

# MINNESOTA DEPARTMENT OF TRANSPORTATION CERTIFICATE OF LOCATION OF GOVERNMENT CORNER

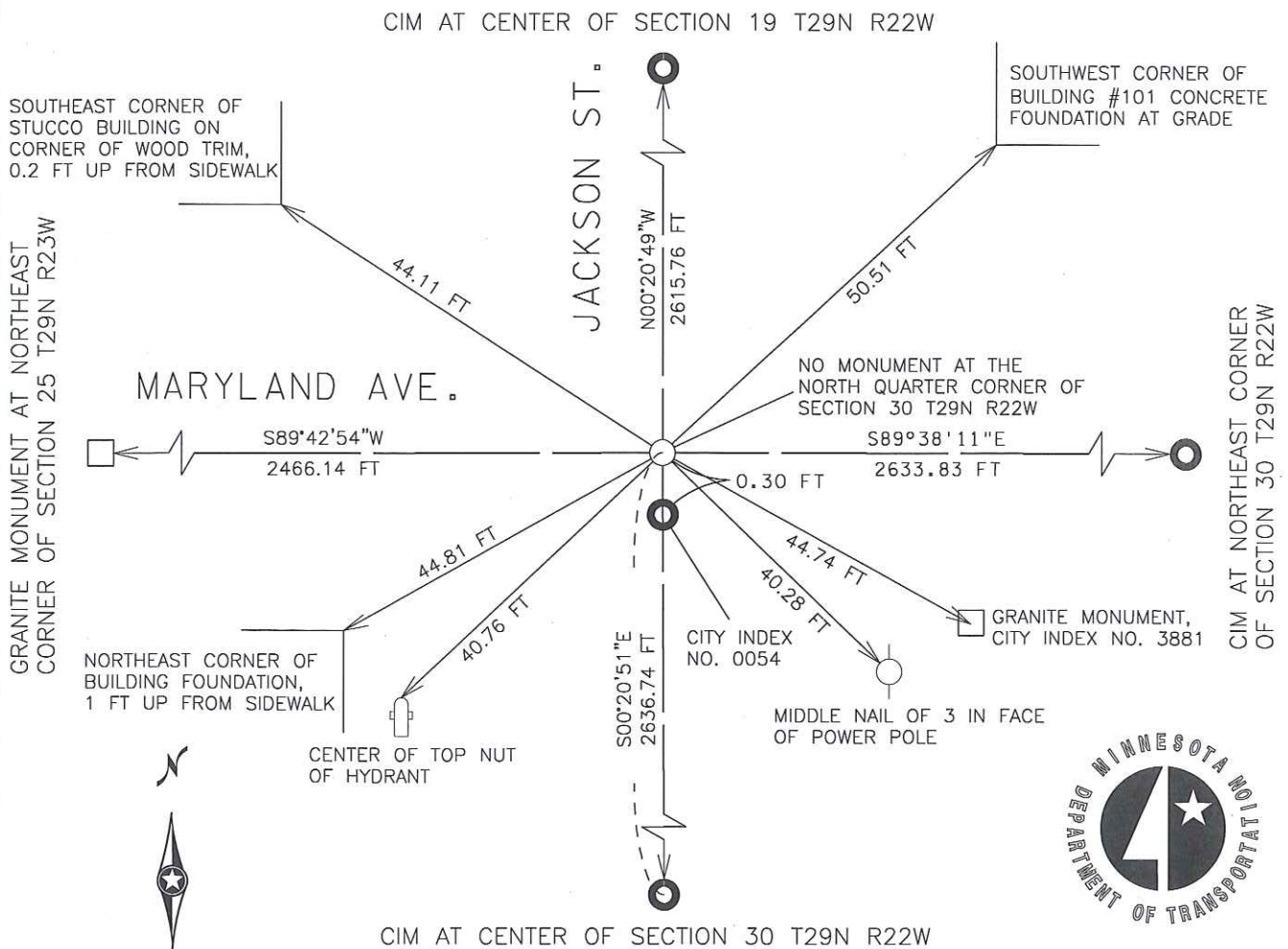
NORTH QUARTER CORNER, Section 30, Township 29 North, Range 22 West,  
4th Principal Meridian Survey, Ramsey County, Minnesota.

At the corner location shown on the sketch:

- ☒ On JULY 12, 2006 found CAST IRON MONUMENT (CITY INDEX NO. 0054)  
☒ left monument as found, ☐ lowered monument, ☐ removed monument (explain)  
☒ On JANUARY 17, 2012 staked out COMPUTED POSITION FOR THE CORNER AND MEASURED REFERENCE TIES.

Corner reference ties measured on JANUARY 17, 2012

Statement of evidence relative to this corner location is on back of page.



Tie distances are horizontal distance measured with a temperature corrected steel tape. Bearings are based on Ramsey County NAD 83 (1996) coordinates.

I hereby certify that this document and the data contained herein was prepared by me or under my direct supervision. I further certify that this document conforms to applicable portions of Minnesota State Statute 381.12.

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 Matthew J. Wernet, Mn/DOT Surveys  
 Minnesota License No. 41888

04/02/2012  
 Date

**North Quarter Corner, Section 30, T. 29 N. - R. 22 W.**

**Statement of Evidence**

- 1847 Unknown day, November. Isaac N. Higbee, deputy surveyor, set post. Tied to 2 bearing trees. See IH p.214-215 2922
- 1886 Unknown date. The plat of Dehmer's Subd of Lots 1 & 2 of Blk 1 of St Paul North Outlots shows a stone monument in place
- 1889 Unknown day, December. Monument set by J.H. Armstrong. His survey shows the length of the west line of the northeast quarter of 30-29-22 to be 2636.85 feet.
- 1890 Unknown date. J.H. Armstrong surveys the west line of the southeast quarter of section 19-29-22. Said line measures 2632.80 feet.
- 1951 Unknown date. Irv Forsberg ties a bridge survey (over NPRR) to NQ 30-29-22.
- 1952 Unknown day, April. Monument tied out. See F.B. 1415, p.8
- 1953 Unknown date. Monument tied out.
- 1959 Unknown day, December. Placed ties. See FB 1512 p.31
- 1970 Unknown date. Monument tied out during Maryland Avenue paving survey.
- 1971 May 24<sup>th</sup>. Sheldon Fox, Mn/DOT, locates granite monument at quarter corner and takes four reference ties. Mn/DOT prepares, but does not complete and record a certificate of location for the corner.
- 1980 June 18. Found granite monument in place. Monument tied to City index no. 55 by means of EDM survey. See FB 1676 p.33
- 1982 Unknown day, April. Elev 153.26 ft on quarter corner. See FB 1421A p.28
- 1982 Unknown day August. Elev 153.23 ft on CL CL. See FB 1421A p.21
- 1985 August 13. Elev 153.24 ft on Monument No. 54. See FB 1421A p.72
- 1987 Unknown day March. Ties checked and magnet placed in drill hole of granite monument.
- 1988 Unknown date. Granite monument removed by city sewer separation project. The contractor set a CIM to replace the granite monument.
- 1994 September 14. Recovered CIM 3" below asphalt street grade. See CofL 0054-1684-A

- 1995 July 12. Traversed through CIM. See SB 556A p.69
- 2002 February 6. Elev 153.40 ft on CIM 0.14 ft below asphalt surface. See FB 1736 p.13
- 2006 July 12. Mn/DOT survey personnel establish NAD 83 (1996ADJ) coordinates on CIM by means of static gps.
- 2006 November 6. Elev 153.39 ft on CIM from bench loop 240
- 2011 March 21. Mn/DOT survey personnel recover the drill hole used as control in the City's 1980 EDM survey (FB 1676 p.33-34). The backsight distance to NE 30-29-22 checks flat and they stake out to a position 0.30 feet north of the in place CIM.
- 2011 March 28. Mn/DOT Survey personnel found that the tie distances from Sheldon Fox's 1971 tie sheet did not check with the in place CIM, but suggested a position 0.39 foot further north. All four ties remain.

Summary and Conclusion:

Please note that most of the history for NQ 30-29-22 was obtained from the St. Paul Surveyor's Office. The granite monument that was set by J. H. Armstrong in 1889 was accepted and maintained as the corner until it was removed during a city sewer separation project in the 1980's. The contractor performing the work was responsible for replacing the granite monument with a cast iron monument. There are three reliable surveys of the granite monument, that suggest the cim was set 0.30 foot too far south.

John B. Irvine's survey of Jackson Street yields a distance of 2636.85 feet from the center of section 30-29-22 to the north quarter corner. The cim at the north quarter corner is only 2636.44 feet north of the cim at the center of section. JBI's survey includes city monument 3881, only 44.74 feet away from the north quarter corner (JBI bk.14, pg.43-44). This monument is identified as 33 feet right of the north and south quarter line at a distance of 30.43 feet south of the north quarter corner (measured along said quarter line). It is also 30 feet southerly of the north line of section 30-29-22 (measured perpendicular to said north section line). If the cim is held, then monument 3881 measures 32.87 feet east of the north and south quarter line, 29.97 feet south of the north quarter corner (as measured along said quarter line), and 29.62 feet southerly of the north line of said section 30 (measured perpendicular to said north section line). Field surveys always contain some error, but this is more error than one usually encounters, when retracing Irvine's surveys. Consider that monument 3881 is in excellent condition, stable, plumb, and in close proximity to the corner.

In 1971 Sheldon Fox recovered the granite monument and took four reference ties. On March 28<sup>th</sup>, 2011, Mn/DOT survey personnel recovered all four of Sheldon's ties

and compared them with the in place cim. The tie to the hydrant did not fit with any of the others and was disregarded. Note that said hydrant is leaning and may have been hit by an automobile and repaired, or may have been replaced. The other three ties suggest a position that is 0.39 foot north of the in place cim; a position that is very close to the one obtained by holding Irvine's station and offset to city monument 3881.

On June 18<sup>th</sup>, 1980, City of St. Paul survey personnel recovered the granite monument and tied it to NE 30-29-22 by means of an EDM survey (FB 1676 p.33-34). On March 21<sup>st</sup>, 2011, Mn/DOT survey personnel recovered the drill hole used as control in the aforesaid survey. The distance Mn/DOT measured from the drill hole to NE 30-29-22 checked flat with the distance recorded in the City's survey. They staked out to the former granite monument's location using the distance and angle shown on the City's survey; to a point 0.30 foot north of the in place cim.

After the cim was set, reference ties were checked by City of St. Paul survey personnel. They noted that existing ties were off by about a tenth of a foot. Note that these ties are mostly east and west of the monument. An error of a tenth in these ties will add up to much more than a tenth in the north/south direction.

The three aforesaid surveys all conclude that the granite monument was three to four tenths of a foot north of the in place cim. It is my opinion that the survey conducted by the City of St. Paul in 1980, employs the most accurate methods of the three, can be reproduced most accurately, and is therefore the most reliable evidence of the location of the granite monument prior to its replacement with a cim. It is also the most recent of the three surveys. Irvine's survey and Fox's tie sheet are solid, corroborating evidence. Additional Evidence follows.

#### PLS Comparisons

##### NQ 30-29-22 to CS 19-29-22

Standard Survey	2615.28' Irvine
Computed Corner	2615.76'
1988 CIM	2616.06'

##### NQ 30-29-22 to NE 30-29-22

Standard Survey	2634.09' Irvine
Computed Corner	2633.83'
1988 CIM	2633.81'

##### NQ 30-29-22 to CS 30-29-22

Standard Survey	2636.85' Irvine
Computed Corner	2636.74'
1988 CIM	2636.44'

##### NQ 30-29-22 to NE 25-29-23

Standard Survey	2466.05' Irvine
Computed Corner	2466.14'
1988 CIM	2466.15'

Angle formed by NE25-NQ30-CS19

Standard Survey	89°55' Irvine
Computed Corner	89°56'17"
1988 CIM	89°55'51"

Angle formed by CS19-NQ30-NE30

Standard Survey	90°43' Irvine
Computed Corner	90°42'38"
1988 CIM	90°42'16"

Angle formed by NE30-NQ30-CS30

Standard Survey	90°17' Irvine
Computed Corner	89°17'19"
1988 CIM	89°17'43"

Angle formed by CS30-NQ30-NE25

Standard Survey	90°05' Irvine
Computed Corner	90°03'46"
1988 CIM	90°04'09"

As one might expect, the length of the north line of the northwest quarter and the north line of the northeast quarter of section 30-29-22 are virtually identical, whether the computed corner, or the in place cim is held. It is important to see that the lengths of the west line of the northeast quarter of section 30-29-22 and the west line of the southeast quarter of section 19-29-22, fit better with Irvine's surveys of the granite monument when the computed corner is held, than they do when the in place cim is held. The angular comparisons appear to be inconclusive.

Standard Survey Comparisons

Two granite monuments were recovered along the south line of Maryland Avenue, west of NQ 30-29-22 (City Monuments numbered 6442 and 4344).

Distance from EQ 30-29-22 to City Monument 6442    OFFSET

Standard Survey	Monument not shown.	
Computed Corner	638.88'	30.09'
1992 CIM	638.89'	29.87'

Distance from EQ 30-29-22 to City Monument 4344    OFFSET

Standard Survey	1927.66' Irvine	30.00' Irvine
Computed Corner	1927.60'	29.85'
1992 CIM	1927.61'	29.79'

Only one granite monument was located on Maryland, east of NQ 30-29-22; probably due to construction of I35E and reconstruction of Maryland. Several irons were found, most of which corroborate the computed corner location.

Distance from EQ 30-29-22 to City Monument 3881    OFFSET

Standard Survey	33.36' Irvine	30.00' Irvine
Computed Corner	33.26'	29.91'
1992 CIM	33.24'	29.62'

Distance from EQ 30-29-22 to iron pipe	OFFSET
Computed Corner	-29.83'
1992 CIM	-30.13'

Distance from EQ 30-29-22 to rls 17006	OFFSET
Computed Corner	-29.89'
1992 CIM	-30.17'

Distance from EQ 30-29-22 to rls 10047	OFFSET
Computed Corner	-30.02'
1992 CIM	-30.27'

Distance from EQ 30-29-22 to iron pipe	OFFSET
Computed Corner	30.00'
1992 CIM	29.76'

Distance from EQ 30-29-22 to rls 23944	OFFSET
Computed Corner	30.09'
1992 CIM	29.93'

Distance from EQ 30-29-22 to rls 23944	OFFSET
Computed Corner	30.04'
1992 CIM	29.90'

Distance from EQ 30-29-22 to rls 15228	OFFSET
Computed Corner	30.13'
1992 CIM	30.01'

Distance from EQ 30-29-22 to rls 3527	OFFSET
Computed Corner	29.99'
1992 CIM	29.87'

Distance from EQ 30-29-22 to iron pipe	OFFSET
Computed Corner	-30.08'
1992 CIM	-30.19'

Four granite monuments were recovered along the east line of Jackson Street, south of NQ 30-29-22 (City Monuments numbered 3871, 3870, 3872 and 3881).

Distance from NQ 30-29-22 to City Monument 3871	OFFSET	Distance to CL
Standard Survey	No Station Irvine	33.00' 1318.43'
Computed Corner	1288.87'	32.81' 1318.46'
1992 CIM	1288.57'	32.80' 1318.16'

Distance from NQ 30-29-22 to City Monument 3870	OFFSET
Standard Survey	33.00' 1019.92' Irvine

Computed Corner	1021.66'	32.90'
1992 CIM	1021.36'	32.89'

Distance from NQ 30-29-22 to City Monument 3872	OFFSET
Standard Survey	632.13' Irvine
Computed Corner	633.15'
1992 CIM	632.86'

Distance from NQ 30-29-22 to City Monument 3881	OFFSET
Standard Survey	30.43' Irvine
Computed Corner	30.32'
1992 CIM	30.02'

The distances measured by Irvine to city monuments 3870 and 3872 are very different from either position for NQ 30-29-22. These cannot be explained without some other evidence, e.g. the monuments were moved or reset at a later date. Otherwise, they are blunders. The centerline for Magnolia Street, defined by city monument 3871, and city monument 3881, however, clearly favor the computed position over the in place cim.

There are no granite monuments along Jackson Street, north of NQ 30-29-22. Found irons are inconclusive as they do not have an assigned station and have virtually identical offsets to the north and south quarter line of section 19-29-22, whether NQ 30-29-22 is defined by the computed corner or the cim.