U.S. Public Land Survey - Special Instructions
A Case Study

by: John E. Freemyer, LS

“One of the most important duties to be performed by the surveyor general is to provide the deputy surveyor with Special Instructions...” Manual of Surveying Instructions, General Land Office (GLO), 1902

Introduction

Special instructions dealt with a wide range of issues; among them were specific directives on how deputy surveyors were to deal with irregular townships. These irregularities could be the result of natural features such as large water bodies; adjoining townships surveyed using a different point of origin (i.e. 4th Principal Meridian versus 5th Principal Meridian); adjoining federal land grants (i.e. military reservations, Indian reservations), or defective township line surveys. When the surveyor general was aware of such irregularities, they could provide a deputy surveyor with special instructions to supplement the general instructions. Because the circumstances relating to such irregularities varied, it would have been difficult to address every possible situation in general instructions.

In 1903, Norris Taylor and Charles Forbes, as partners, were issued contract No. 112 to subdivide T. 68 N., R. 23 W. and T. 66 N., R. 24 W. Surveyor General Eli S. Warner was aware of certain defects with township lines and suspected other potential problems, so special instructions were issued to explain how to deal with the previously surveyed township line. This case study is limited to portion of the contract dealing with T. 68 N., R. 23 W.

Records Research

Research for this case study was confined to the archives collection at the Minnesota History Center in St. Paul. A volume of descriptive indexes provide an overview of the archive contents and reference numbers necessary for accessing the actual records. These indexes are organized alphabetically or numerically in a large set of three ring binders that can only be found in the Weyerhaeuser Reference Room at the History Center.

Within the alphabetical books is a 50 page index titled “U.S. Surveyor General of Minnesota.” (Fig. 1) This index only itemizes certain categories such as accounting, contracts, correspondence, land survey field notes, miscellaneous records and plats. Each category within the index contains a brief description of the archive contents and reference numbers for either selected years or geographic areas. As an example: contracts and correspondence are organized in a chronological manner, while field books and plats are organized by geographic area. The largest portion of this index is the lists of various notes and plats.
Before setting out to find special instructions or the possibility of them, it is necessary to understand how the GLO commissioner and surveyor generals issued them. If issued to a specific person, they could be in the form of a document designated as “Special Instructions” or they could simply be incorporated into a letter without any reference to the term. If the writer provided directives that were not included in general instructions, they could be considered special instructions.

In searching for the possible existence of special instructions issued to Taylor and Forbes, it can be assumed they were issued on or about the contract date. That date, May 25, 1903, was easily determined on the PLS plat located at [www.lmic.state.mn.us/glo](http://www.lmic.state.mn.us/glo). According to the descriptive index for the surveyor general records, the most logical categories to find special instructions are the correspondence and contract files. Assuming the surveyor general would have included special instructions with a letter, a request for the 1903 "Letters Sent" (Reference # 111.E.8.9B) was placed. Most correspondence was bound in ledger books (Fig.2) by surveyor general office staff to insure their chronological order. Although copies of most letters sent in 1903 were typewritten, the carbon copies on onion skin paper could be somewhat difficult to read. The ledger book contained miscellaneous correspondence relating to Taylor and Forbes’ contract, but there were no special instructions.
Figure 2: Correspondence Books - Letters Sent
Contract files became the next logical portion of the records to examine, so a request for "Contracts for Surveys, 1881-1907" records (Reference # 111.E.10.1B) was placed. This record box contained separate file folders for selected years. (Fig. 3) Within the 1903 folder was a separate sleeve for contract # 112, where a transmittal letter, special instructions and other related correspondence were found. It is readily apparent that surveyors general staff was inconsistent in how they filed special instructions. Some are located in the correspondence books, while others are located in the contract files.

PLS field notes for the applicable townships indicate how the special instructions were applied. The History Center has two sets of PLS field notes. The set within the surveyor general records are noted as being "copies" of township exterior and township subdivision surveys. They are also noted as being an incomplete set. The official set of PLS field notes is also maintained at the History Center as a service to the Secretary of State. They are indexed in volume one of a four volume set of descriptive indexes covering multiple documents of the Secretary of State. Access to the actual field books is currently open to the general public according the index, although the box containing the applicable notes was labeled "Restricted." (Fig.4) The librarian took over one hour to determine why there was a discrepancy between the index and the box label, but finally allowed the notes to be examined. The quality of the notes was excellent, although the bindings were fragile and broken in some cases.
In reviewing the notes, it became apparent that Taylor directed the field work without any assistance from Forbes. This was somewhat unusual since the contract was issued to both. In a 1905 letter Taylor explained:

"Mr. Forbes was to go along and push the work thru quickly. Well you know I had to go alone or the work would not begin..." N.Y. Taylor to Eli S. Warner, Surveyor General, Contract 112 Sleeve, Contracts 1903.

Analysis of the Special Instructions

The special instructions dated May 25, 1903 by Surveyor General Eli S. Warner (Fig. 5) generally dealt with specifically known problems and suspected problems with the township lines completed as much as twenty years earlier by other deputies. The special instructions also included an attached GLO Circular dated June 15, 1898 dealing with deputy compensation issues for different township line closure scenarios. (Transcribed copy of special instructions in appendix)
One of the most common and difficult survey problems encountered by deputy surveyors subdividing townships was closing on township exteriors previously marked by other deputies. Typical problems included alignment and linear measurement deviations and missing markers. Although general instructions and GLO circulars provided some guidance in dealing with these problems, the special instructions issued to Taylor were more specific. In dealing with linear measurement deviations along the township lines, the special instructions stated:

“As the Townships on the South, West, North and East sides of T. 68N. R.23W., have been subdivided no change can be made in the boundaries of said townships except that errors in measurement may be corrected by establishing corners common to two sections at intervals of 80 chains; and ¼ section corners at intervals of 40 chains in direct line between adjacent old corners and altering the markings on said old corners so the they may reference only to the sections in the adjacent townships.”

This provision effectively created a scenario where non-traditional double corners could be set. If Taylor found that section corner and quarter section corner monuments previous set along the township lines were not within the
positional tolerance called for in the GLO Manual of Surveying Instructions of 1902 (50 links/mile), a corner post would be set to control section lines within T.68N., R23W. - on line with the existing posts. This call for double monuments was a radical departure from earlier instructions that stated:

"Double Corners - are to be nowhere except on the base and standard lines..." Instructions To The Surveyors General of the Public Lands, GLO, 1855

In this case, the necessity to set double corners on township lines was a direct result of a severe alignment problem with the south township line and was a practical method to deal with the irregularity of a previously surveyed line. To prevent that alignment problem from having an adverse impact on all the sections with the township, the special instructions also stated:
"As an examination of the diagram of T.68N. R 23W., (Fig. 6) shows that the south boundary of said township is defective in alinement, a Sectional Correction line, as defined in Section 272 of page 84 of the Manual of 1902, will be run due West, from the corner of Secs 25, 30, 31 and 36 on the east boundary of the township, to its intersection with the West boundary of the Township, where a closing corner will be established. You will note distance to the nearest corner of said township line."

Excerpt of Section 272, Manual of 1902

"The south and east boundaries will be rectified under clause 1, Section 257..."

Excerpt of Section 257, Manual of 1902

"Where subdivisional lines have been closed upon one side of, - - a township boundary prior to the subdivision of the township on the other side, its alinement will not be changed; all obliterated old corners will be reestablished in their original places; new regular corners common to two townships, sections, or quarter sections, will be established upon it at lawful distances..."

This provision requiring a due east-west base line along the north line of sections 31 through 36, created a better control line for laying out the sections to the north, while restricting the abnormally sized sections to the most southerly row.

The surveyor general most likely suspected the east township line could be defective because the west tier of government lots on the township plat for T.68N., R.22W tapered in width by approximately 5 chains. To deal with the potential problem the special instructions stated:

"If the East boundary of the Township is found to be defective in alignment, a Sectional Guide Meridian will be run from the corner of sections 25, 26, 35 and 36 on a true line due North to its intersection with the North boundary of the township where a closing corner will be established."

Similar to the previous provision, the intent was to isolate abnormally sized sections to one tier of sections rather than potentially impacting all sections within the township. From this base line Taylor would measure East along the sections lines, close on the west boundary of T.68N., R.22W and set a new monument, or accept the existing monuments along that line if they were within positional tolerance. (Fig. 7)
Figure 7: Plat with location of Sectional Correction Line & Sectional Guide Meridian
Analysis of Field Notes for Compliance with Special Instructions

As required by the special instructions, Taylor established a "Sectional Correction Line" along north boundary of sections 31 through 36, and set new section corner posts along the south and west township boundaries. As a result the corner post set during the original township line surveys control the adjoining townships, while Taylor’s corner posts controls section lines in T. 68N., R.23W. He also found it necessary to establish a “Sectional Guide Meridian” along the west line of the east tier of sections, but he was able to accept the existing monuments along the east township boundary. Below are excerpts from the original field books that clearly indicate his actions.

Page 1-2

Survey commenced Sept. 20th A.D. 1904 & executed with a Young Solar Compass with telescope attachment. The instrument was examined & tested on the true meridian at St. Paul - found correct & was approved by the surveyor General Aug 21st, 1903.

At the temporary corner of sections 22, 23, 26 & 27, Where I had established my camp - - - I observed Polaris at Eastern elongation in accordance with the Manual of Instructions…
Notes of retracements of the East and West boundaries & resurvey of the South boundary will be found in separate book. And as it is impossible to close on the east (township) boundary, I determined to run the lines bet sec. 35 & 36 - 25 & 26 - 23 & 24 - 13 & 14 - 11 & 12 - & 1 & 2 as a Sectional Meridian. My instructions requiring a sectional correction line.

Comment:
The retracement notes that Taylor mentioned were not included with the subdivision notes and were not located elsewhere. They would be important when perpetuating corners along those township lines. Retraced lines are labeled on the plat.

I commenced at the corner of sections 25, 30, 31 & 36 on the east bdy of Tp - according to the special instructions furnished me by the surveyor General. The corner being a wood post witnessed as described by the surveyor General - Thence I run West on a true line between Sec. 25 & 36.

Comment:
While most township subdivisions start at the southwest corner of Section 36, this subdivision started at the northeast corner of Section 36. This was in compliance with the special instructions due to defective alignment of the south township line. (Fig. 9)

South on a true line for a sectional guide meridian bet sec 35 & 36

Comment:
From the new corner post at the southwest corner of Section 36, Taylor apparently measured along the south township line as previously established, setting new posts at 40 chain intervals. (Fig.9) This would be further clarified if his retracement notes could be located.

From the corner of sec 25 & 26 - 35 & 36
I ran north on a true line for a Sectional Meridian bet 25 & 26

Comment:
Returning to the northwest corner of Section 36, Taylor proceeded to run due North using his solar compass along the "Sectional Guide Meridian."

East on a random line bet sec 24 & 25

81.55 Intersected east bdy of Tp. 17 lks south of cor. Sec. 19, 24, 25 & 26
Thence I run S 89° 53' W on a true line bet sec. 24 & 25

41.55 chains - Set post
81.55 chains - The corner of sec 23, 24, 25 & 26
Comment:
Taylor continued running due North along the "Sectional Guide Meridian," at each section corner he ran east on a random line, accepted existing section corners along east township line and then ran west on an adjusted line. All chainage deviations were placed in the east half mile. At the north township line, which is the "10th Correction Line," he set a closing corner using standard procedures. (Fig. 9)

Figure 9: The subdivision survey started at the northeast corner of Section 36.
From the corner of sec 25, 26, 35 & 36 - I ran West on a true line for a sectional Correction line bet. sec. 26 & 35
40.00 chains - Set post
80.00 chains - Set post

Comment:
Returning to the northwest corner of section 36, Taylor ran due West along the "Sectional Correction Line."

S 0° 1' E on a Random line bet sec 34 & 35
40.00 chains - Set temp 1/4 sec cor.
79.82 chains - Intersected the south boundary 14 lks west of corner to sec. 34 & 35
Thence I ran N 0° 7'W on true line bet sec 34 & 35
39.82 chains - Set post
79.82 chains - The corner of sec 26, 27, 34 & 35

Comment:
Taylor continued running due West along the "Sectional Correction Line" and at each section corner turned and ran south on a random line, to the apparent section corners he had previously set during the retracement portion of his survey. All chainage deviations were placed south half mile.

West on a true line bet sec 30 & 31 - For a Sectional Correction line
40.00 chains - Set post
85.26 chains - Intersect the W bdy of the Tp 10.60 chs N 0° 52'E of the corner set for cor sec 25, 30, 31 & 36
- Found as described Sur. General & changed cor from cor of 4 to cor. for 2 sec by cutting out the marks on the east face of the post & cutting out marks on the east Witness trees - and at the point of intersection I set a spruce post - for cor of sec 30 & 31, T 68 N, R 23 W.

Comment:
Intersecting the west township line with the "Sectional Correction Line" Taylor set another new section corner post, noting the distance to the old post and changing the markings. These double corners were set along the entire length of the west township boundary at the section corners. (Fig. 10) Based on the notes, he apparently did not set new posts at the quarter corners along the west township boundary line. Not setting that post would be consistent to situations where closing quarter corner posts were not typically set on correction lines and standard parallels.

Without the benefit of the special instructions, would a land surveyor reading Taylor’s notes be confused by terms such as “Sectional Correction Line” or “Sectional Meridian?” Would there be confusion as to why Taylor set new corner posts along a previously surveyed line? There would be absolutely no confusion about the existence of special instructions, because Taylor mentioned them several places in his notes.
Figure 10: Portion of East - West "Sectional Correction Line" and Double Corners along West Township Line

PLS Corner Perpetuation and Section Subdivisions

It is readily apparent that this township was not subdivided like most townships in this state. Just as the special instruction provisions changed Taylor's procedures, they will also impact perpetuation and subdivision procedures. These are some of the considerations:

- Taylor used different procedures to set his new corner post along the south township line versus the west township line. Retracement procedures would likewise be different. On the south township line he apparently measured along the line setting new corner posts at 40 chain intervals. New corner posts along the west township line were set at the point of intersection with the east-west section lines, and were classified as closing corners. (Fig. 10) Finding Taylor's field notes for the retracement of these lines is critical to understanding his exact procedures. If handled improperly gaps and overlaps could easily occur along the
township boundaries. Extra care is also necessary to insure that the proper corner marker is used to control the direction of intersecting section and quarter section lines.

- Government lots around the entire perimeter of the township will impact how single proportionate measure is used to establish these corners on the ground. Taylor measured from north to south on the section lines separating Sections 31 through 36. A similar procedure would have to be used for prorating those lines.
- The layout of the "Sectional Correction Line" and Sectional Guide Meridian" may impact how the corners along those lines are retraced. For "Lost" section corners, some land surveyors may consider single proportional measurement where double proportionate measurement would be the normal procedure.

According to Koochiching County Surveyor records, there are 51 corner certificates or reports for PLS corners in T.68N, R.23W. Four of those are sections corners along township lines where non-traditional double corners exist, but they give no indication that the monument only controls section lines in T.68N, R.23W. These corner certificates are generally well prepared and some dating back to the early 1950s include evidence of the original bearing trees.

Conclusion

Special instructions are as important as the general instructions, notes and plats in the perpetuation of the original rectangular surveys, but for a century they have been nearly undisturbed by human hands. Maybe they have been thought of as simply novelties for historians, rather than records that can still impact land boundaries. Even if there is a change in attitude about the importance of these documents, individual land surveyors would have a great deal of difficulty and expense accessing them considering their current location and organization.

By examining the PLS notes and plat, an experienced land surveyor would possibly understand how the township was subdivided, but would have no idea why. To understand why - requires a thorough understanding of applicable general and special instructions. With that knowledge, the intent of the GLO expressed through the plat can be understood and footsteps of the original surveyor can be followed. Then and only then is the public being properly served.

"The surveyor will carefully examine all the original field-notes pertaining to the particular section under consideration, and ascertain whether or not particular instructions were given by the surveyor-general to his deputy who made the original survey. If such instructions, out of the ordinary were given, they may play an important part in the work of the local surveyor and he should be guided, in a measure, thereby." A Treatise on the Law of Surveying and Boundaries, Frank Emerson Clark, Minnesota Bar, 1922

© 2009, John E. Freemyer