNCHECKD
1298.767	.007	1				VERTICAL CONTROL SURVEY	1960	L28 MINN

Geoid Separations(ft): GEOID18 = -97.579 12B = -97.575 09 = -97.490 03 = -97.303

* No Horizontal Positions in the Database *

Station Photos

<u>Type</u>	<u>File Name</u>	<u>Dir</u>	<u>Date</u>
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Z_274-SJ0476-3NW-27JUL2021.jpg	NW	Jul 27, 2021
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Z_274-SJ0476-2-27JUL2021.jpg		Jul 27, 2021
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/Z_274-SJ0476-1-27JUL2021.jpg		Jul 27, 2021

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: Z 279

NGS Name: Z 279

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ1329](#) [Get Map](#)
NGS Quad / Sta Num : 47093221/
USGS Quad: FLOODWOOD LAKE

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
SW	5	54 N	21 W	471107.00	930229.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	1968	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Z 279 1948

5.9 MILES SOUTH ON TRUNK HIGHWAY 73 FROM A RAILROAD CROSSING AT SILICA THEN 1.1 MILES SOUTHWEST ON COUNTY ROAD 18, 47.0 FEET NORTHWEST OF COUNTY ROAD 18, 240.0 FEET NORTHEAST OF THE TOP OF A GRADE, AT THE NORTHEAST END OF A MEADOW, 24.0 FEET NORTH OF A ROAD WEST, 2.0 FEET SOUTHEAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1335.739	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1334.971	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN
1334.971	.007	1				VERTICAL CONTROL SURVEY	1952 Q470932

Geoid Separations(ft): GEOID18 = -97.001 12B = -97.001 09 = -96.936 03 = -96.804

* No Horizontal Positions in the Database *



Mn/DOT Name: Z 28

NGS Name: Z 28

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0350](#) [Get Map](#)
NGS Quad / Sta Num : 47092321/
USGS Quad: KELSEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	22	55 N	18 W	471426.00	923614.00	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1934	1995	DESTROYED	Horz=NO Vert=NO	NO			SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1995)

Stamping: Z 28 1934

12.4 MILES SOUTH OF IRON JUNCTION, 12.4 MILES SOUTH ALONG COUNTY ROAD 7 FROM THE JUNCTION OF COUNTY ROAD 7 AND MAIN STREET IN IRON JUNCTION.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1319.092	.016	2/0				VERTICAL ADJUSTMENT	1991	00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1318.386	.007	1				VERTICAL CONTROL SURVEY	1934	L27 MINN

Geoid Separations(ft): GEOID18 = -97.900 12B = -97.900 09 = -97.818 03 = -97.661

* No Horizontal Positions in the Database *



Mn/DOT Name: Z 280

NGS Name: Z 280

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [SJ0559](#) [Get Map](#)
NGS Quad / Sta Num : 47092343/
USGS Quad: RILEY

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NW	4	55 N	20 W	471658.34	925318.43	2	

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1948	2021	DESTROYED	Horz=NO Vert=NO	NO		PROJECTS 5 IN.	SEE DESCRIPTION

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
CONCRETE MONUMENT (CAST-IN-PLACE)	BENCH MARK DISK	NGS

Description: (1948)

Stamping: Z 280 1948

4.75 MILES SOUTHWEST OF LITTLE SWAN, 1.75 MILES WEST OF A NORTH-SOUTH GRAVEL ROAD (COUNTY ROAD 965), 1.9 MILES EAST OF A RAILROAD CROSSING, AT THE TOP OF A LOW GRADE, 31.0 FEET SOUTH OF COUNTY ROAD 442, 16.0 FEET EAST OF A TRAIL SOUTH, 2.0 FEET EAST OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1308.567	.016	2/0				VERTICAL ADJUSTMENT	1991 00000025

NGVD29

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>	<u>Determination Method</u>	<u>Year</u> <u>Reference</u>
1307.793	.016	2/0				UNKNOWN/APPROXIMATE	1992 UNCHECKD
1307.793	.007	1				VERTICAL CONTROL SURVEY	1960 L28 MINN

Geoid Separations(ft): GEOID18 = -97.729 12B = -97.729 09 = -97.651 03 = -97.556

* No Horizontal Positions in the Database *



Mn/DOT Name: ZEBOTT

NGS Name: ZEBOTT

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR1839](#) [Get Map](#)
NGS Quad / Sta Num : 47092243/
USGS Quad: CENTRAL LAKES

1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
SE	3	55 N	17 W	471638.12	922838.42	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 57 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017) **Stamping:** ZEBOTT 2017

13.5 MILES SOUTH OF EVELETH, 9.25 MILES SOUTH ALONG TRUNK HIGHWAY 53 FROM THE JUNCTION OF TRUNK HIGHWAY 53 AND TRUNK HIGHWAY 37 (THE JUNCTION IS 5.0 MILES SOUTH OF EVELETH), AT TRUNK HIGHWAY 53 MILEPOINT 46.6, 34.5 FEET WEST OF SOUTHBOUND TRUNK HIGHWAY 53, 5.0 FEET EAST OF A WITNESS POST.

Station Pair: STOOORE - ST. LOUIS, MN

Leveling-Derived Orthometric Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1380.998	.016	2/1				VERTICAL ADJUSTMENT		2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88			Ellipsoid (NAD83)			Determination Method		Project Info	
Height	Acc	Order (/Class)	Height	Acc	Adj			Year	Reference
1381.004	.262		1283.052	.197	2011	GPS - RTRN		2017	RTRN2017

Geoid Separations(ft): GEOID18 = -97.953 12B = -97.953 09 = -97.897 03 = -97.729

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - Central Zone		Determination Method			Project Info	
Latitude	Longitude	X	Y	Acc	Order		Year	Reference
47 16 38.12067	92 28 38.42490	493212.713	109943.505	.131	3	GPS - RTRN	2017	RTRN2017

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15		Determination Method			Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order		Year	Reference
2779222.151	612204.032	1770106.190	17178796.810	.131	3	GPS - RTRN	2017	RTRN2017

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZEBOTT-DR1839-3W-17OCT2017.jpg	W	Oct 17, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZEBOTT-DR1839-2-17OCT2017.jpg		Oct 17, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZEBOTT-DR1839-1-17OCT2017.jpg		Oct 17, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **



Mn/DOT Name: ZOBEL MNDT

NGS Name: ZOBEL

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DE9564](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

[Get Map](#)

<u>1/4</u>	<u>Sec</u>	<u>Twp</u>	<u>Rng</u>	<u>Reference</u> <u>Latitude</u>	<u>Reference</u> <u>Longitude</u>	<u>Vert</u> <u>Order</u>	<u>Horz</u> <u>Order</u>
NE	7	50 N	20 W	464952.42	925445.15	2	C

<u>Year Set</u>	<u>Last Recovery</u>	<u>Condition</u>	<u>Geodetic Usability</u>	<u>Photos</u>	<u>Bridge Num</u>	<u>F/P/R</u>	<u>Magnetic Properties</u>
1999	2017	DESTROYED	Horz=NO Vert=NO	NO		FLUSH	MARKER W/BAR MAGNET

<u>Monument Type</u>	<u>Disk Type</u>	<u>Mon. Agency</u>
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	SURVEY DISK	MNDT

Description: (1999)

Stamping: ZOBEL 1999

6.25 MILES SOUTH OF FLOODWOOD, 6.25 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 36.70, 70.0 FEET WEST OF TRUNK HIGHWAY 3, 19.0 FEET SOUTH OF AN ENTRANCE, 18.6 FEET NORTH-NORTHEAST OF A RIGHT-OF-WAY POST, 31.5 FEET NORTH-NORTHEAST OF A CABLE MARKER, 2.0 FEET NORTH OF A WITNESS POST.

Station Notes

THE DISK WAS TURNED IN TO THE OFFICE.

Leveling-Derived Orthometric Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
1278.337	.016	2/1				VERTICAL ADJUSTMENT	2004	00000464
1278.331	.016	2/1				VERTICAL CONTROL SURVEY	2002	VFLOO

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88

<u>Orthometric Height</u>			<u>Ellipsoid (NAD83)</u>			<u>Determination Method</u>	<u>Project Info</u>	
<u>Height</u>	<u>Acc</u>	<u>Order (/Class)</u>	<u>Height</u>	<u>Acc</u>	<u>Adj</u>		<u>Year</u>	<u>Reference</u>
			1183.889	.013	2011	HORIZONTAL ADJUSTMENT	2012	GPS2800
			1183.984	.014	2007	HORIZONTAL ADJUSTMENT	2007	GPS2300
1278.344	.131		1184.056	.066	1996	HORIZONTAL ADJUSTMENT	2003	GPS1769
1278.344	.131		1184.056	.066	1996	GPS - STATIC	2002	HFLOO

Geoid Separations(ft): GEOID18 = -94.462 12B = -94.458 09 = -94.360 03 = -94.255

Lat/Lon and County Coordinates (Feet)

NAD83(2011)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 49 52.42291	92 54 45.14680	384214.225	166442.994	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 49 52.42303	92 54 45.14766	384214.166	166443.007	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

<u>Geodetic Position</u>		<u>St Louis County - South Zone</u>		<u>Acc</u>	<u>Order</u>	<u>Determination Method</u>	<u>Project Info</u>	
<u>Latitude</u>	<u>Longitude</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
46 49 52.42270	92 54 45.14723	384214.195	166442.973	.033	C	ADJUSTMENT	2003	GPS1769
46 49 52.42270	92 54 45.14723	384214.195	166442.974	.033	C	GPS - STATIC	2002	HFLOO



State Plane and UTM Coordinates (Feet)

NAD83(2011)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671592.436	448956.480	1662299.976	17015757.128	.010		ADJUSTMENT	2012	GPS2800

NAD83(2007)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671592.377	448956.492	1662299.916	17015757.140	.010		ADJUSTMENT	2007	GPS2300

NAD83(1996)

MN State Plane - North Zone		UTM - Zone 15		Acc	Order	Determination Method	Project Info	
<u>X</u>	<u>Y</u>	<u>X</u>	<u>Y</u>				<u>Year</u>	<u>Reference</u>
2671592.406	448956.458	1662299.946	17015757.107	.033	C	ADJUSTMENT	2003	GPS1769
2671592.407	448956.458	1662299.946	17015757.107	.033	C	GPS - STATIC	2002	HFLOO



Mn/DOT Name: ZOBEL MNDT RESET

NGS Name: ZOBEL RESET

County: ST. LOUIS, MN (Sheet 1)

NGS ACRN: [DR5181](#)
NGS Quad / Sta Num : 46092443/
USGS Quad: PRAIRIE LAKE

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1/4	Sec	Twp	Rng	Reference Latitude	Reference Longitude	Vert Order	Horz Order
NE	7	50 N	20 W	464952.42	925445.15	2	3

Year Set	Last Recovery	Condition	Geodetic Usability	Photos	Bridge Num	F/P/R	Magnetic Properties
2017	2017	GOOD	Horz=YES Vert=YES	YES		RECESSED 3 IN.	BAR MAG IN DRILL HOLE

Monument Type	Disk Type	Mon. Agency
ALUMINUM ALLOY ROD (NO SLEEVE) (DEPTH 25 FT)	METAL ROD (WITH REMOVABLE ID DISK)	MNDT

Description: (2017)

Stamping: ZOBEL 1999 2017

6.25 MILES SOUTH OF FLOODWOOD, 6.25 MILES SOUTH ALONG TRUNK HIGHWAY 73 FROM THE JUNCTION OF TRUNK HIGHWAY 73 AND TRUNK HIGHWAY 2 IN FLOODWOOD, AT TRUNK HIGHWAY 73 MILEPOINT 36.70, 70.0 FEET WEST OF TRUNK HIGHWAY 73, 19.0 FEET SOUTH OF A DRIVEWAY, 18.6 FEET NORTH-NORTHEAST OF A RIGHT-OF-WAY POST, 31.5 FEET NORTH-NORTHEAST OF A CABLE BOX, 2.0 FEET NORTH OF A WITNESS POST.

Leveling-Derived Orthometric Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1278.134	.016	2/1					VERTICAL ADJUSTMENT	2021	00000963

Non Leveling-Derived Orthometric and Ellipsoid Heights (Feet)

NAVD88				Ellipsoid (NAD83)				Project Info	
Height	Acc	Order / (Class)		Height	Acc	Adj	Determination Method	Year	Reference
1278.108	.262			1183.652	.197	2011	GPS - RTRN	2017	RTRN2017

Geoid Separations(ft): GEOID18 = -94.462 12B = -94.458 09 = -94.360 03 = -94.255

Lat/Lon and County Coordinates (Feet)

NAD83(2011)		St Louis County - South Zone						Project Info	
Latitude	Longitude	X	Y	Acc	Order	Determination Method	Year	Reference	
46 49 52.42310	92 54 45.14623	384214.265	166443.013	.131	3	GPS - RTRN	2017	RTRN2017	

State Plane and UTM Coordinates (Feet)

NAD83(2011)		UTM - Zone 15						Project Info	
MN State Plane - North Zone X	Y	X	Y	Acc	Order	Determination Method	Year	Reference	
2671592.476	448956.499	1662300.016	17015757.148	.131	3	GPS - RTRN	2017	RTRN2017	

Station Photos

Type	File Name	Dir	Date
Location:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZOBEL_RESET-DR5181-3W-06SEP2017.jpg	W	Sep 6, 2017
Monument:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZOBEL_RESET-DR5181-2-06SEP2017.jpg		Sep 6, 2017
Disk:	https://www.olmweb.dot.state.mn.us/geod/StationPhotos/st_louis/ZOBEL_RESET-DR5181-1-06SEP2017.jpg		Sep 6, 2017

** All station images can be viewed at: <ftp://ftp.olmweb.dot.state.mn.us/geod/StationPhotos> **