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August 16, 1968

FIELD NOTES

FOR: Dependent survey in South-half of Township 1 North, Range 9 East, Willamette Meridian, Hood River County, Oregon - Work Order #3737

PARTY: Personnel of Tenneson Engineering Corporation and Hood River County Forestry Office.

DATES PERFORMED: Fall 1967 and Spring 1968

On November 1, 1967, our firm was retained by Hood River County Commissioners to perform a dependent survey in Township 1 North, Range 9 East, Willamette Meridian to establish the boundaries of a parcel owned by the State of Oregon described as the North one-half of the Northeast one-quarter of Section 35 and the South one-half of the Southeast one-quarter of Section 26 in said Township and Range. We were advised that the Hood River County Surveyor's Office had started the work but the project had not ever been completed and that we should check the accuracy and methods by which the existing field notes had been derived.

We were able to obtain from the Survey Office maps of the area and were also provided with assistance in the form of survey party personnel, which had been involved in the preliminary work.

After general reconnaissance of the work location, it was our decision to proceed as follows:

- A. Establish a series of control stations in the area which were tied into the Oregon State North Zone Coordinate System Grid.
- B. Tie the found section corners from the control stations and calculate coordinates for all such found corners.
- C. With the calculated data, verify existing measurements and proportion the missing section lines and distances to establish coordinate positions for the corners which were to be set.
- D. Traverse from known points to set the missing corners.

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Additional reference information was obtained from U. S. Coastal and Geodetic Office in the form of descriptions including North Zone Coordinates of all of their stations in the Hood River Valley Area and from Bonneville Power Administration from their right-of-way maps through the area which are tied into the grid. The BPA maps also show corner information and references found as well as coordinates for the corners. A complete set of the original and subsequent General Land Office survey notes for the entire township was obtained from the Portland Office.

Work was started at USC&G Sta. "Blue Ridge". A traverse was run Easterly, using DM-Model 20 Electrotapes for horizontal measurements and Wild T-16 Theodolite for angular measurements, to follow the BPA right-of-way to the East edge of the township. From that point the traverse continued North then Westerly upon high ridges and other vantage points; thence closing back to the point of beginning.

A preliminary closure was in the area of 1/100,00 and after adjustment a flat closure was computed giving 2nd order triangulation stations along the traverse route. From the traverse stations the known corners were tied in by either chaining traverse or electrotape shots.

The resultant information was then reduced to coordinates for the known points and plotted upon a work map for resolution. Analysis of the plotted data indicated the following:

1. The GLO 1940 resurvey measurements across the South line of the Township were fairly close in Sections 35 and 36, 23 feet short in Section 34, 4 feet long in Section 33 and 10 feet short in Section 31 and 32 combined, when compared with the distances calculated from the corners found and tied in the field.
2. The calculations on the previous work done in this survey gave the total distance across the township 1 mile North of the Base Line at 32,424 feet in East-West direction whereas the calculated measure from the electrotapes was 32,332 feet. An error of over 90 feet. The preliminary notes also showed angular discrepancy of $0^{\circ} 15'$ at one check point.
3. The distance of South $6^{\circ} 12' 48''$ West 2807.59 feet from the found East one-quarter corner of Section 36 to the re-established brass cap monument at the Southeast corner of that section and a similar distance of South $3^{\circ} 45' 23''$ West 2837.72 feet from the found quarter corner between Sections 34 and 35 to the common section corner on the base line, indicates to this office that when the GLO resurveys of 1915 and 1940 were run the Easterly portion Base Line in this township as re-established was some distance South of the line upon which the original subdivision of Township 1 North, Range 9 East was based. The distances in the first one-half mile North from the resurveyed Base line seems to fit well on the West side of the township. This was evidenced by the tie between the found Southwest corner and the found West one-quarter corner of section 31 of North $0^{\circ} 58' 12''$ East 2615.23

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4. The overall distances between the found corners in the interior of the subdivision, except for the first one-half mile North of the Base line as noted above, were in general short by a factor of approximately $2\frac{1}{2}$ feet per 100 feet of the original measurements.

After reviewing these preliminary findings, it was our decision to not use the traverse data previously done as it apparently contained several errors and was done in so many courses as to make retracement almost impossible or at best very difficult.

We then proceeded to calculate the position of the Northwest corner of Section 35 by convention double proportionate measure from our traverse tie information. We used the found North one-quarter corner of Section 36 and found the Northwest corner of Section 31 for East-West control. Overall actual distance was 29,774.15 feet against GLO measure of 30,577.13 feet giving a ratio of 0.97373919 in the East-West direction. North-South direction used the found one-quarter corner common to Sections 34 and 35 and the Southwest corner of Section 14. Overall actual measure was 13,059.31 feet against GLO measurement of 13,200.0 feet giving a ratio of 0.989265909 in North-South direction.

With the position of the Northwest corner of Section 35 calculated we then used single proportionate measure in East-West direction to establish a trial position for the Northeast corner of Section 35 feeling that the apparent deviation from the re-established Base Line and first one-half mile North would place the corner position too far South if double proportioning was used.

The trial position was established in the field from one of the triangulation control stations and a temporary corner set. It was noted that the temporary corner fitted the descriptive matter of the GLO notes in that it fell in the only sizable clump of cedar trees in the area and all of the Bearing Trees for the original corner were cedar.

An exhaustive search of the area extending South 200 feet failed to turn up any evidence of either the original corner monuments or Bearing Trees. It was presumed that the logging operations in the area had destroyed all such information.

Proceeding North from the temporary corner, the geological tie of 15.0 chains to the East-West spring branch mentioned in the GLO notes was found to fit to the foot.

In view of this close measurement agreement the original notes and the fact that double proportionate method would move the corner Southerly some 192 feet, it was our decision to let the secondary GLO ties rule in the North-South direction and use single proportionate measure in the East-West direction to establish this corner position.

The corner was thus set in the position calculated by a one-and one-half inch iron pipe topped with an aluminum cap. The sections were then divided by conventional calculations and the North one-quarter corner of Section 35 set by single proportionate measure between the section corner positions previously calculated.

The Northwest corner of Section 26 was calculated by conventional procedure, using the found Northeast corner of Section 25 and North one-quarter corner of Section 27 for East-West control. Original GLO distance of 13,184.16. Actual remeasure of 12,745.30. Ratio = 0.9667130. The North-South control was the same as used for Northwest corner of Section 35.

The Northeast corner of Section 26 was double proportionate between the previously established Northeast corner of Section 35 and the Southeast corner of Section 14.

Original GLO measure of 10,560.0. Actual remeasure of 10,325.29. Ratio = 0.9777736. The East-West was the same as for the Northwest corner of the section. The North one-quarter of Section 26 was easily set by single East-West proportionate measure between the Section Corners.

Both sections were then subdivided by conventional methods to separate out the desired lines for the required survey.

The survey was then traversed along the computed course from the corners previously set to complete the project. A complete description of each found corner, including coordinates therefor, as well as the calculated corner positions and calculated proportionate measures are shown on the attached maps and corner reference cards, which by reference are made a part of these notes.

I certify this work was done under my direct supervision.

TENNESON ENGINEERING & SURVEYING

Donald J. Branton, Engineer



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