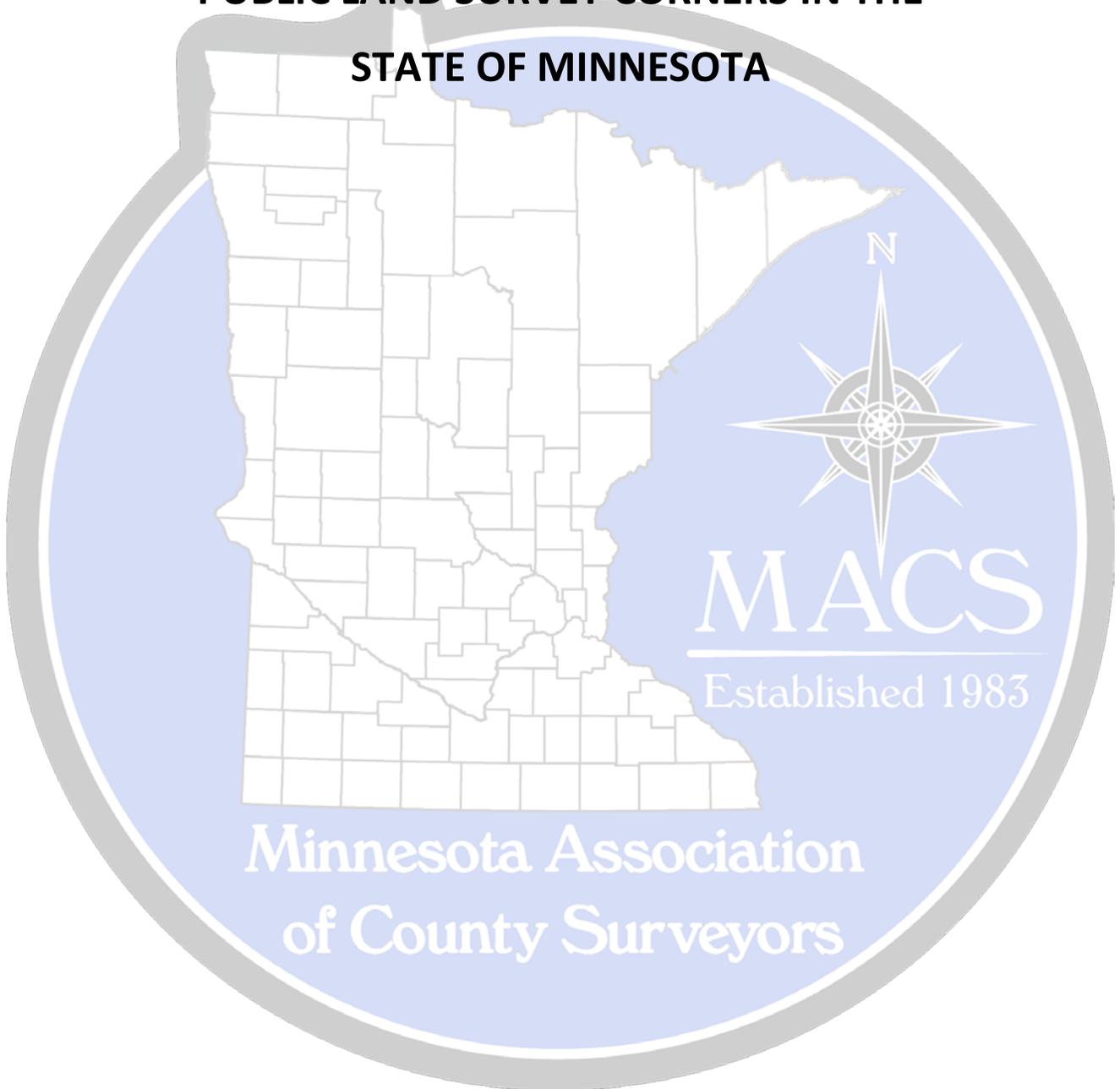


**MANUAL OF GUIDELINES FOR THE
IDENTIFICATION, REMONUMENTATION
AND PRESERVATION OF THE
PUBLIC LAND SURVEY CORNERS IN THE
STATE OF MINNESOTA**



Prepared by
Minnesota Association of County Surveyors
PLSS Committee
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Section I. PREFACE

The "Manual of Standard Procedures for the Identification, Remonumentation and Preservation of the Public Land Survey Corners in the State of Minnesota" (now the "Manual of Guidelines for the Identification, Remonumentation and Preservation of the Public Land Survey Corners in the State of Minnesota") was developed and written by the Minnesota Land Surveyors Association (now Minnesota Society of Professional Surveyors (MSPS)) County Surveyors Committee. The "Manual", as presented here, was initially submitted to the Minnesota Land Surveyors Association at their 1984 Annual Meeting as the County Surveyors Committee report. The report was not adopted by the Minnesota Land Surveyors Association but forwarded to the Standards of Practice Committee.

On February 8, 1984 the Minnesota Association of County Surveyors (MACS), at their first annual meeting, reviewed the Minnesota Land Surveyors Association Committee report and adopted the report as the manual for PLSS remonumentation activities. The Board of Directors of the Minnesota Land Surveyors Association (now MSPS) has granted the MACS full rights to use and publish the County Surveyors Committee report.

Since the initial adoption of this manual numerous technological advances have occurred that have greatly impacted many aspects of the land surveying profession. Global Navigation Satellite System (GNSS) and reference networks allow for precise geodetic locations for corner monumentation. The internet allows for easier access to high resolution images of historical records. Geographic Information Systems (GIS) allows users to overlay historic mapping and imagery onto current data and measurements.

In 2019 the MACS PLSS committee took on the task of updating the "Manual" to current standards of practice. While technological advances have made it more efficient for surveyors to locate an existing monument to a high degree of precision, the underlying methods and rules governing corner remonumentation have changed little over the course of time.

Section II. INTRODUCTION

The need for remonumentation of the Public Land Surveys System (PLSS) in Minnesota is increasing. Minnesota was originally surveyed into sections of land (± 3640 acres) by surveyors contracting with the federal government between the years of 1847 and 1910. These surveyors set over 300,000 monuments marking the boundaries of these sections. All boundaries of land ownership in Minnesota, both public and private, depend upon and are related to these monuments.

The positions of the PLSS corners are permanent by congressional legislation, but the monuments identifying the corners were not permanent. The original monuments were objects of stone, wood and/or mounds of sod or other types of materials that were readily available at the time of the survey. When/if the monuments marking the corners have been destroyed and the corner positions obliterated, the accurate retracement of property boundaries becomes extremely complex and costly.

The Federal Government surveyed all lands utilizing the PLSS, but the preservation of the monumented corners became a local responsibility. It would be logical to presume that once the PLSS was completed and the records turned over to the State of Minnesota, preservation of the monuments by the State of Minnesota would be a natural evolution. This was not the case. The State of Minnesota failed to provide the necessary legislation and preservation programs thus the PLSS monuments quickly began to deteriorate.

Many Minnesota counties have a rapidly deteriorating PLSS. The solution is a remonumentation program for the identification and preservation of the corner positions. Remonumentation of the PLSS corners by the counties has been the exception rather than the rule in Minnesota. Some counties have full time remonumentation programs. Other counties have limited programs which vary with the degree of funding available for that purpose. An examination of these programs currently in use by counties shows a need for standardized procedures within remonumentation programs.

Currently less than half of the 300,000 PLSS corners have been remonumented and certified. Many of those corners which have been certified require maintenance to sustain their certified position. With the use of the Global Navigation Satellite System (GNSS), we can now obtain a geodetic coordinate on the corner position with relative confidence in precision. Unfortunately, most of the PLSS corners in Minnesota have not been certified and located with a geodetic coordinate.

The use and precision of Geographic Information Systems (GIS) mapping is growing. Parcel maps depend on an accurate PLSS. Without certified PLSS corners with known geodetic coordinate values on the PLSS corners, a parcel map is at best an inaccurate picture. As we move into a world which demands accurate representation of parcel boundaries, we can only improve our mapping with an accurate PLSS framework.

This manual will provide solutions for addressing these issues. It will also identify the information which must be analyzed before a final solution and acceptance of a corner position. Adherence to the methods outlined herein will promote reasonable standardization in remonumentation programs.

Section III. THE PUBLIC LAND SURVEY SYSTEM (PLSS)

The original basis of the rectangular land system in Minnesota is the United States Ordinance of 1785. This ordinance set forth the principles for dividing, designating and describing the land in the public domain. In February 1805, an act of Congress gave us the "United States System for the Survey of the Public Lands" which is the basic system of land subdivision in use today.

The Public Land Survey System (PLSS) in Minnesota started in 1847 and was nearly completed by 1910. All the surveys were based on the 4th and 5th Principal Meridians.

The Surveyor Generals were given detailed instructions, regarding surveys and plats, from the General Land Office (GLO). From these instructions evolved the Manual of Surveying Instructions. The immediate forerunner to the manual series was printed in 1851 titled as "Instructions for the Surveyor General of Oregon: Being a Manual of Field Operations." These instructions were used extensively in Minnesota. Instructions with more detail and uniformity were issued in the "Manual of Instructions for Survey of the Public Lands of the United States" in 1855, 1881, 1890, 1894, 1902, 1930, 1947, 1973 and 2009. A compilation of some of the various manuals through 1902 can be found in A History of the Rectangular Survey System by C. Albert White, available through the U.S. Government Printing Office.

While U.S. Manuals of Instruction were intended for government surveyors engaged in the original survey of the public lands, the corner restoration circulars were prepared for private sector surveyors engaged in retracements of the original surveys. The GLO went through six printings of its Manual of Instructions before it added a chapter on the Restoration of Lost Corners in the 1930. Corner restoration circulars were prepared by the General Land Office and the Bureau of Land Management (GLO and BLM). This was done in response to many inquiries from county and local surveyors about the proper methods of restoring lost or obliterated corners and of subdividing public land sections.

The GLO and BLM note that the rules given in their circulars are "general rules". The circulars contain general rules and they also provide many explicit instructions. The retracement surveyor must become familiar with these circulars before attempting any PLSS remonumentation work.

A serious study of the circulars of 1879, 1883, 1909, 1939, 1952, 1963, 1974 and 2009 should be made as they contain the general rules to be followed for the restoration of lost or obliterated corners. The GLO Surveyors attempted to set the PLSS Corners in a standardized and predictable manner. Unfortunately, this was not always the case. With the capabilities that we have today, surveyors find PLSS corners that do not fall at the exact position recited in the original notes and plat. This makes it imperative that every effort should be made to find the original perpetuated PLSS position. Copies of these circulars can be obtained from the U.S. Government Printing Office or other organizations that print documents of interest to the surveyor.

Minnesota Statute 389.04 requires that surveyors in the State of Minnesota are in conformity with the original survey and subsequently the Manual of Survey Instruction. The remonumentation guidelines outlined in this document will not discuss specific corner restoration methods as defined in the Manual of Survey Instructions. The surveyor in Minnesota must follow the standards and procedures as outline in the Manual of Survey Instructions as well as applying local legal precedents for corner restoration.

Section IV. RECOMMENDED ORDER OF PROCEDURES

A. Introduction

This order of procedures is intended to serve as a best practice guide for PLSS determinations in Minnesota. Years of experience has shown that the following order proves to be the most thorough, effective and efficient approach for corner restoration. This order may not be exactly applicable for each project and may require modifications based on local conditions. Ultimately, corner determinations must be made with consideration to the totality of all available evidence.

B. Order of Procedures

1. Records Research

- i. Records research is paramount to the PLSS remonumentation process. This research is where the guidance to walk in the footsteps of the original surveyor begins.
- ii. As many records that can be found should be analyzed and preserved for future generations.
- iii. Preliminary statements of evidence for the PLSS corner certificates should be prepared listing all pertinent information to the corner being restored or maintained.

2. Preliminary Analysis

- i. Analysis of identified records provides a road map from which to proceed.
- ii. Records analysis provides the who, what, when, where and why that is required for searching in the field.

3. Field Research

- i. Field research provides the physical evidence that connects records to geographic location and mathematical solutions.
- ii. Keep search areas large and tie into as many related features as possible.
 1. Records research provides the guidance for tying into these features.

4. Analysis

- i. Analysis of potential corner positions found in the field should answer a variety of questions:
 1. What was found?
 2. Is additional records research needed?
 3. Does the corner position fit with available evidence?
 4. Is there an alternate position that would fit with available evidence?
 5. Does the position fit lines of occupation?
 6. Are additional field searches needed?
 - a. It may take multiple trips to a site to find the original corner position.
 7. Why was a monument set at the location of record?
 8. Is the corner lost, obliterated or existent?

5. Determination
 - i. The final decision on the corner position should be made with the assumption that the public in the future will be relying upon it.
 - ii. Final corner determinations are not always routine and there may be alternate positions to consider. Peer review from other surveyors can help to solidify final decisions.
6. Documentation
 - i. If a monument is found or set then a corner certificate must be completed as required by MN Statutes 381.12. The certificate should summarize all research compiled and pertinent analysis of the corner and alternate positions that were considered. The corner certificate should ensure that future surveyors understand why the corner was determined in the position shown on the certificate. The certificate should leave no doubt as to whether a competent and thorough job of record research, field research and corner analysis was completed in order to determine the final location of the corner. The corner certificate must be filed as a public record in the appropriate county office in order to ensure the public is aware of the corner location.

Section V. RECORD RESEARCH

A. Introduction

The basis for all remonumentation work *begins* with the search of and location of all available record information that has relevance to the corner. A thorough job of research is essential to properly certify a Public Land Survey System Corner. The surveyor must have as much information as possible in order to locate or remonument the original corner. By thoroughly examining the records, the prudent surveyor can be confident that the proper location of the corner has been monumented.

B. Research Sources

The following list of sources of survey information must be researched, where pertinent, in order to provide a complete written record of information for each corner position.

1. Primary Record Sources

Primary record sources are the original survey records which are the basis of the PLSS in Minnesota.

RECORD SOURCE	NOTES
Original Government Land Office Notes and plats, and Special Instructions.	<p>These notes should be obtained directly from the BLM. Experience has shown that copies available in County Offices may contain transcription errors and omissions. Special instructions and correspondence and other pertinent data can also be found at the Minnesota Historical Society.</p> <ul style="list-style-type: none"> • The original field notes for Minnesota were historically maintained by the Secretary of State. Between 2004 and 2011 the original field notes were indexed and scanned. The field notes are now located at the Minnesota Historical Society. Copies of these field notes were given to the BLM and are available via the BLM Official Federal Land Records website. • See Appendix E for a link to the BLM record website. • Note: County offices may have local scanned copies of these records.
Subsequent Government Surveys, Dependent, Independent or Omitted lands.	A check for these records should be made in the BLM records, county offices, MnGEO, Minnesota Historical Society and the office of the Secretary of State.

2. Local Record Sources

Local record sources must be identified and researched when working in a given area. Some County Surveyor's Offices may contain primary record sources while others may not. In many cases, the most comprehensive set of records may be in the offices of local surveyors. It is critical that the researcher identify, compile and analyze all available records in order to properly restore a PLSS corner.

RECORD SOURCE	TYPE OF INFORMATION USUALLY AVAILABLE
County Surveyor	Section corner certificates, public and private land surveys
County Recorder	Corner certificates, subdivision plats, land surveys, recorded surveys and exhibits, easements, deeds, abstracts, deed exhibits and other references
County Engineer	Highway location surveys, land ties, highway easements
County Auditor	County and legal ditch records, town road orders, unrecorded maps
Clerk of Court	Court records, registered lands
County Assessor	Unrecorded conveyances, survey maps
County/City GIS Departments	Aerial imagery, GIS data and services
Registrar of Titles	Registered land descriptions
Zoning Office	Building permit records
County Land Commissioner	County land records
Adjoining Co. Offices	County line records, county line roads
Township Records	Board meeting minutes, cemetery records, township road descriptions and maps.
Engineers, Clerks, and Zoning Offices, Utility Departments	City/County records and maps
Minnesota Historical Society	Drainage commission surveys, railroad surveys, dam surveys, timber surveys, etc.
Department of Natural Resources	State park, WMA, landfill survey, mining maps and surveys
Minnesota Department of Transportation	ROW maps and plans, commissioners orders, railroad maps
National Archives	Historic survey records, GLO records
Bureau of Land Management	GLO Records, other federal survey records
US Fish and Wildlife Service	Conservation Easements, survey records
USDA Forest Service	Section corners records, Civilian Conservation Corps records, harvest records
US Soil Conservation Service	
US Corps of Engineers	Federal dam survey , dredging and river surveys
Canadian Agencies	Bordering Province/Canadian survey records
Other Sources	Private surveyors and engineers records, utility company records, forest product company records, mining company records, land agency records, railroad company records, abstractors record, lending institution records
Other Maps and Plats	U.S. Geological Survey quadrangle maps, plat books of ownership

3. Aerial Photos

- i. Aerial photos can provide information on current and historical land use patterns.

There are a variety of places where these photos can be found:

- a. MnGeo, County Offices, City Offices U.S. Soil Conservation Service, U.S. Agriculture Stabilization and Conservation Service, Minnesota DNR, U.S. Forest Service, Minnesota D.O.T., Mining and Forest Product Companies, University of Minnesota, Aerial Mapping Companies.

4. Other Records

- i. The lists above are not comprehensive. Pertinent records can also be found in unlikely places.
 1. For example, various mineral holding companies with vast records may house records pertinent to corner restoration. The researcher may need to search the tax records in order to determine where these companies have interest and visit said companies offices in order to gain access to the records.

C. Preliminary Corner Certificate

After record resources have been identified and researched, the information should be organized and transcribed to a preliminary statement of evidence for the corner certificate. See Section IX.

This preliminary statement of evidence will guide the surveyor in determining search areas, pertinent related feature calls and corner ties of record. **This step ensures that all pertinent information is available in the field when completing corner searches.**

D. Research tips

1. Develop a check list to ensure that the possible sources of information have been investigated.
2. Carefully study the notes of the original surveyor. Specifics of how lakes were crossed by survey, inconsistent calls, speed of work, due care for astronomic fieldwork, comments about terrain, accuracy of natural feature call ties, etc. can provide insight into the methods utilized by the original surveyor.
3. Sometimes local unqualified personnel attempted to restore corner positions and set monuments that were not typically set by surveyors (i.e. buggy axels, odd pipes, irons, crankshafts, etc.). Some foresters laid out plantations with wood posts and/or laid out 40's as square cardinal boxes. Farmers utilized standard fence rolls of 1320' in order to fence in their property. Due caution is needed to research the types of monuments typically utilized in an area.
4. Develop relationships with surveyors across the state. These relationships can be invaluable when working in an unfamiliar locality.
5. Review all maps, plats, surveys and aerial photos and compare distances to the Public Land Survey notes to correlate physical calls such as streams, lakes, swamps, etc...
 - i. Utilizing a modern GIS mapping system can greatly reduce the size of search areas. When used in conjunction with CAD systems, feature calls, roads, historic field lines and other features can be identified via aerial imagery or LiDAR derived elevation models.

Section VI. FIELD SEARCH

A. Introduction

A thorough field search for corner evidence is as important as complete records research of the corner. The goal is to find the position of the original monument that the GLO surveyor set.

Field reconnaissance of the area using the record research data of the Public Land Survey methods is necessary in order to narrow the search area for exploring the area for evidence. Much reconnaissance can be completed utilizing GIS maps and imagery overlays, but it cannot replace a site visit. Utilizing a lost position from the records / GIS and using it as the basis of your search may be problematic. Overreliance on coordinates can easily cause valuable evidence to be overlooked. Checks to nearby natural feature calls or other known information can often reveal alternate positions to consider in the field.

A retracement survey is made in order to locate existing monuments, occupation lines, possible corner locations and natural feature calls from PLSS field notes and historical corner positions which were identified in the research process.

B. Field Location from record evidence

1. All record data relationships to established monuments, accessories and calls to natural features should be reviewed in order to define and concentrate the area of search.
 - i. The preliminary statement of evidence for the corner certificate will aid tremendously in comparing historical distances and corner ties to current conditions.
2. An experienced surveyor or person under direct supervision of a surveyor should perform the field search for valuable evidence which may be overlooked or destroyed. Expertise in the identification of evidence can only be obtained with experience. For example, when searching for original bearing tree remains, knowledge of characteristics of somewhat decayed wood is imperative. Consult with experts and other resources when needed.
3. The field search should be made at a time of year when conditions are most suitable for uncovering evidence. This may depend on the terrain, vegetation or ground cover.
 - i. This consideration is extremely important when searching for corners where there are little to no records subsequent to the original survey. In these cases the surveyor will be likely be searching for original corner evidence. Most of this evidence is obliterated and the only remains that can be found are in the form of decayed posts, stumps and decayed stump mounds. Searching for this type of evidence in the winter when there is 12" of snow cover is likely a fruitless effort. The same is true if searching in the middle of the summer when the grass and underbrush obscures all view of the ground. Searching in the spring and fall may produce the most favorable searching conditions.

4. The record evidence of the monuments to be located will suggest the type of search equipment to be used during the field search. The following list should be considered when preparing for the search.
 - i. Metal locator
 1. For recovery of metallic monuments.
 - ii. Hand tools (tape measure, compass, axe, picks, shovel, etc.)
 1. Where monumentation is expected within a small area or near the surface.
 - iii. Mechanical equipment (backhoe or jackhammer)
 1. For excavation in large, deep or difficult search areas.
5. Examine the search area to locate all existing monuments, ties and topographical references. This information and the surveyor's judgement will control the depth and extent of excavations. See Section VII for further information of field excavations.
6. A field search using proper equipment should be made at every potential monument site. The extent of the search to be made is a judgement based upon the surveyor's knowledge of the area and the likelihood of evidence being recovered.
- C. Land Owner and Resident Interviews
 1. An interview should be performed when local residents have knowledge of corner information. The interview should obtain pertinent historical information related to the corner position. The interview may support or discredit the position of found evidence or a contemplated corner position.
 2. Develop an interview form. The form should include space for a statement and signature of the person being interviewed. The date and name of the interviewer should be included.
 3. On large remonumentation projects, in lieu of an interview, a flyer can be provided to local landowners soliciting the same information contained in an interview.
 4. Interviews should be completed prior to the commencement of field searches in order to get baseline information. This can also uncover records not previously known to the surveyor.
 5. An affidavit may be desired when important parol evidence is received.

PLSS Land Owner Interview Questions

Date _____

Interviewer _____

Section Corner _____ Section _____ Township _____ Range _____ Principal Meridian _____

Parcel ID Number _____

Land owner _____ Age _____

Owner address _____

Owner Phone number _____

Where is your land in relationship to this corner? _____

How long has the land been in your family? _____

How long have you lived at this location? _____

Do you know of any surveys in the area? _____

Do you know if there is an existing monument at this corner (Stones, Pipe, etc...)?

Do you know if your fence line or other improvements are on the Section, Quarter, or 1/16th line?

If Yes, how can you be certain that it is? _____

How long has the fence line or other improvements been in its current location?

Have there been any property disputes, feuds, moved fence line or legal proceedings in the vicinity of the corner?

Is there anyone else that might have knowledge of the land corner location?

Any other information?

Land Owner Signature and Date

_____ Date _____

Section VII. CORNER EXCAVATION

A. Introduction

Excavating for PLSS corner evidence is one of the most important processes to substantiate a PLSS corner. A shovel is the most important instrument that a surveyor carries. Surveyors should always be striving to find the original corner position. If there is no record of a previous corner excavation then an excavation may be warranted.

B. Analysis before excavation

1. After all evidence has been collected, then analyze possible corner position(s) and determine if an excavation is necessary. The analysis should include comparison of historical comparable distances, consistency of ties, monuments found, all historical ties and alternate positions.
2. Ask the following questions to determine if an excavation is necessary. If the answers to these questions lead to the conclusion that there **may** be an alternative monument of record under the surface then an excavation is warranted.
 - i. Has the corner been excavated before at this location?
 1. If the corner was previously excavated and a monument found then an excavation may not be warranted.
 2. Alternatively, if a monument was not found then it is possible the excavation was not adequate.
 - ii. Were previous excavations in the correct location?
 1. If previous excavations were in the correct location then an excavation may not be warranted.
 - iii. Is there a difference between found monumentation and monuments of record?
 1. If the type of monument found does not match the records then an excavation may be warranted.
 - iv. What is the record monument?
 1. Is it likely that the record monument would have been destroyed?
 - v. Is the corner a certified perpetuated position?
 1. If a corner was previously certified then it may carry more weight than an unrecorded monument.
 2. Alternatively, if the certified corner was not excavated then an excavation may be necessary.
 - vi. Is the corner in a cut or fill section of a roadway?
 1. Fill sections are more likely to contain monuments of record.
 - vii. Would an excavation unnecessarily damage the roadbed?
 1. Destroying a road bed in order to find a monument of record may not be in the public interest. Contact the local road authority for guidance.
3. Even if a record monument is found in place, if the evidence analysis calls for an excavation then ensure an excavation is completed.
4. When in doubt, excavate the corner to expose all potential corner evidence underground to remove any doubt.
5. Request a utility location ticket with Gopher State One Call prior to excavation.

- C. Excavating in the road
 - 1. Consult the local road authority to acquire permission and necessary permits.
 - 2. Excavate at apparent occupation if it is reconcilable with the original survey and subsequent resurveys.
 - 3. Make the excavation as long and wide as possible.
 - 4. Look for old roadbeds under current roadbed. Monuments can be found in and under those old roads.
 - i. If there is not an old roadbed then the area may have been cut or subcut and any evidence may have been destroyed.
 - 5. Excavate until undisturbed ground is uncovered. Since there are different soil types across the state, knowledge of local soil types and conditions is imperative.
 - i. This knowledge can come from local soil experts or from previous excavations in the area.
 - 6. When excavating with a backhoe, use a backhoe operator that will excavate in shallow scrapes without destroying evidence. A flat bucket without teeth is ideal for backhoe excavations.

- D. Excavating off the road
 - 1. Hand excavations are the norm outside of roadways.
 - 2. Excavate around found monuments and occupation to see if there is adjacent evidence or evidence beneath topsoil.
 - 3. Evidence of monuments may be deeper than anticipated.

- E. Analysis after excavation
 - 1. Make sure all options and positions have been exhausted.
 - 2. Come to a final conclusion for the corner position based upon all of the evidence gathered.
 - 3. Document the findings
 - i. Include excavation size and depth.
 - ii. Include method for determining location.
 - iii. Ensure this information is translated to the corner certificate so future surveyors do not feel the need to excavate again.
 - iv. Pictures are the best documentation of evidence that can be collected when excavating for corners.

Section VIII. CORNER MONUMENTATION

A. Background

Monumentation establishes a permanent marking of the lines and fixes the corner position so that the location of the surveyed lands may always be definitely known. The legal significance of a corner monument has been well established by the courts where such evidence is given far greater weight than all other categories of evidence.

B. Field Monumentation

1. Type of Monument

A durable and easily identifiable monument locatable with a magnetic locator should be placed at the position of each corner if possible. Each county should make an effort to standardize the monuments placed within its boundaries. Each monument should be stamped or engraved to identify it, identify who it was set by and should have a centering mark to define the exact location of the corner.

Ensure to properly stamp reference monuments, witness corners and meander corners to ensure proper usage. See the BLM's Manual of Survey Instructions, 2009 edition for examples.

2. In place Monuments

In the case of an in place, nonferrous monument, sufficient ferrous material should be placed around and/or below the surface of the monument to facilitate the use of a magnetic locator. It is imperative that the surveyor file a certificate of location for any corner that falls under this category in order to relieve future confusion over the corner monumentation.

C. Setting of Monuments

Monuments should be placed carefully to minimize any future movement.

Reference monuments should be placed where corners are located in unstable or inaccessible locations. It is always necessary to consider what future uses may be made of the monument's location when placing it.

If a county has a standard monument then any monument set should conform to that standard.

If a county does not have a standard monument then use the following as a guide:

- a. For a gravel road, a “crank shaft” or “fin” type cast iron monument, set down 1 foot below the road surface would be advisable.
- b. For a paved road, a drilled or punched rod and disk of larger diameter is advisable. Countersink the monument so it is flush with or just below the driving surface. Avoid using concrete nails (PK, Mag, etc.) as they are subject to removal by plow trucks.
- c. In stable soils, a rod or pipe and disk of larger diameter is advisable. The monument may need to be driven below the surface in yards, fields or other areas where it would be susceptible to being disturbed. In tree cover, the monument should protrude above the surface in order to ensure visibility.
- d. In unstable soils, or where marsh or peat type of soil is encountered, a monument of sufficient length and/or extendable type of monument is preferred where at a certain depth, the monument will become firm and not subject to movement.
- e. If the surface is hard and impenetrable then a monument may have to be erected in a mound of stone or other structure. See the BLM’s Manual of Survey Instructions, 2009 edition for examples. A hammer drill can also be used to place a rebar at a corner position which falls in bedrock or boulders.
- f. For Township corners, refer to Minnesota Statutes 381.13.
“In every county, the county board shall cause to be placed by a licensed surveyor at the northeast corner of each congressional township a durable magnetic monument having a head not less than 3-1/2 inches in diameter and a length of 20 inches. The monument must be embedded its full length in the ground. The county board shall pay from the treasury the expense of installing the monuments, and the place where the monument is located is prima facie evidence of the northeast corner of such township.”

D. Number of Ties or Accessories

Each monument should have a minimum of four ties to substantial objects in the immediate vicinity of the corner so that future verification or relocation of the corner is possible. Signage is also recommended for both the corner and the accessories.

The corner should be able to be reestablished from ties utilizing hand tools. This allows the surveyor to reestablish the corner without the use of a total station or GNSS equipment.

Section IX. CORNER CERTIFICATES

A Certificate of Location shall be prepared and filed for each PLSS corner recovered and/or monumented according to Minnesota Statutes 381.12. This certificate shall be a complete document relating to the location, monumentation, perpetuation and history of a corner. Refer to Appendix C for examples of corner certificates.

- A. The following outline provides guidelines for preparation of the Certificate of Location.
 - 1. Where a county has an identification standard, be sure to identify the corner according to that standard.
 - 2. Where a county does not have an identification standard, identify the corner to be certified in the following manner:
 - i. Identify where the corner is in the section by the North and East reference.
 - a. North Quarter Corner, Northeast Corner or East Quarter Corner.
 - ii. Identify the corner in the proper section.
 - iii. If a corner falls on a standard line or correction line then the corner shall be identified in accordance with the section that it pertains to.
 - 3. If the corner is on a county line then it should be identified and filed in each county.
 - 4. Clearly identify what type of corner the monument is representing
 - i. Section corner, Quarter Corner, Meander Corner, Witness corners, Reference monument, etc.
 - 5. Show the section, township (N/S), range (E/W), principal meridian and county.
- B. Monument
 - 1. Identify whether a monument was found or set at the corner location.
 - 2. Indicate the date of recovery or setting of the monument.
 - 3. Identify the type of monument set or found
 - 4. Describe the monument in detail and indicate its distance above or below the surface of the ground.
 - i. Be certain to provide sufficient detail as to size and character of the monument.
 - 5. If a monument is removed during excavation or for other reasons then explain fully in the statement of evidence on the back page of the certificate.
- C. Sketch of Reference Ties.
 - 1. Show all the tie information gathered during the field work.
 - 2. Identify the reference tie objects in detail
 - i. I.e. nail and disk on S.W. side of 20 inch burr oak, 2 feet above the ground.
 - 3. Reference tie distances are horizontal unless clearly stated on the sketch. Show the difference in elevation and direction of slope for slope measurements.
 - 4. Reference tie bearings are magnetic with proper declination set. Declination should be stated on the corner certificate
 - 5. The location of reference ties from the corner shall be graphically shown with the proper direction orientation.
 - 6. Show the improvements and conditions in the immediate vicinity of the corner such as roads, swamps, buildings, fences, tree lines, etc. and their relationship to the corner.
 - 7. Show ties to other monuments as found.
 - i. Include reference to historical comparable distances as necessary
 - 8. For meander corners, note on which shore of a lake the monument is located. Clearly note if the monument is a witness corner or reference monument.

- D. Coordinate values and Measurements
1. All corners should be tied into a known geodetic coordinate system. The coordinate system should be clearly identified on the corner certificate.
 2. All grid coordinate values shall be in feet and shown to a minimum of 2 decimal places.
 3. If latitude and longitude values are shown then they should be shown in Degrees, Minutes, Decimal Seconds and shown to a minimum of 4 decimal places. The horizontal datum shall be shown.
 4. All coordinate values and measurements shown shall meet the specifications set forth in Section X of this Manual.

E. Statement of evidence

1. Include all record evidence located during the research of the corner which relates to the history of the corner. Examples of records include at a minimum, but are not limited to:
 - i. Original corner setting information.
 1. Monument details.
 - a. Who set it, What was set, When it was set
 2. Applicable chainages.
 3. Related feature calls.
 - ii. Reference ties of record including whether found or set.
 - iii. Monuments of record.
 - iv. Source, location, dates and identifying information of records.
 - v. Explanation of records which were accepted and/or disregarded.
 - vi. Historical comparable distances.
 - vii. Statements of prior excavations.
2. Include any parol evidence and/or testimony concerning the corner location. List the name, age, residence address and how the information was obtained.
3. Include all information on current field search and excavation. Indicate the extent and depth of the excavation, soil profile characteristics and the present ground elevation in relation to the natural ground elevation.
4. Identify the type, size and location of all found monuments.
5. The method used to determine the location for the corner shall be stated in an analysis of the record and field information. Statements relating the supporting evidence shall be made.
6. If a corner of record was rejected then list the bearing and distance to the rejected corner.
7. Where witness corners were established, the relationship from the witness corner to the GLO corner position shall be shown.
 - i. Note, coordinate values for both the GLO corner (not monumented) and the witness corner (monumented) shall be shown.

F. Filing

The completed and signed certificate shall be filed in the office of the County Surveyor. If the county has no County Surveyor's Office then the certificate shall be filed in the office of the County Recorder.

County Surveyor and County Recorder filing requirements are not standard across the state. Consult the applicable office prior to filing in order to meet individual county requirements.

Section X MEASUREMENT STANDARDS

In order to publish and thereby promote the use of a common datum, such as the Minnesota County Coordinate System, for coordinate values placed on the PLSS corner monuments, those using these coordinate values must be assured that the furnished coordinates have been satisfactorily obtained.

All reported coordinate values and measurements shown on a Certificate of Location of Government Corner shall meet the “*Measurement Standards*” of the current [“MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS”](#) as published by American Land Title Association® (ALTA®) and National Society of Professional Surveyors (NSPS).

Sometimes the minimum relative positional tolerance cannot be met – i.e. high order traverse is impractical, GNSS signals blocked by tree cover or terrain, monument location is very unstable. In these cases, the reason that the minimum relative positional tolerance cannot be met must be documented on the corner certificate. A value of the relative positional tolerance of the reported position must also be shown on the corner certificate.

Section XI. RECORD KEEPING

- A. Archiving Corner Information
 1. Corner information is recorded in multiple formats, thus historical records should have standard metadata to facilitate easy retrieval.
 2. Metadata should include, at a minimum:
 - a. Section*
 - b. Township (N/S)*
 - c. Range (E/W)*
 - d. Principal Meridian
 - e. Source
 - f. Remarks to aid researcher in identifying pertinent corners
 3. Corner records should be indexed in a publically accessible electronic system.
 4. Use Geographic Information Systems (GIS) to link survey records to locations on a map.

- B. Certificates of Location
 1. Index by township (N/S), range (E/W) and section whenever possible.
 2. Use Geographic Information Systems (GIS) to link certificates to locations on a map.
 3. When survey grade geodetic coordinates have been determined for a corner location, enter the coordinate values into a GIS database to facilitate future cadastral updates.
 4. Metadata should include method of determination, geodetic coordinate system, and precision of the coordinate values.
 5. When corners are certified but survey grade geodetic coordinate values cannot be determined, represent approximate corner locations without displaying coordinate values.
 6. Corners which are not certified should not be represented in GIS.

- C. Survey Records
 1. County survey records should be filed in a county office and be readily available to the public.
 2. Survey records pertinent to the remonumentation of the PLSS should be made readily available to surveyors in order to facilitate maintenance of the PLSS. Sharing records and data increases public trust and fosters more efficient remonumentation programs.
 3. Copies of official survey records should include the time period and place of storage of the original records.

*Based upon Jurisdictional convention

Section XII. REPORTS

A. Annual Report

The county surveyor should make an annual report to the county board outlining the PLSS remonumentation progress made throughout a given year.

Key components of the report

Estimated total PLSS corners in the county.

Total PLSS corners certified in the county.

Count of PLSS corners which are located with survey grade coordinate values.

Count of PLSS corners which are certified without survey grade coordinate values.

Number of PLSS corners reestablished.

Number of PLSS corners maintained.

Other jurisdictional specific information.

The report should be made available upon request.

Section XIII. PRESERVATION PROGRAMS

Experience has proven that if monuments and reference ties are not maintained then the corner position can quickly become obscured and may be difficult to reestablish. For example: There was no provision to maintain the PLSS after the federal government surveyed the public lands. The monuments quickly became obscured and in 2019 half of the PLSS corners in Minnesota do not have verifiable known positions.

In order to avoid a similar fate in the future, a program of monument preservation is necessary and should be carried out on a regular basis.

A. Updating Certified Monuments.

Periodically monuments previously certified should be visited. Disturbed monuments should be replaced, and the reference ties updated.

The surveyor should follow the guidelines provided in statute 381.12 as a guide in determining when a corner certificate needs to be filed.

B. Examples:

A previously certified corner which was monumented with a ½" iron pipe is removed prior to road construction. After construction a new cast iron monument is set.

Statute 381.12 states:

Subd. 3. Certificate of location of government corner.

(a) A certificate of location of government corner must be prepared as part of any land survey which includes or requires the use, perpetuation, or restoration of a public land survey corner and one of the following conditions exists:

(4) the corner, witness, or reference monuments shown on an existing certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located have been destroyed.

A corner certificate should be filed since the corner monument has changed.

A previously certified corner which was monumented with a cast iron monument is removed prior to road construction. After construction the cast iron monument is reset. All reference ties have remained the same.

Statute 381.12 states:

Subd. 3. Certificate of location of government corner.

(a) A certificate of location of government corner must be prepared as part of any land survey which includes or requires the use, perpetuation, or restoration of a public land survey corner and one of the following conditions exists:

(4) the corner, witness, or reference monuments shown on an existing certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located have been destroyed.

A corner certificate is not required since the corner monument is the same and the reference ties are also the same.

Note: The surveyor may wish to file a corner certificate in order to document the maintenance activity.

Example: A previously certified corner which was monumented with a cast iron monument is removed prior to road construction. After construction a new cast iron monument is set. 3 of 4 reference ties were destroyed during road construction, 3 additional reference ties were set.

Statute 381.12 states:

Subd. 3. Certificate of location of government corner.

(a) A certificate of location of government corner must be prepared as part of any land survey which includes or requires the use, perpetuation, or restoration of a public land survey corner and one of the following conditions exists:

(3) the reference ties have been destroyed or differ from those shown on an existing certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located; or

A corner certificate should be filed since the reference ties have changed.

Example: A known PLSS corner monument with a noncertified corner record is utilized in the course of a land survey.

Statute 381.12 states:

Subd. 3. Certificate of location of government corner.

(a) A certificate of location of government corner must be prepared as part of any land survey which includes or requires the use, perpetuation, or restoration of a public land survey corner and one of the following conditions exists:

(1) There is no certificate of location of government corner for the corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located; or county recorder for the county in which the corner is located; or

A corner certificate should be filed since there has been no corner certificate filed.

These examples are not intended to represent every situation which can occur in the field. It is the responsibility of the certifying surveyor to determine when/if filing a corner certificate is required by Minnesota Statute.

Section XIV. REMONUMENTATION PROGRAMS

Remonumentation programs vary widely across the state of Minnesota. This section will outline the different options that are currently being practiced.

A. Dedicated County Staff

The most effective remonumentation programs are those which have dedicated county staff. This option allows staff to plan and implement a long term strategy for remonumenting and maintaining the PLSS within a county. This option allows the staff to react to areas of need within a county. Landowners and internal county staff benefit greatly from having dedicated staff to discuss survey questions and resolve issues pertaining to the PLSS.

Dedicated staff can also build relationships to support other departments. Examples include:

- Public Works and Road Construction
- Right of Way Maintenance
- Planning and Zoning
- Recorders
- Assessors
- Public Lands
- GIS

These offices, and others, benefit from having county staff dedicated to PLSS remonumentation and maintenance. Full time survey staff can build relationships and identify areas of common need and concern. Programs can be designed and implemented around these needs.

County staff can also build relationships with their private sector counterparts. They can assist private surveyors in reestablishing and maintaining PLSS corners. A positive and cooperative relationship between the public and private sector has proven to aid in the remonumentation and maintenance of the PLSS.

Many counties have historically had full time staff dedicated to remonumentation and maintenance of the PLSS. The result is a nearly complete PLSS in these counties.

B. Contract Remonumentation

Contract remonumentation can allow a county to remonument areas of concern without dedicated long term funding. This option can also be utilized as a supplement to a dedicated county staffed remonumentation program.

In order to succeed, the contract remonumentation must be done under the guidance of a County Surveyor. The County Surveyor's oversight ensures that remonumentation procedures are properly followed and the public interest is protected.

C. Reimbursement Program

Preparation of Corner Certificates can be a time consuming and expensive additional cost to a landowner that requires a survey. A program which reimburses a surveyor a portion of the cost for the preparation of the certificate can encourage more land surveys to be completed and corner certificates to be filed.

Parameters should be put in place that outlines the processes and procedures for receiving a reimbursement. Examples include:

- Minimum requirements of the Corner Certificate
- Fixed amount that will be reimbursed
- Deadline to file the application
 - i.e. within 6 months of completing a survey
- Deadline to file the corner certificate
- Parameters to qualify for the program

Oversight by a County Surveyor must be maintained in order to protect the public interest.

D. Policy

Counties can adopt policies which require the preparation of Corner Certificates.

Examples include:

- Subdivision and Development Policies
- Building/Land Use Permit Policies
- Road Construction Policies
- Utility, pipeline and cell tower development policies
- Timber Harvest Policies

Oversight by a County Surveyor should be maintained in order to protect the public interest.

Appendix A GENERAL RULES

1974 Edition, Bureau of Land Management Circular on Restoration of Lost and Obliterated Corners

GENERAL RULES

The general rules followed by the Bureau of Land Management, which are controlling upon the location of all public lands, are summarized in the following paragraphs:

FIRST: That the boundaries of the public lands, when approved and accepted, are unchangeable.

SECOND: That the original township, section, and quarter-section corners must stand as true corners which they were intended to represent, whether in the place shown by the field notes or not.

THIRD: That quarter-quarter-section corners not established in the original survey shall be placed on the line connecting the section and quarter-section corners, and midway between them, except on the last half mile of section lines closing on the north and west boundaries of the township, or on the lines between fractional or irregular sections.

FOURTH: That the center lines of a section are to be straight, running from the quarter-section corner on one boundary to the corresponding corner on the opposite boundary.

FIFTH: That in a fractional section where no opposite corresponding quarter section corner has been or can be established, the center line must be run from the proper quarter-section corner as nearly in a cardinal direction to the meander line, reservation, or other boundary of such fractional section as due parallelism with the section boundaries will permit.

From the foregoing it will be evident that corners established in the public land surveys remain fixed in position and are unchangeable; and that lost or obliterated corners of those surveys must be restored to their original locations from the best available evidence of the official survey in which such corners were established.

Appendix B SELECT MINNESOTA STATUTES (2019)

Listed below are Minnesota State Statutes relevant to the remonumentation of Section and Quarter Section Corners. This is not intended to be a comprehensive list of statutes relevant to Land Surveying in the State of Minnesota. Statutes were retrieved from <https://www.revisor.mn.gov/statutes/> on May 31, 2019. Make sure to consult current State Statutes for revisions.

160.15 PRESERVING SECTION OR QUARTER-SECTION CORNERS.

Subdivision 1. **Perpetuation of corners.** Whenever the construction, reconstruction, or maintenance of a public street or highway causes the destruction or obliteration of a public land survey corner marker or monument, the road authority having jurisdiction over the highway or street shall provide for the perpetuation of the corners and placement of corner monuments, corner markers, reference monuments, or witness monuments by a land surveyor licensed under chapter 326. A certificate of location of government corner shall be prepared in accordance with section 381.12.

Subd. 2. [Repealed, 2015 c 7 s 15]

Subd. 3. **Time of placement; tie objects of durable material.** Reference ties evidencing the location of the public land survey corner shall be established by a land surveyor licensed under chapter 326 before the obliteration of the corner in at least three places if practicable and shall consist of objects of durable material. If it is not practicable to establish three reference ties, two must be established.

Subd. 4. [Repealed, 2015 c 7 s 15]

Subd. 5. [Repealed, 2015 c 7 s 15]

Subd. 6. **Cost of placing markers.** The cost of placing the markers and monuments, including filing fees, must be paid out of the respective funds provided by law, or set aside for highway or street purposes.

History: 1959 c 500 art 1 s 15; 1971 c 598 s 1; 1973 c 123 art 5 s 7; 1976 c 181 s 2; 2004 c 154 s 1; 2005 c 99 s 1; 2015 c 7 s 1,2

216D.04 EXCAVATION; LAND SURVEY.

Subdivision 1. **Notice required; contents.** (a) Except in an emergency, an excavator shall and a land surveyor may contact the notification center and provide notice at least 48 hours, excluding Saturdays, Sundays, and holidays and not more than 14 calendar days before beginning any excavation or boundary survey. An excavation or boundary survey begins, for purposes of this requirement, the first time excavation or a boundary survey occurs in an area that was not previously identified by the excavator or land surveyor in the notice.

(b) The notice may be oral or written, and must contain the following information:

- (1) the name of the individual providing the notice;
- (2) the precise location of the proposed area of excavation or survey;
- (3) the name, address, and telephone number of the individual or individual's company;
- (4) the field telephone number, if one is available;
- (5) the type and extent of the activity;
- (6) whether or not the discharge of explosives is anticipated;
- (7) the date and time when the excavation or survey is to commence; and
- (8) the estimated duration of the activity.

Subd. 1a. **Plans for excavation.** (a) Any person, prior to soliciting bids or entering into a contract for excavation, shall provide a proposed notice to the notification center to obtain from the affected operators of underground facilities the type, size, and general location of underground facilities. Affected operators shall provide the information within 15 working days. An operator who provides information to a person who is not a unit of government may indicate any portions of the information which are proprietary and may require the person to provide appropriate confidentiality protection. The information obtained from affected operators must be submitted on the final drawing used for the bid or contract and must depict the utility quality level of that information. This information must be updated not more than 90 days before completion of the final drawing used for the bid or contract.

(b) This subdivision does not apply to bids and contracts for:

- (1) routine maintenance of underground facilities or installation, maintenance, or repair of service lines;
- (2) excavation for operators of underground facilities performed on a unit of work or similar basis; or
- (3) excavation for home construction and projects by home owners.

(c) A person required by this section to show existing underground facilities on its drawings shall conduct one or more preliminary design meetings during the design phase to communicate the project design and coordinate utility relocation. Affected facility operators shall attend these meetings or make other arrangements to provide information.

(d) A person required by this section to show existing underground facilities on its drawings shall conduct one or more preconstruction meetings to communicate the project design and coordinate utility relocation. Affected facility operators and contractors shall attend these meetings or make other arrangements to provide information.

(e) This subdivision does not affect the obligation to provide a notice of excavation as required under subdivision 1.

Subd. 2. **Duties of notification center; regarding notice.** The notification center shall assign an inquiry identification number to each notice and retain a record of all notices received for at least six years. The center shall immediately transmit the information contained in a notice to every operator that has an underground facility in the area of the proposed excavation or boundary survey.

Subd. 3. **Locating underground facility; operator.** (a) Prior to the excavation start time on the notice, an operator shall locate and mark or otherwise provide the approximate horizontal location of the underground facilities of the operator and provide readily available information regarding the operator's abandoned and out-of-service underground facilities as shown on maps, drawings, diagrams, or other records used in the operator's normal course of business, without cost to the excavator. The excavator shall determine the precise location of the underground facility, without damage, before excavating within two feet of the marked location of the underground facility.

(b) Within 96 hours or the time specified in the notice, whichever is later, after receiving a notice for boundary survey from the notification center, excluding Saturdays, Sundays, and holidays, unless otherwise agreed to between the land surveyor and operator, an operator shall locate and mark or otherwise provide the approximate horizontal location of the underground facilities of the operator, without cost to the land surveyor.

(c) For the purpose of this section, the approximate horizontal location of the underground facilities is a strip of land two feet on either side of the underground facilities.

(d) Markers used to designate the approximate location of underground facilities must follow the current color code standard used by the American Public Works Association.

(e) If the operator cannot complete marking of the excavation or boundary survey area before the excavation or boundary survey start time stated in the notice, the operator shall promptly contact the

excavator or land surveyor.

(f) After December 31, 1998, operators shall maintain maps, drawings, diagrams, or other records of any underground facility abandoned or out-of-service after December 31, 1998.

(g) An operator or other person providing information pursuant to this subdivision is not responsible to any person, for any costs, claims, or damages for information provided in good faith regarding abandoned, out-of-service, or private or customer-owned underground facilities.

Subd. 4. Locating underground facility; excavator or land surveyor. (a) The excavator or land surveyor shall determine the precise location of the underground facility, without damage, before excavating within two feet on either side of the marked location of the underground facility.

(b) If the excavator or land surveyor cancels the excavation or boundary survey, the excavator or land surveyor shall cancel the notice through the notification center.

(c) The notice is valid for 14 calendar days from the start time stated on the notice. If the activity will continue after the expiration time, then the person responsible for the activity shall serve an additional notice at least 48 hours, excluding Saturdays, Sundays, and holidays, before the expiration time of the original notice, unless the excavator makes arrangements with the operators affected to periodically verify or refresh the marks, in which case the notice is valid for six months from the start time stated on the notice.

(d) The excavator is responsible for reasonably protecting and preserving the marks until no longer required for proper and safe excavation near the underground facility. If the excavator has reason to believe the marks are obliterated, obscured, missing, or incorrect, the excavator shall notify the facility operator or notification center in order to have an operator verify or refresh the marks.

History: 1987 c 353 s 10; 1992 c 493 s 5; 1993 c 341 art 1 s 21; 1997 c 196 s 1; 1998 c 348 s 1-3; 2004 c 163 s 2-6

381.12 SECTION CORNERS PERPETUATED.

Subdivision 1. **Surveyor, employment.** When the county board determines that the monuments established by the United States in the public lands survey to mark public land survey corners have been destroyed or are becoming obscure, it may employ a land surveyor licensed under chapter 326 to perpetuate said corners with durable magnetic monuments. The land surveyor shall make full and accurate notes and records from which the entire survey can be retraced, and, no later than one year after perpetuating the corners, shall file the records of such survey and a certificate of location of government corner for each corner, prepared in compliance with subdivision 3. The land surveyor shall file the records and certificate in the office of the county surveyor if an office is maintained in a building maintained by the county for county purposes on a full-time basis, and if not, the land surveyor shall record them in the office of the county recorder. The monuments are prima facie evidence of the original United States public land survey corners.

Subd. 2. **Expense, tax levy.** The county board of any county may levy a tax upon all the taxable property in the county for the purpose of defraying the expense incurred, or to be incurred for:

- (1) the preservation and restoration of monuments under this section;
- (2) the preservation or establishment of control monuments for mapping activities;
- (3) the modernization of county land records through the use of parcel-based land management systems;

or

- (4) the establishment of geographic (GIS), land (LIS), management (MIS) information systems.

Subd. 2a. **Monuments; manner of placement.** (a) Perpetuation of the corners and placing of corner monuments, reference monuments, or witness monuments must be in the manner described in

paragraphs (b) to (e).

(b) At the corner location, a durable magnetic monument must be placed so as not to be disturbed by routine activities.

(c) For a corner monument set below a paved surface, a supplemental marker that is visible at the surface must be set.

(d) An access cover or monument box providing access to a monument below a paved surface may be used in lieu of setting a supplemental marker at the surface.

(e) If it is not practical or safe to set a monument at the corner location, a durable magnetic monument may be set as a witness or reference monument.

Subd. 3. Certificate of location of government corner. (a) A certificate of location of government corner must be prepared as part of any land survey which includes or requires the use, perpetuation, or restoration of a public land survey corner and one of the following conditions exists:

(1) there is no certificate of location of government corner for the corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located; or

(2) the land surveyor who performs the survey accepts a position for the public land survey corner which differs from that shown on a certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located; or

(3) the reference ties have been destroyed or differ from those shown on an existing certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located; or

(4) the corner, witness, or reference monuments shown on an existing certificate of location of government corner on file in the office of the county surveyor or the county recorder for the county in which the corner is located have been destroyed.

(b) A certificate of location of government corner must include all the following elements:

(1) the identity of the corner, as referenced to the public land survey system;

(2) a description of any record evidence, monument evidence, occupation evidence, parcel evidence, or any other material evidence considered by the land surveyor, and whether the monument was found or placed;

(3) a description of any corner monument, witness monument, or reference monument placed;

(4) where practicable, reference ties to at least three durable objects;

(5) a plan view drawing depicting the corner position, relevant monuments, and reference ties in sufficient detail to enable accurate restoration of the corner position;

(6) a description of any significant discrepancy between the position of the corner as restored and the position of that corner as previously accepted or certified;

(7) a statement identifying the methods used to restore and perpetuate the corner; and

(8) the directions and distances to other public land survey corners which were used as evidence or used for proportioning in determining the corner positions.

(c) The certificate of location of government corner shall be certified according to Minnesota Rules, part 1800.4200, subpart 4, and shall include a statement that the certificate of location of government corner is correct and complete to the best of the land surveyor's knowledge and belief.

(d) No later than one year after perpetuating or restoring a public land survey corner, the land surveyor shall file or record the certificate of location of government corner in the same manner as required under subdivision 1.

(e) A reasonable fee for professional services may be paid to the land surveyor filing or recording the certificate of location of government corner with the respective county, on approval and determination of the fee by resolution of the county board.

History: (784) *RL s 448; 1951 c 288 s 1; 1973 c 583 s 28; 1976 c 181 s 2; 1983 c 216 art 1 s 64; 1986 c 365 s 11; 1992 c 511 art 2 s 35; 2005 c 4 s 67; 2005 c 99 s 2,3; 2015 c 7 s 4*

381.13 TOWNSHIP LANDMARKS.

In every county, the county board shall cause to be placed by a licensed surveyor at the northeast corner of each congressional township a durable magnetic monument having a head not less than 3-1/2 inches in diameter and a length of 20 inches. The monument must be embedded its full length in the ground. The county board shall pay from the treasury the expense of installing the monuments, and the place where the monument is located is prima facie evidence of the northeast corner of such township.

History: (785) *RL s 449; 1986 c 365 s 12*

389.04 RULES FOR SURVEYS.

In all surveys the basis for the courses must be defined. In subdividing townships, sections, or parts of sections, as established by the United States survey thereof, and in restoring lost or obliterated government corners, the county surveyor shall follow the rules established by or pursuant to acts of Congress, and all such surveys shall be made in strict conformity to the original survey made by the United States.

History: (939) *RL s 578; 1986 c 365 s 17*

505.31 ENTRY UPON LAND; NOTICE.

It is lawful for any surveyor to enter upon any land for the purpose of locating existing survey or reference monuments or landmarks, provided, however, such surveyor shall be responsible to the landowner for any and all damages as a result of such entry, and no surveyor may enter upon any land unless first notifying the owner or occupant of the intended entry for such purpose.

History: *1959 c 322 s 1; 1986 c 444*

507.093 STANDARDS FOR DOCUMENTS TO BE RECORDED OR FILED.

The following standards are imposed on documents to be recorded with the county recorder or the registrar of titles other than by electronic means as provided in section [507.24](#), except as provided in sections [505.021, subdivision 1](#), and [505.04](#) for plats; [508.47, subdivision 4](#), and [508A.47, subdivision 4](#), for registered land surveys; and [515B.2-110\(c\)](#) and [515B.2-1101\(c\)](#) for common interest community plats:

(1) The document shall consist of one or more individual sheets measuring no larger than 8.5 inches by 14 inches.

(2) The form of the document shall be printed, typewritten, or computer generated in black ink and the form of the document shall not be smaller than 8-point type.

(3) The document shall be on white paper of not less than 20-pound weight with no background color or images and, except for the first page, shall have a border of at least one-half inch on the top, bottom, and each side.

(4) The first page of the document shall contain a blank space at the top measuring three inches, as measured from the top of the page, and a border of one-half inch on each side and the bottom. The right half of the blank space shall be reserved for recording information and the left half shall be reserved for tax certification. Any person may attach an administrative page before the first page of the document to accommodate this standard. The administrative page may contain the document title, document date, and, if applicable, the grantor and grantee, and shall be deemed part of the document when recorded.

(5) The title of the document shall be prominently displayed at the top of the first page below the blank space referred to in clause (4), or on the administrative page.

(6) No additional sheet shall be attached or affixed to a page that covers up any information or printed part of the form.

(7) A document presented for recording must be sufficiently legible to reproduce a readable copy using the county recorder's or registrar of title's current method of reproduction.

History: *1996 c 338 art 3 s 1; 2000 c 275 s 2; 2002 c 365 s 1; 2005 c 156 art 2 s 40; 2006 c 222 s 1; 2008 c 238 art 3 s 11; 2015 c 7 s 12*

Appendix C

Named per local convention
Section IX-A1

Twp 145 Rge 29 Index No. Z.0 - 25.0



CERTIFICATE OF LOCATION OF GOVERNMENT CORNER

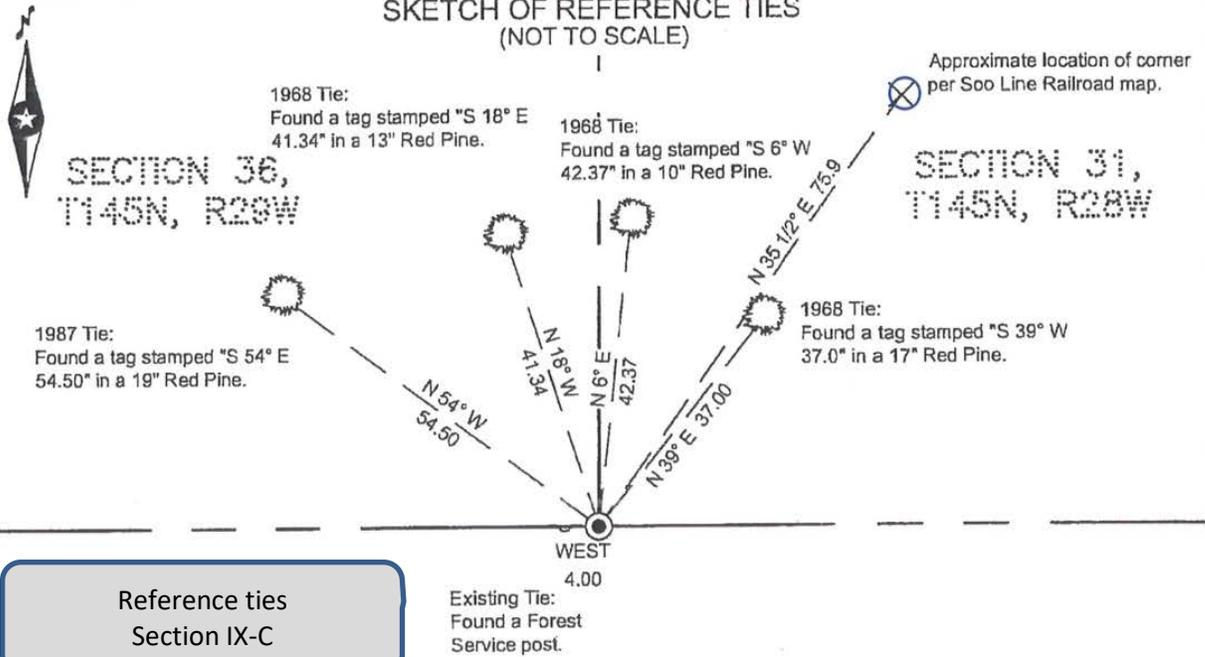
Standard Southeast corner of Section 36, Township 145 N., Range 29 W., 5th P.M.
State of Minnesota, County of Cass

At the corner location shown on the sketch:

On 03-29-2011 found a 6" diameter concrete cylinder with a 2.5" diameter brass cap,
18" above the surface grade. The monument is approximately 115 feet southerly of the old railroad grade.
 left monument as found lowered monument removed monument (explain)

On 07-29-2011 lowered monument so that the top is flush with the surface grade.

**SKETCH OF REFERENCE TIES
(NOT TO SCALE)**



NOTE: All bearings are true.

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

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed land Surveyor under the laws of the State of Minnesota. I further certify that this United States public land survey monument record is correct and complete to the best of my knowledge and belief.

Terry L. Freeman
Terry L. Freeman, Land Surveyor

Date 3/1/12 MN License No. 21367

A000578699
OFFICE OF COUNTY RECORDER
CASS COUNTY MINNESOTA
CERTIFIED, FILED, AND/OR
RECORDED ON
03/15/2012 10:27:28 AM
AS DOC #: A000578699
PAGES: 2 REC FEES: 0.00
KATHRYN M. NORBY
COUNTY RECORDER

Index No. Z.O - 25.0

Statement of evidence
Section IX-E

STATEMENT ON EVIDENCE

Standard Southeast Corner of Section 36, Township 145 North, Range 29 West of the 5th Principal Meridian.

In 1871, G.R. Stuntz, U.S. Deputy Surveyor, set a wood post in place to mark the location of this corner and established bearing trees as follows: a 19" Yellow Pine, N40°E 41 links; a 9" Black Pine, N66°W 91 links. Copies of notes on file in the Cass County Survey Department.

Example

No Date, Soo Line Railroad Valuation Map on file at the Minnesota Department of Transportation shows the subject corner to be 57 feet southerly of centerline Sta. 318+25 at an angle of 70°32' from the railroad centerline tangent to the southeast. A copy of the map is on file in the Cass County Survey Department.

Example

1900 and 1904, U.S. Army Corp of Engineers maps for the Leech Lake and Lake Winnibigoshish Reservoirs show corner found by surveyors Horace Dunaway and T. Milton Fowble. A copy of the map is on file in the Cass County Survey Department.

Example

In 1924, G.E. Marshall, Township Supervisor, found a "squared up", 10" Norway Pine at the corner position. He noted that the position falls south of the cut (on north side), on bank at edge of Cut. Original corner was north in the cut. Information on file in U.S.F.S. Cass Lake office T145N R28W Book 1, Pg. 7.

Example

Date of record, source,
identifying information
Section IX-E1iv

1955, Curo survey by Northern Engineering & Consulting survey in Section 31-145-28. On page 36, the notes indicate the Forest Ranger told him that the area was logged and the yellow location poster was gone. Sketch on page 41 shows symbol for corner.

Example

In 1967, J. Ekstrom, a U.S. Forest Surveyor, found no evidence at the corner position. Information on file in U.S.F.S. Cass Lake office T145N R28W Book 1, Pg. 7.

Example

On July 8, 1968, W. Okerman, a U.S. Forest Surveyor, set a concrete cylinder with brass cap at the corner position by proportional measurement from Cadastral Survey, +/- 110 feet south of R.R. tracks. He also established four new bearing ties as follows: an 8" Red Pine, N39°E, 37.00 feet; a 5" Red Pine, N6°E, 42.37 feet; a 7" Red Pine, N18°W, 41.34 feet; and an 8" Jack Pine, N3°W, 23.36 feet. Information on file in U.S.F.S. Cass Lake office T145N R28W Book 1, Pg. 7.

Example

Method used to
determine corner position
Section IX-E5

In 1974, C.E. Akin, United States Cadastral Surveyor, made a dependent resurvey of the township lines of Township 145 North, Range 29 West. The notes on pages 1 and 2, which describe the resurvey, indicate that the original corner position was at the local standard cor. of Tp. 145 N., Rs. 28 and 29 W., set by R.L.S. No. 6807, orig. cors. recovered in this resurvey, and which I accept as the best available evidence. The record indicates that all of the 1968 accessories were recovered. (Running notes on file in Cass County Survey Department)

Example

On August 14, 1987, M. Hayes and C. Krause, a U.S.F.S. surveyors, found the 1968 concrete cylinder in good condition and the four BTs. They also established three new bearing ties as follows: a 17" Norway Pine, N54°W, 54.50 feet; a 17" Jack Pine, N17°E, 80.00 feet; and a steel post, West, 4.0 feet. Information on file in U.S.F.S. Cass Lake office T145N R28W Book 1, Pg. 46.

Example

On March 29, 2011, a Northern Engineering & Consulting survey crew found a 2-1/2" brass cap in a 6" concrete cylinder, up 18" at ground surface. Five existing ties were found as shown on the front page of this certificate.

On July 29, 2011, a Northern Engineering & Consulting survey crew removed found concrete and dug down so that the top is flush with the surface grade. Found concrete monument accepted as set in the lost position in 1968 by the USFS Surveyor and used by the BLM in 1974 as a point of local control.

December 2011, The Cass County Survey Office (CCSO) located the old railroad bed and nearby corners, using GPS in topo mode. They then calculated the approximate location of the corner as shown on the Soo Line Railroad map. This approximate location is N 35 1/2° E from the concrete cylinder accepted as a point of local control.

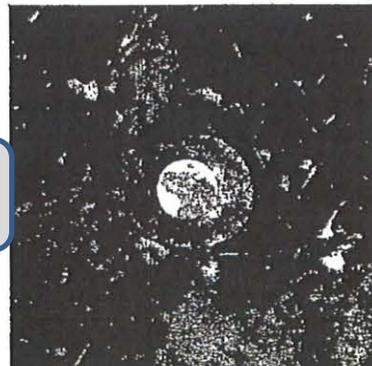
Minnesota State Plane (Central Zone)

Northing 1175826.819
Easting 2614893.416

County Coordinates (Cass County North)

Northing 290056.736
Easting 481959.171

Coordinate Values
Section IX-D



CERTIFICATE OF LOCATION OF GOVERNMENT CORNER

Southwest Corner of Section 18
Township **62 N**, Range **20 W**, 4th P.M.
STATE OF MINNESOTA, COUNTY OF ST. LOUIS.

Office of the County Recorder
St. Louis County, Minnesota

Recorded on 10/14/2016
at 2:10 PM

Document No. 01295877

Mark A. Mancelli
County Recorder
By: B Goodreau
ATP 366

Named per local convention
Section IX-A1

On January 22nd 2015, found a(n): Aluminum Capped Pipe
above ground, plumb and solid.

left monument as found lowered monument
 removed monument (explain) raised monument

On April 1st 2015, re-set the: Aluminum Capped Pipe
to conform to the two found scribed 1920 jack pine bearing trees.

Filed in County Recorder's Office
Local recording format
Section IX-F

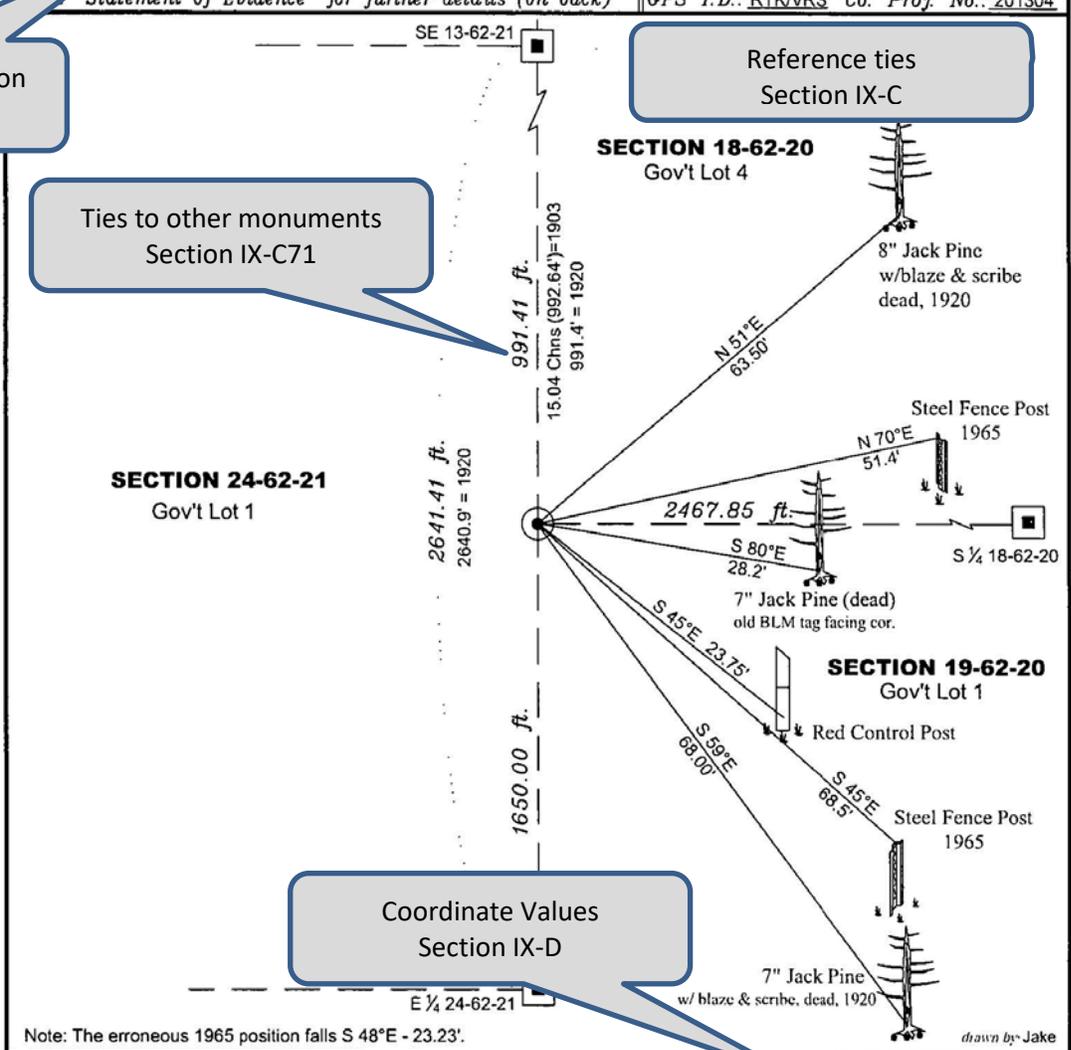
"Statement of Evidence" for further details (on back)

GPS I.D.: RTK/VRS Co. Proj. No.: 201304

Monument description
Section IX-B

Reference ties
Section IX-C

Ties to other monuments
Section IX-C71



Coordinate Values
Section IX-D

Note: The erroneous 1965 position falls S 48° E - 23.23'.

"SKETCH OF REFERENCE TIES"

(not to scale - bearings are magnetic)

Ties are measured to center of monument unless otherwise noted.

NAD 83 (1996 adjustment)

Latitude (N): 47°50' 54.13971"

Longitude (W): 92°57' 17.84693"

SLCTM 96 Northing: 3730520.991 FT

Easting: 4633210.558 FT

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the state of Minnesota. I further certify that this certificate of location of government corner is correct and complete to the best of my knowledge and belief.

[Signature]

Name: Preston Dowell

10-7-16
date

License No. 44976

County Surveyor

Deputy County Surveyor

Professional Land Surveyor

Appendix C

Statement of Evidence

Southwest Corner Section 18, T62N, R20W (closing)

July 31, 1891

Original survey of the west boundary of 62-20 was run north between Sections 19 & 24, and at 80.00 chains a 4" square spruce post was set in the ground for the section corner from which:

- 12" Jack Pine N 49.5°E - 50 links
- 10" Jack Pine S 25°E - 32.5 links
- 3" Aspen S 24°W - 7.5 links
- 6" Aspen N 49°W - 21 links

NOTE: This corner was destroyed in the 1903 resurvey.

Allison DF Gardener
U.S. Deputy Surveyor

September 6th 1903

A Resurvey of the West Boundary of T62N - R20W was run north between Sections 19 & 24 and at 80.00 chains set a Poplar post 2ft in the ground for the Corner to Sections 13 & 24, T62N-R21W from which:

- 6in Poplar S 89°30'W - 16½ links
- 8in Poplar N 72°W - 16½ links

Old Corner bears S 86°W - 226 links distance which I destroy. Marks indicate that at some time a Corner has stood within 10ft of this one just built.

NOTE: This resurvey of the range line resulted in controlling corners pertaining to T62N-R21W. The section corners pertaining to T62N-R20W were later set as closing corners during the subdivision of T62N-R20W and the quarter corners were not set.

Charles H. Armstrong
U.S. Deputy Surveyor

October 12th 1903

The original Subdivision of T62N-R21W was run West between Sections 18 & 19 and at 76.68 chains intersected the west boundary of the township 15.04 chains south of Corner to 13 & 24 which I established September 6th 1903. Set Poplar post with charred stake for closing corner. Dig pits 36" x 30" x 12" on line 4 feet distance North & South and 4 feet distance East of post and raise a mound of bog 4ft base, 3ft east of corner.

Charles H. Armstrong
U.S. Deputy Surveyor

March 11th 1920

Notes for the "Range Line Road" show the NW 19-62-20 as a Post in Mound with the following references:

- 4" Jack Pine N 51°W - 63.5'
- 4" Jack Pine S 59°E - 68.0'

Stationing distances of 991.4' north to the SE 13-62-21 and 1649.6' south to the E1/4 24-62-21 can be calculated.

St. Louis County Surveyor's Office

June 15th 1965

Daily Survey Report states: "Found BT set Capped Pipe"
Corner Cards states: "Found BT 4in JP S 59°E - 68 lk (44.88ft) Highway records Set 1 ½ in capped Iron Pipe & Iron fence posts N45E & S45E - 45ft.
Set red post for guard stake. (6/15/65)"

(erroneous monument)

Gunnar Lindholm
St. Louis County Land Department

October 13th 1970

Corner Cards states: " Found the corner in place cap & SFP., It was set by someone in 1965.

- 7in JP stb 15ft hi S 58°E - 44.9ft
- 8in JP stb 9ft hi N 30°E - 60.9ft
- CP & SFP's in place. (10/13/70)"

(erroneous monument)

St. Louis County Surveyor's Office

May 14th 1971

Daily Survey Report shows the SW 18 as a capped pipe symbol with SFP's NE & SE and states: "From the W1/4 Sec. 18 T62R20 run south to the NW cor. Sec. 19T62R20 - then chained south 5250' to the SW Cor. Sec. 19 T62R20 finding the scribed sp tree in the W1/4 Sec. 19 2400' south of the NW Cor. Sec. 19 T62R20 I believe it to be in error so I pulled the hardware but square up a tree for W1/4 Sec. 19 at 2625 mark."

Al Bakk
St. Louis County Land Surveyor's Office

March 19th 2008

A "Certificate of Survey" of Government Lot 1, Section 18, T62N-R20W was signed by LaVerne Luelling of Northern Lights Surveying & Mapping. The Southwest Corner of Section 18 is shown as a found aluminum capped pipe. Distances of 2647.39' north to the W1/4 18 and 2659.16' east to the SE 18 are given.

LaVerne Luelling - RLS 16089
Northern Lights Surveying & Mapping

Statement of evidence
Section IX-E

Original setting
Section IX-E1i

Historical distances
Section IX-E1vi

Date of record, source,
identifying information
Section IX-E1iv

Statement of Evidence

Southwest Corner Section 18, T62N, R20W (closing)

January 22nd 2015

Found an aluminum capped pipe (ACP) plumb, solid and 1ft above the ground. The following ties were found:

- 7" Jack Pine Stub S 58°E – 44.9' (15' high w/scribe, 1920)
- 8" Jack Pine Stub N 30°E – 60.9' (9' high w/scribe, 1920)
- U Steel Fence Post N 45°E – 45.1' (1965)
- U Steel Fence Post S 45°E – 45.1' (1965)
- 7" Dead Jack Pine N 45°E – 15' (old illegible, rusty, square tag, unknown origin)

Red Guard Wooden Post next to monument.

Added New BT: 3" Spruce N 67°E – 20.39' (nail & disc, tag)

Located the ACP with GPS (VRS/RTK) as project point #81.

(erroneous monument)

Greg Jacobson and Bruce Anderson
St. Louis County Land Survey Division of Public Works

April 1st 2015

Determined the ACP set in 1965 to be set incorrectly using links instead of feet for distance from only one of the 1920 bearing trees. Finding both 1920 bearing trees and using the 1920 survey distances and bearings from said bearing trees, the ACP was re-set at the true 1920 position. Located the ACP as project pt. #94. The references are now as follows:

- 7" Jack Pine Stub S 59°E – 68.00' (15' high w/scribe, 1920)
- 8" Jack Pine Stub N 51°E – 63.50' (9' high w/scribe, 1920)
- U Steel Fence Post N 70°E – 51.4'
- U Steel Fence Post S 45°E – 68.5'
- 7" Dead Jack Pine S 80°E – 28.2' (old illegible, rusty, square tag, unknown origin)
- Red Wood Control Post S 45°E – 23.75' (tag, nail & disc)

Destroyed the 3" spruce tie set 1-22-2015. The erroneous SW 18 position falls S 48°E – 23.23'.

Greg Jacobson and Dylan Otto
Louis County Land Survey Division of Public Works
Preston Dowell, Deputy County Surveyor

Explanation of disregarded monument Section IX-E1v

Ties established Section IX-E1ii

Tie to disregarded monument Section IX-E6

Appendix C

BLM CODE: T63NR21W400200

Index No. V-13

Certification language per MN Statute 381.12

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision, and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota. I further certify that this certificate of location of government corner is correct and complete to the best of my knowledge and belief.

Signature: James Kramer
James Kramer

Date: 02-03-2020
Reg. No. 23668

Office of the County Recorder
St. Louis County, Minnesota

Recorded on: MAR 04 2020
at 02 44 P m

Document No. 1375082

Wendy Levitt
County Recorder

I hereby certify that the within instrument was filed in this office for record

by B. Goodreau Deputy

CERTIFICATE OF LOCATION OF GOVERNMENT CORNER

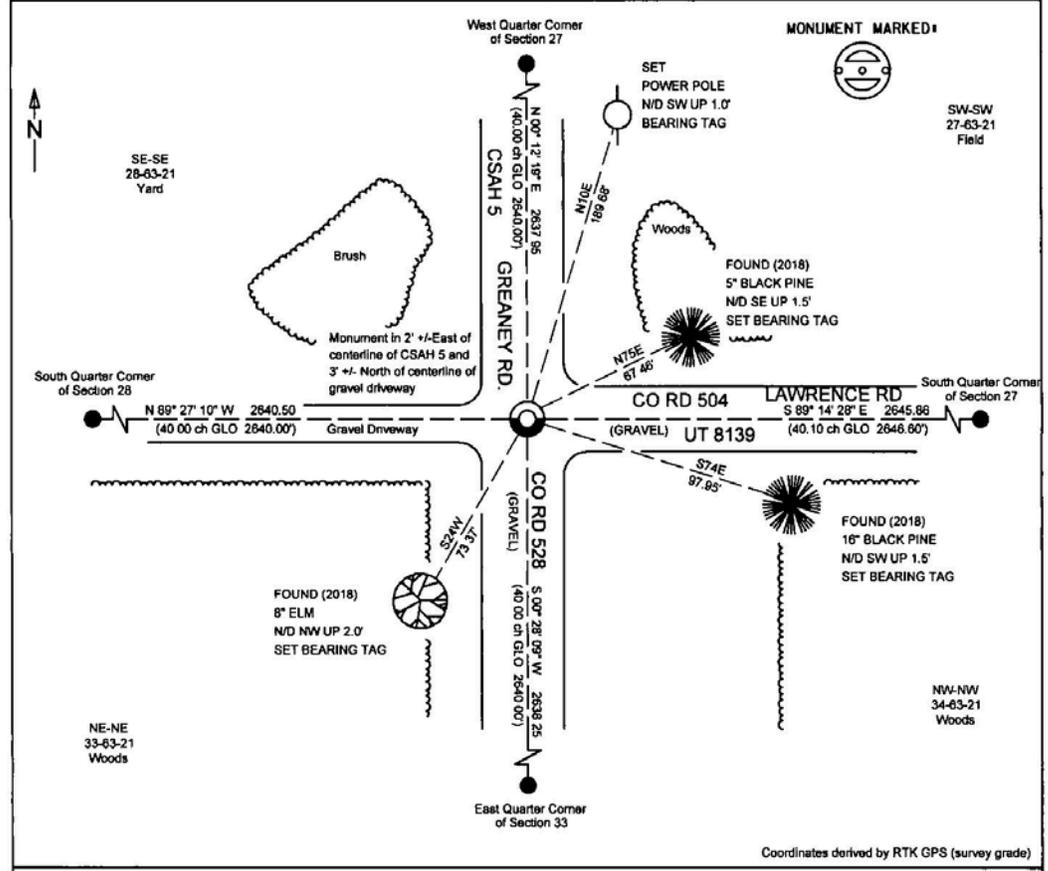
INDEX NO. V-13, Southwest CORNER OF SECTION 27, TOWNSHIP 63, RANGE 21, STATE OF MINNESOTA, COUNTY OF ST. LOUIS.

AT THE CORNER LOCATION SHOWN ON THE SKETCH:

ON 10-26-2018 FOUND A(N) Double edge axe head down 3' +/-

LEFT MONUMENT AS FOUND, LOWERED MONUMENT, REMOVED MONUMENT (EXPLAIN)

ON 07-25-2019 PLACED A(N) 4"x10" Cast iron monument down 0.7'



(NAD 83)	Latitude (N): <u>47° 54' 32.30534"</u>
	Longitude (W): <u>93° 01' 20.30690"</u>
SLCTM 96 (NAD 83)	Northing: <u>3752743.960</u>
	Easting: <u>4616835.887</u>
S. P. North (NAD 83)	Northing: <u>842004.281</u>
	Easting: <u>2643719.986</u>

CO. PROJ. NO.: 5456C

KLD
KRAMER LEAS DELEO
SURVEYING - ENGINEERING - PLANNING
BRainerd ST. CLOUD

STATEMENT OF EVIDENCE RELATIVE TO THIS CORNER LOCATION IS ON THE BACK OF THE PAGE Page 1 of 2

Appendix C

Statement of Evidence for the Southwest Corner of Section 27, T63N, R21W.

1905

The Original Public Land survey by William Everts, U.S. Deputy Surveyor commenced on June 14, 1905, and was completed on July 5, 1905. A 4-inch square spruce post that was 3-foot long was set 24 inches in the ground to mark the corner. The following bearings ties were set:

Tie	Size	Bearing	Distance
Tamarac	4"	N47E	45 links (29.70')
Spruce	5"	S52-3/4E	23 links (15.18')
Spruce	4"	S08-3/4W	16 links (10.56')
Spruce	4"	N42W	4.5 links (2.97')

February 07 1918

GREANEY ROAD-Consolidated and renamed by Resolution of the County Board states: To be comprised of that part of road described as beginning at the Northwest Corner of Section 10-63-21 and running thence South to the Southwest Corner of Section 34-63-21. Road Legalization Greaney Road.

LAWRENCE ROAD-Consolidated and renamed by Resolution of the County Board states: To be comprised of that part of the extension of Halverson Road, which is described as beginning at the Southeast corner of 28-63-21 and running thence East three miles to the Southeast corner of 25-63-21. Road Legalization Lawrence Road.

1918

Hibbing Road Notes and Balkan Township Notes of the alignment of Lawrence road show no found original bearing ties. Settler living about 1 1/2 miles north claims there is an axe bit buried in the road for the section corner. St Louis County Master Index H-CR-504 page 1-2.

Unknown

St. Louis County information on the south line of section 27 indicates a stake marking the corner. The following bearing ties were noted. SLC Virginia Engineers Range Book 63-21.

Tie	Size	Bearing	Distance
Poplar	3"	N43E	54.35 feet
Spruce	3"	N50W	55.70 feet

2018 (September)

Crews at Kramer Leas Deleo searched for original corner evidence and bearing accessories, and found nothing.

2018

On October 26, 2018 St Louis County excavated an 8' X 8' X 3' deep hole and recovered a double edge axe head down 3' on the westerly projection of Lawrence Road centerline, and 2' +/- east of Greaney Road. The following bearing ties were set.

Tie	Size	Bearing	Distance
Black Pine	16"	S74E	97.95'
Elm	8"	S24W	73.37'
Black Pine	5"	N75E	67.46'

2019

On July 25, 2019 Crews at Kramer Leas Deleo set at cast iron monument in the location of the recovered axe head. It is the opinion that the recovered axe head is the monument referenced in 1918, and the perpetuation of the original corner location. The 2018 bearing ties were recovered, and one new bearing tie was set:

Tie	Size	Bearing	Distance
Power Pole		N10E	189.68'

For additional information, contact:
 Kramer Leas Deleo PC
 1120 Industrial Park Road
 Brainerd, MN 56401
 218-829-5333

Description of parcel evidence Section IX-E2

Description of excavation Section IX-E3

Description of monument set Section IX-B

NW 6, 129-44



8 0 0 1 6 7 9
Tx:4001226

CERTIFICATE OF LOCATION OF GOVERNMENT CORNER

NORTHWEST Corner of Section 6

Township 129N, Range 44W, 5th P.M.

COUNTY OF GRANT, STATE OF MINNESOTA

At the corner location shown on the sketch:

On 8-28-2018 found a 9"x12"x32" limestone scribed with Township & Range numbers 4 feet below grade.

left as found, lowered monument, removed monument

On 10-16-2018 placed a 2" brass cap stamped GRANT COUNTY SURVEY MONUMENT on a 18" No. 5 rebar 5" below grade at position of limestone.

179285

CERTIFIED FILED AND/OR RECORDED ON

12/28/2018 02:04:56 PM

REC FEE: 0.00

PAGES: 2

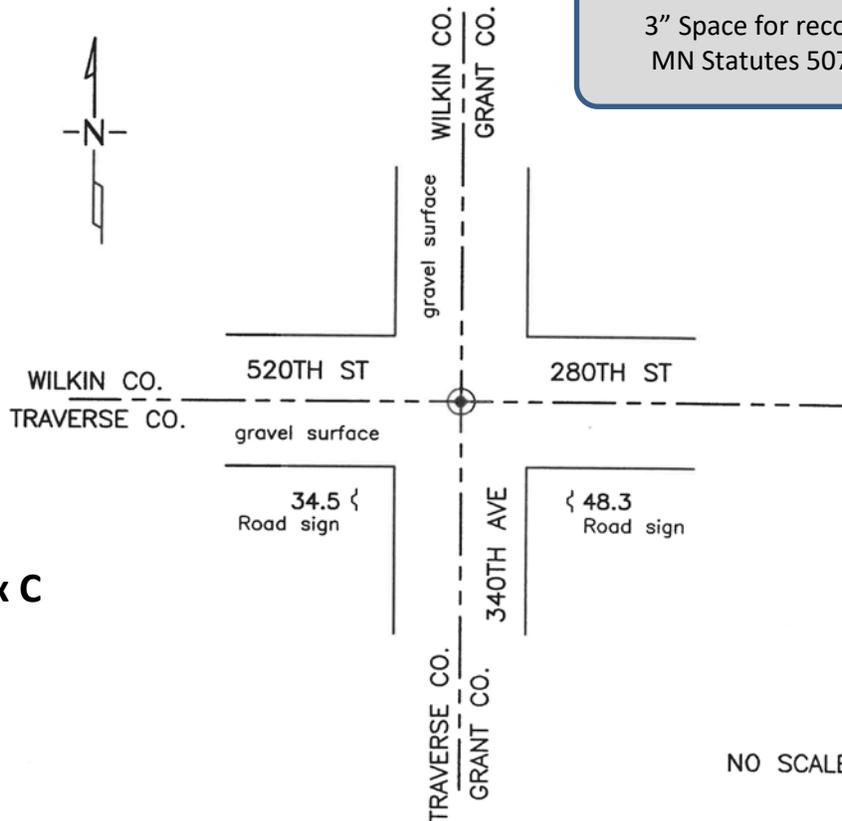
DIANN GIESE

GRANT COUNTY RECORDER

ELBOW LAKE, MN

BY DEPUTY: HOLLY JO

SKETCH OF REFERENCE TIES



3" Space for recording
MN Statutes 507.093

Appendix C

NO SCALE

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

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the state of Minnesota.

Signature: Patrick D. Veraguth

Name: Patrick D. Veraguth

Date: 11-14-2018

Reg. No.: 26396

CERT1805

Appendix C

GRANT COUNTY PLS CORNER

Statement of Evidence:

NORTHWEST CORNER, SECTION 6, TOWNSHIP 129 NORTH, RANGE 44 WEST, 5TH P.M.

- 1858 This corner was originally established during the U.S. General Land Office survey and marked with a charred stake in a mound and trench and pits. It measured 78.60 chains (5187.60 feet) west of the section corner.
- 1901 Traverse County Surveyor E. Rutledge set an 8"x8" limestone 24" long in the center of the Govt. mound.
- 1917 Ditch Survey field notes report a cement block marking this corner about 3 feet below road surface. He writes: "I set a 2"x4" stake over the stone". It measured 37.5 feet east of the bridge center over big ditch and 5170 feet west of N-S road centerline at or near the NE corner, Section 6.
- 2001 Steven A. Ackerman, L.S. 17004, set a 1/2"x20" iron rebar for this corner. It was reset lost by double-proportionate measurements from corners 2 miles north, 1 mile south, 1 mile west, and 2 miles east.
- 2013 Steven A. Ackerman, L.S. 17004, resurveyed Section 1, rebar for the lost E1/4 corner, 2636.01 feet distant from s is corner. He set a 1/2"
- 2018 The Grant County Engineer contracted with the Douglas and subdivide sections in road centerlines at the corner site.

Description of excavation
Section IX-E3

On 8/28 Douglas County Surveyor Patrick D. Veraguth, L.S. 26396, and Scott Tillmann excavated the corner site with a backhoe operated by Brian Melby. An 8' N-S by 6' E-W hole centered on Point No. 608 was dug 4 deep where a 9"x12" limestone 32" long was found standing upright. On the top was chiseled (township) "129" and "130" and (range) "44" and "45". Centered between the numbers was a chiseled "+". Above the stone was an old wood stake. The stone measured 5167.23 feet west of a monument found at the section corner.

The 'cement block' found in 1917 could easily have been mistaken for the limestone if only the top was exposed.

The limestone was accepted for the perpetuated corner of Grant, Wilkin, and Traverse counties. It was transported to Grant County Highway Department for a historical display.

On 10/16 a 2" brass cap stamped GRANT COUNTY was set on a 18" No. 5 rebar at Point No. 658. A Certificate of Location of Government Corner was issued by Patrick D. Veraguth, L.S. 26396.

Analysis of historical evidence
Section IX-E5

County Coordinates, 1/2" rebar LS 17104, Point No. 658
NAD 83 (1996 Adjustment)
N - 195893.690
E - 445079.715

County Coordinates, limestone & wood stake/brass cap & rebar, Point No. 658
NAD 83 (1996 Adjustment)
N - 195894.574
E - 445077.182

Appendix D FEDERAL AND STATE OFFICE LOCATIONS

Department of Natural Resources
Division of Lands and Minerals
500 Lafayette Road Box 45
St. Paul, MN 55155-4045

U.S. Department of the Interior
Bureau of Land Management Eastern States
20 M Street South East, Suite 950
Washington, DC 20003 Phone: 202-912-7353

U. S. Forest Service
Superior National Forest
LaCroix Ranger District
320 N Hwy 53, Cook, MN 55723
218-666-0020

U. S. Forest Service
Chippewa National Forest
200 Ash Avenue NW
Cass Lake, MN 56633
Phone: 218.335.8600

Minnesota Historical Society
345 W. Kellogg Blvd.
St. Paul, MN 55102
651-259-3000

Minnesota Department of Transportation
395 John Ireland Blvd
St. Paul, MN 55155-1800
651-296-3000

Appendix E HYPERLINKS

Associations and government offices

[Minnesota Association of County Surveyors](#)

[Minnesota Society of Professional Surveyors](#)

[MnGeo](#)

[MnDOT Surveying and Mapping](#)

[National Geodetic Survey](#)

[Gopher State One Call](#)

Resources

[Bureau of Land Management Records](#)

[Manual of Surveying Instructions](#)

[Minnesota State Statues](#)

[RESTORATION OF LOST OR OBLITERATED CORNERS & SUBDIVISION OF SECTIONS, a guide for surveyors](#)

[A History of the Rectangular Survey System](#)

[Replacement and Apportionment as Surveying Methods for Re-establishing Property Corners](#)

[A manual for resurvey of public land survey corners and sectionalized subdivision boundaries within the state of Wisconsin](#)

[Restoration of Lost Corners and Subdivision of Sections \(State of Washington\)](#)

[Guide to the Identification of Bearing Tree Remains](#)

[Minnesota County Surveyors list \(2019\)](#)

[MnTopo \(LiDAR data\)](#)

[Aerial Imagery of Minnesota](#)

[1984 Manual of Standard Procedures for the Identification, Remonumentation and Preservation of the Public Land Survey Corners in the State of Minnesota](#)

Appendix F CONTRIBUTORS

The "Manual of Guidelines for the Identification, Remonumentation and Preservation of the Public Land Survey Corners in the State of Minnesota" was developed and written by the Minnesota Land Surveyors Association (now Minnesota Society of Professional Surveyors) County Surveyors Committee. The members of that committee are unknown as of the update of this manual. The current MACS PLSS Committee which has updated this manual in 2020 would like to acknowledge the tremendous work they have completed.

The contributors to the current manual are as follows:

- Preston Dowell, St. Louis County
- Terry L. Freeman, Northern Engineering & Consulting, Inc.
- Peter Jenkins, Minnesota Department of Transportation
- Scott Marlin, Community Land Solutions
- Eric Schmitt, Houston County
- Bruce Shepperd, Minnesota Department of Natural Resources
- Mike Smith, USDA Superior National Forest
- Pat Veraguth, Douglas County