Oregon Department of Transportation

Survey Mapping and Content Standards

Right-of-Way Monumentation Surveys

Ron Singh, PLS
Chief of Surveys
Oregon Department of Transportation
Geometronics Unit
200 Hawthorne Avenue SE, Suite B250
Salem, Oregon 97310
(503) 986-3033
(503) 986-3548 (fax)

Survey Technical Advisory Committee

Ron Hamilton	Region 1
Roger Galles	Region 1
Dan Bissell	Region 2
Chris Blevins	Region 3
Jules Wetzel	Region 4
Ken Eddy	Region 5
Charlie Middleton	R/W Engineering
David Artman	Geometronics
Dave Brinton	Geometronics

Revised March 1, 2001

Contents and Index

Standards Section

Examples Section

Documents: Survey Mapping and Content Standards: Monumentation by Boundary, Monumentation by Network
Revised March 1, 2001

Sheet	Subject
1	Narrative, Sheet Layout
1A	Notes and Explanations for Sheet 1
2	Network Schematic with Pertinent Data Tables
2A	Notes and Explanations for Sheet 2
3	Cells and Symbol Standards
3A	Notes and Explanations for Sheet 3
4	Text Standards
4A	Notes and Explanations for Sheet 4
5	Common Line Standards
5A	Notes and Explanations for Sheet

1. Surveys filed will meet the requirement of this document in addition to the ORS (Oregon Revised Statues) requirements for filing surveys. This documents lists the minimum requirement for filing right-of-way Monumentation surveys for ODOT. If this document is silent on any item it is presumed to be optional and may be added if desired. Refer to the ODOT Monumentation Policy dated September 24, 1998 for additional requirements.

2. All ODOT right-of-way Monumentation surveys will be filed in the unit of the new right-of-way description.

   A) Show all linear values for retraced or measured dimensions in meters (m) or millimeters (mm).
   B) There shall be a space between the unit value and the unit symbol, i. e. 9.144 m.
   C) For the ODOT Survey Filing Standards, there shall be no space to delineate thousands, i. e.
   34 876.348 7 meters = 34876.3487 m.

3. Definition of Monumentation Survey Filing Maps: A monumentation survey that references right-of-way by the following two methods: (Refer to the ODOT Monumentation Policy dated September 24, 1998)

   A) Boundary option: The survey will show the location of the set monuments. The survey will show the relationship of the set monuments to the centerline of reference be it a resolved centerline or a new centerline.

   B) Network option: Establish a permanent survey control network that references the right-of-way centerline and right-of-way boundary. This map shall identify the final horizontal control network, the resolved and/or new right-of-way centerlines, and boundary lines. A Monumentation Survey will show a diagram of the network and the information relating to the network.

4. ODOT will use 18" x 24" sheet size for survey filing maps.

5. Township, Range and 1/4 Section will be listed at the top center of each sheet for a heading. The first sheet should have all of the sections that the survey pertains to. All others sheets of the survey should have at least the 1/4 Sections with Township and Range that are represented on that sheet. You may list the DLC (Donations Land Claims) name and number if they exist and/or if your county requires it.
   See the "CADD STANDARDS" (Sheet 2) for details.

6. Microstation CADD files for each filed survey should be "stand alone" for archiving. People accessing these files will not need to access any additional referenced files.

7. The minimum text size on survey filing maps will be 3 mm (Tx=3) for 1:1000 scale plots. This is slightly larger than the minimum of 0.10" for English maps to meet ORS and county requirements.
   When creating maps at scales other than 1:1000, text sizes will need to be adjusted accordingly. This is more easily accomplished in the planning stage of your map. The scale of text and cells or symbols that are generated by Inroads should be adjusted prior to displaying in CADD file.

8. All text will be upper case.
   Exceptions include the lower case "m" used as the meter and millimeter symbol or any record unit of measure requiring a lower case letter as its standard designation.
   See the "CADD STANDARDS" (Sheet 4) for details.

9. Text for tables and other blocks of text requiring columnar alignment will be mono-spaced font (ft=4). Text for all curve data will be slanted font (ft=24). All other text will be font 2.
   See the "CADD STANDARDS" (Sheet 4) for details.

10. Space will be left to allow the counties to put their file numbers and other information on the survey. The responsible surveyor should contact the county surveyor to determine where this space needs to be. Normally, this will be in upper right hand corner of each sheet.
    See the "CADD STANDARDS" (Sheet 1) for details.

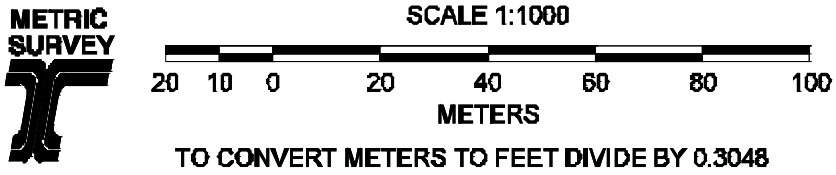
11. The Surveyors Stamp is available as a cell. The signature must be a wet)

   See the "CADD STANDARDS" (Sheet 3, Note 7) for details.

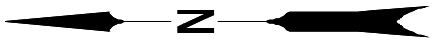
12. Each map sheet will contain a legend for the unlabeled lines and or symbols.
    See the "CADD STANDARDS" (Sheet 3, Note 8) for details.

13. Title Blocks will contain the following:
    A) "Oregon Department of Transportation"
    B) Type of survey: Right-of-Way Monumentation
    C) Project name (as listed in the contract plans)
    D) Highway name (Use the route name & number in preference to straight-line number.)
    E) County
    F) Address of office filing the survey
    G) Date of survey filing
    H) Sheet number (See the "CADD STANDARDS" (Sheet 3, Note 9) for details.)

14. Place the cell that contains the metric survey flying "T" logo with metric conversion statement and the scale bar on each sheet. Normally locate this above the title block. Scales can be shown as 1 mm = 1 m; 1:1000; 1:500; etc. The scale will be shown with scale bar. See example below



15. Include a north arrow on each map sheet. Use the north arrow from the cell library. Separate from the scale bar. The length of the arrow will be approximately 55 mm.



A) Sheet Plan Layout: For large or complicated surveys include a sheet plan showing the organization or layout of each sheet along the survey. This is a quick reference showing where a sheet lies along the survey. On small surveys a simple index can be used. i.e.:

INDEX
SHEET 1 - NARRATIVE , QUALITY CONTROL
SHEET 2 - PROJECT CONTROL SHEET
SHEET 3 - PROJECT MONUMENTATION

17. Narrative: Each narrative will be unique to the project and include the purpose, reference documents, alignment used (new, or retraced), basis of control, coordinates and network, survey work, dates and equipment used. Information and examples follow:

A) PURPOSE: State the purpose of the survey, include what type of survey it is, where it is, and what project it is for.

Example:
THIS SURVEY MONUMENTS THE CENTERLINE AND RIGHT-OF-WAY (R/W) ACQUIRED FOR THE CONSTRUCTION OF THE (PROJECT NAME) AN OREGON DEPARTMENT OF TRANSPORTATION (ODOT) PROJECT. THIS SURVEY IS LOCATED ON (HIGWAY NAME) AT (NAME OF ROAD, ETC.) (NEAR OR BETWEEN, ETC.) THIS SURVEY IS BASED ON ODOT DRAWING NO.: 10B-15-4, (DRAWING REVISION DATE), (CONSTRUCTION YEAR), ETC.

* RIGHT-OF-WAY abbreviated will be "R/W" as the standard.

B) REFERENCE DOCUMENTS: List all of the reference documents hat were used for this survey, such as ODOT Drawing Maps, Record of Sturveys, Subdivisions, and Deeds.

ODOT DRG 10B-8-22
(ODOT Right-of-Way, Located Line, and Constructed Line Maps are referred to as Drawing Number (DRG XX-XX-XX).

RECORDED SURVEYS: CS 3573; PS 23094.
(Each county has a different system for naming its surveys.)

Example:
REFERENCE DOCUMENTS USED: ODOT DRG 10B-8-22 AND CS 15516.

DEED REFERENCES USED: BK 213 PG 352; BK 213 PG 353; BK 213 PG 354; BK 117 PG 167; BK 152 PG 616; BK 91 PG 357; BK 213 PG 634; BK 137 PG 611; BK 190 PG 33.

C) ALIGNMENT MONUMENTATION: How and when monuments were set and what methods were used. The methods used such as radial coordinate stakeout, station and offset, reference, etc. Listed below is an example.

Example: (note this example is a combination of network and setting right-of-way monuments.)

THE BEGINNING OF THIS MONUMENTATION SURVEY IS AT STATION (STA) 3+170.301 PT, AND ENDS AT STA 4+138.526 PS BACK = STA 135+78.3 PS AHEAD ON HWY 99 W. THE ALIGNMENTS USED FOR THE NEW R/W WERE FROM THE RESOLVED R/W RECORDS OF SURVEY, POLK CO. SURVEY NUMBER 15516.

THE CONTROL NETWORK WAS RE-DENSIFIED TO REPLACE NETWORK CONTROL POINTS DESTROYED DURING CONSTRUCTION. THE NETWORK WAS THEN ADJUSTED FROM LISCAD FIELD DATA USING LEAST SQUARES ADJUSTMENT SOFTWARE CONSTRAINED TO UNDISTURBED REMAINING CONTROL. THE RIGHT-OF-WAY MONUMENTATION WAS THEN ESTABLISHED UTILIZING ODOT RESOLVED ALIGNMENTS AND THE STATION AND OFFSET CALLS GIVEN ON ODOT DRAWING 10B-8-22. THE CALLS ARE RELATIVE TO THE CL OF HWY 99 W. R/W MONUMENTS WERE NOT SET ON THIS SURVEY. ALL R/W POINTS EXIST AS COORDINATES RELATIVE TO THE CONTROL NETWORK. THE R/W POINTS ARE LISTED IN THE COORDINATE TABLE AND CAN BE LOCATED USING THE CONTROL NETWORK ESTABLISHED.

THE MONUMENTS WERE SET BY RADIAL COORDINATE STAKEOUT FROM THE CONTROL NETWORK. (This last sentence can be dropped if not setting any R/W monements.)

D) BASIS OF BEARING: The basis of bearing for the survey needs to be explained. Here are some examples of different types.

Examples:
A HORIZONTAL CONTROL AND RECOVERY SURVEY (SN XXXXX) WAS FILED BY ODOT WITH VVVV COUNTY SURVEYOR'S OFFICE. THIS WAS USED FOR BEARING AND COORDINATE CONTROL FOR THE PROJECT.

THE BASIS OF BEARING WAS ESTABLISHED BY HOLDING TWO GLOBAL POSITIONING SYSTEM (GPS) STATIONS, "AAA" AND "BBB", SET BY ODOT GEOMETRONICS. THE DOCUMENTATION OF THESE GPS STATIONS IS FILED WITH THE POLK COUNTY SURVEYOR'S OFFICE AS C.S. 12506.

Or:
THE BASIS OF BEARING WAS ESTABLISHED BY HOLDING TWO GPS STATIONS, "AAA" AND "BBB", FROM THE CITY OF XXX NETWORK.

Or:
THIS SURVEY IS BASED ON ASSUMED COORDINATES FROM COUNTY SURVEY NO. XXXX FILED (survey date), in (County name) COUNTY, OREGON.

Or:
THE BASIS OF BEARING WAS ESTABLISHED BY HOLDING 2 GLOBAL POSITIONING SYSTEM (GPS) POINTS, 9283-1 AND 9283-2. W & H PACIFIC SET THESE ON SEPTEMBER 2, 1997 AT THE REQUEST OF ODOT. THE DOCUMENTATION OF THESE GPS STATIONS IS FILED WITH THE POLK COUNTY SURVEYOR'S OFFICE AS C.S. 12506.

E) BASIS OF COORDINATES: State if the survey is an LDP survey. State which (*) year, zone and what the conversion factor to the OCS is.

<u>1927</u>
THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE SYSTEM (OCS) OF 1927 (**) ZONE, WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

1983
THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE SYSTEM (OCS) OF 1983 (**) ZONE, WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

* Year could be 1927, 1983, etc.
** Zone could be north or south.

Example:
THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE SYSTEM (OCS) OF 1983 NORTH ZONE WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

F) SURVEY WORK: This paragraph shall state who performed the surveying, when it was done and with what equipment.

CREW:
Identify the crews that did the survey work i.e., consultant, ODOT, City, County, etc.

DATES:
The beginning and ending dates when the monuments were set.

EQUIPMENT USED:
Identify the equipment used for the network and pin ties. Include the equipment type, manufacturer and serial numbers.

METHOD of ADJUSTMENT:
Include the type of adjustment performed on the network or traverse.

Example: (Note adjustment method was stated above so it does not need to be repeated.)

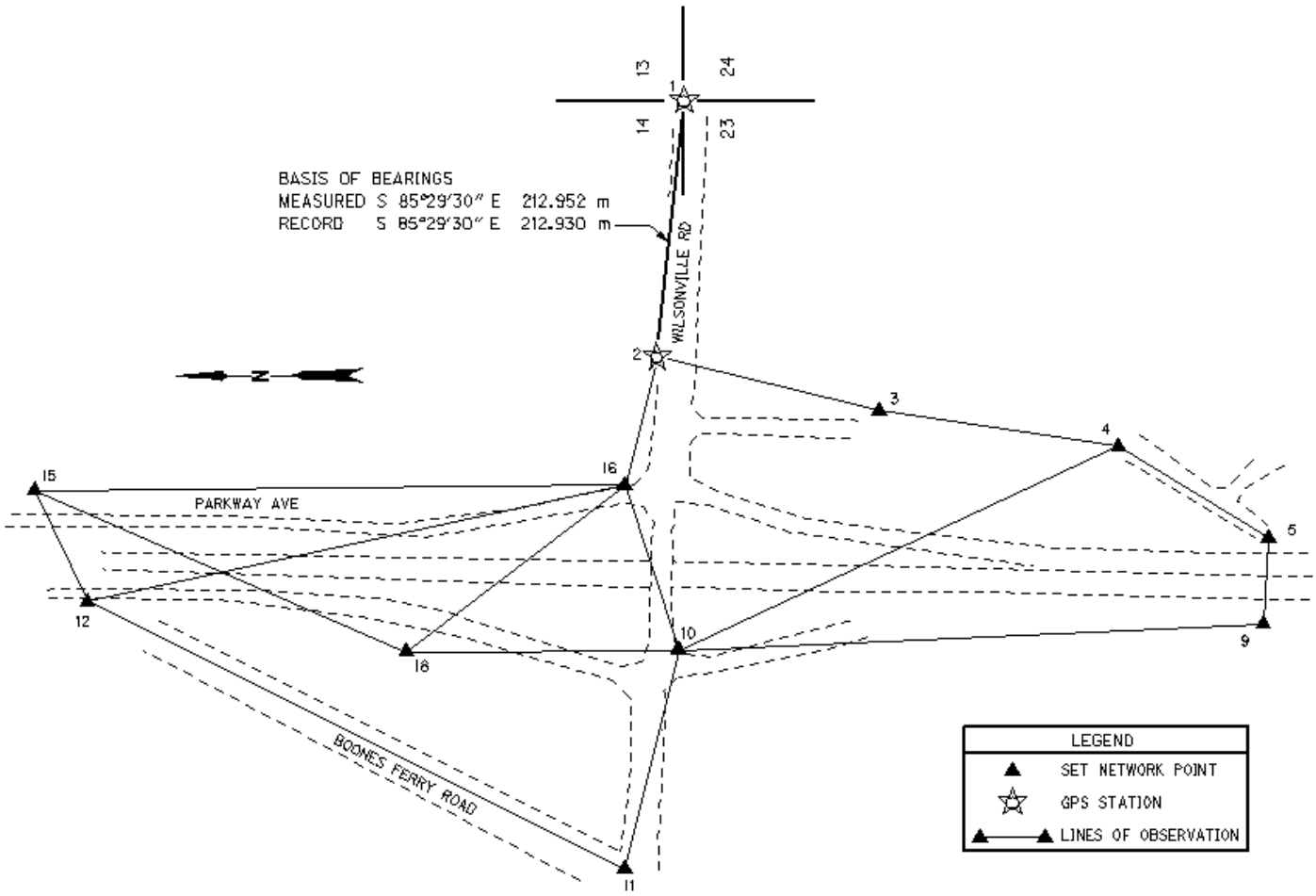
SURVEY WORK WAS PERFORMED BY ODOT SURVEY CREWS FROM DECEMBER 1, 1997 TO DECEMBER 15, 1998. THE SURVEY EQUIPMENT USED WAS A WILD TCA1800 ELECTRONIC THEODOLITE WITH INTEGRATED EDM S/N 426580.

NETWORK POINTS SET DURING THIS SURVEY DO NOT REPRESENT PROPERTY LINE OR R/W LINES. THEY ARE INTENDED TO PERPETUATE THE ALIGNMENTS AND RIGHT-OF-WAY DEVELOPED FOR THIS PROJECT IN CONFORMANCE WITH ORS. CHAPTER 209, SECTION 155.

18. Network/Traverse: Show the network or traverse from which monuments were set. If this is a network control monumentation survey then show the network and it's relationship to the new right-of-way.

    A) Show a schematic diagram. This can be separate from the sheet orientation diagram or included with it.

    B) Include the Basis of Bearing.



    C) Show the lines of observation to each network point. (Or list them in a table if they are too numerous.)

    D) For a Monumentation Survey, a table is preferred when the points are numerous. * If there are a few points, the data may be entered at the point. The Network/Traverse Table should show the following:

        1. Point number

        2. Coordinates

        3. Description of points set. (List ODOT or Consultant if they set the monument)

4. If found monuments are used, reference the oldest survey or state not recorded.

5. When using abbreviations a legend should be provided, i.e. R.P.C. = Red Plastic Cap
   Note: A table template cell and a report template have been created for this purpose. (see example sheet 3A, note 10).

6. A statement about the residual values of the network **or** copy the table from the LISCAD output report, which consists of the items.

RESIDUAL TABLE

At	To	Distance	Distance Residual	Angle Residual
300	302	1000.000 m	0.002 m	00°00′01″

7. List the following values for each network point.

CONFIDENCE LEVEL LIMITS

PT. #	Semi Major	Semi Minor	Orientation*
300	0.025 m	0.016 m	30° 34′ 45″

* North azimuth.

Note: Items 6 & 7 can be omitted if no additional network monuments are set or adjustments made to previously filed survey. Reference that survey to cover this data.

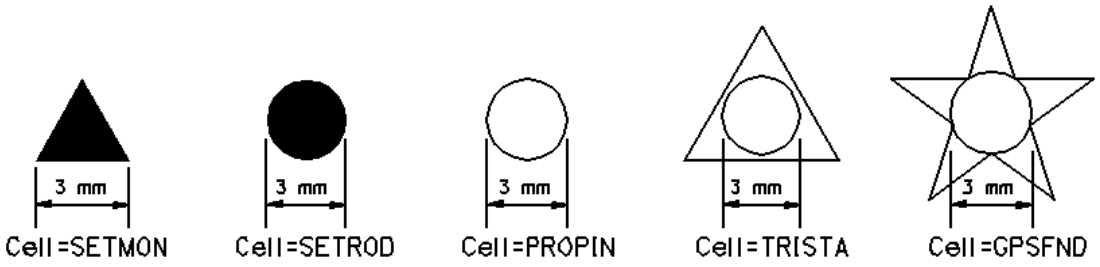
E) If the surveyor has knowledge that a network monument has been destroyed it shall be shown with a symbol on the map. This will be the open triangle with a "X" through it.

If the surveyor searched for but did not find network monuments it shall be noted in the narrative.

F) New network monuments set during the monumentation phase will be numbered per ODOT standard. Avoid the use of the point IDs for monuments that were not found or destroyed.

19. The network/traverse points and point numbers should be shown on each individual sheet where they occur.

20. All set or found monuments and network control point cells or symbols should be no smaller than the common county requirement of 0.1". For the purposes of this standard, the minimum size should be 3 mm. For symbols with a central circle, the diameter should be no less than 3 mm, as illustrated below.



21. The found monument symbol or other symbols that are not filled shall be shown on the map unobscured. This means no line going through it. If other data makes it obscure, then show a detail. Use the property pin cell (propin.cel) or font 84, lower case "f".

22. Found Monument Table: Create a found monument table if monuments are found:

    A) Before construction begins, a search for monuments should be made for monuments set after the initial recovery for monuments. At monumentation stage, these ties shall be placed on the monumentation map if no other map was filed for their perpetuation.

    B) End of construction monumentation. A search for monuments set by others along the R/W should be done and tied. These will then be added to the monumentation map.

    C) All re-observed monuments for the monumentation survey shall be shown on the map.

    Refer to the ODOT Monumentation Policy and the ODOT Standards for Horizontal Control/Recovery/Retracement maps for this section.

23. Set Monument Table: A table is preferred unless there are only a few monuments. The text for tables will be a mono spaced font (ft=4). A table template cell and a report template have been created for this purpose. A Set Monument Table should show the following headings:

Point#	Northing	Easting	**LDP** Station	**LDP** Offset	Date	Description
300	134145.448	2276756.547	3+474.723	12.217 m RT	(date set)	Set16 mm IRON ROD, etc.

    A) Station: List the computed station of monuments as they relate to the right-of-way centerline.

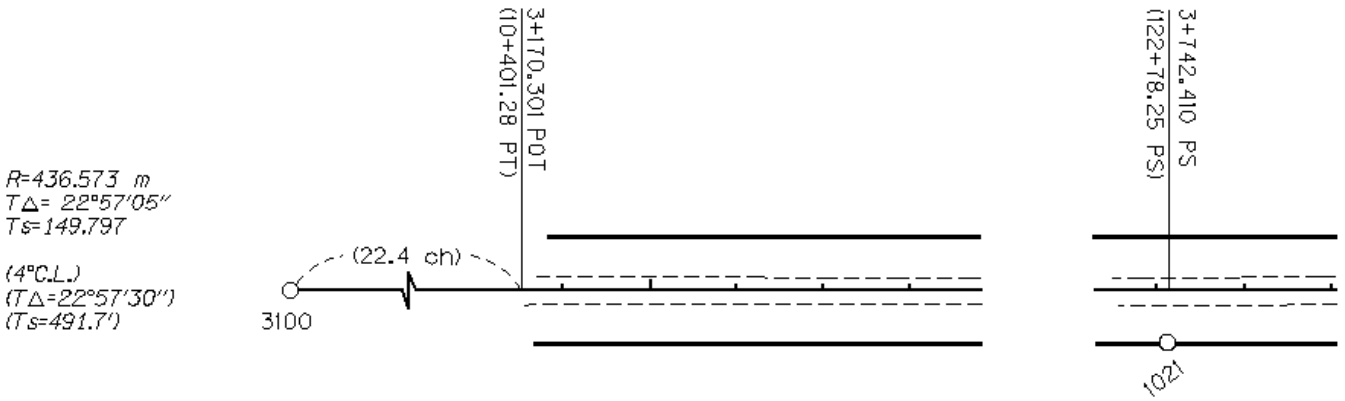
    B) Offset: List the offset distance and direction LT or RT of the right-of way centerline.

C) Date: List the date when the monument was set.

D) Descriptions: Describe the size and type of monument set.

24. Show all measurements on metric surveys in metric terms (m, mm).

Example 1 is to the left, **Example 2 is to the right**

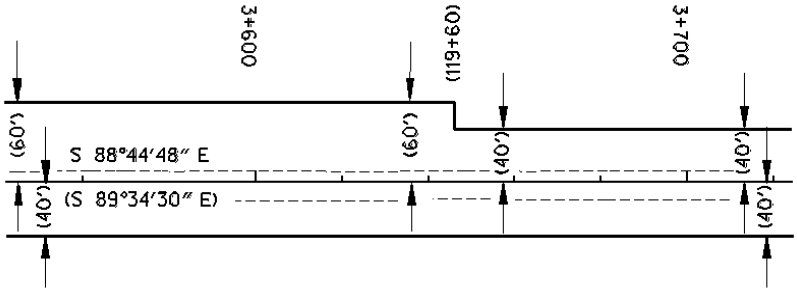


25. Bearing: i.e. the tangent bearing (PT to PC, or PT to PS) should show along the centerline. Show both record and resolved.

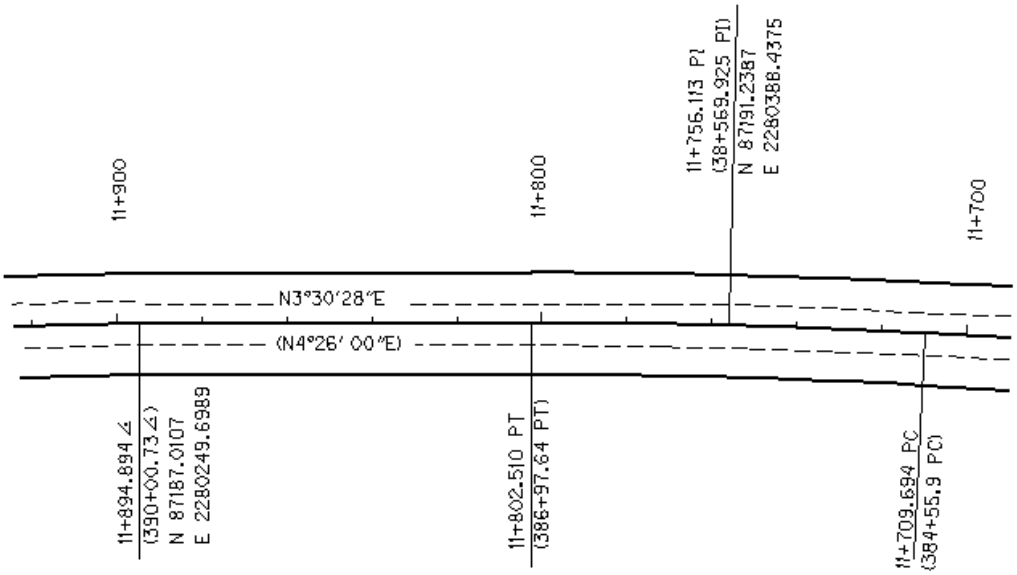
26. Curve Data: Show the following:

Radius
Ts (Total distance from PS to PI) (There could be a Ts1 ([in]) and a Ts2 ([out]) if there are different spiral lengths).
Δ (Delta Angle) for simple curves
TΔ (Total Delta Angle) for curves with spirals
Spiral Lengths

27. Right-of-Way Lines and Widths: Show the new right-of-way line widths and the station at all changes in right-of-way. Show right-of-way widths at both ends of tangents on each sheet.



28. Centerline: Show the right-of-way centerlines that property was acquired from. (Multiple alignments should be noted in different line styles and/or have unique labeling). Show the alignments with stationing, all centerline control points and PIs. List the coordinates at PIs , POTs, angle points and the ends of the alignment only.



29. Alignment stationing & offset distances should be shown in the direction ahead on line. All other drafting should follow the bottom/right rule. That is, it should be easily read from the bottom or the right side if placed at bottom. The layout sequence for sheeting out of the pages should follow the stationing ahead on line.

30. At a minimum show all section lines, 1/4 section lines and Donation Land Claim lines. These lines will be shown even when the monumented corners defining these lines were not tied. Use deeds and other surveys to locate these lines. 1/16 lines will be shown when they pertain to the survey.

31. Show a calculated bearing and distance from a tied monumented section corner, one-quarter corner, one-sixteenth corner or Donation Land Claim corner in Township and Range, or to a monumented lot or parcel corner or boundary corner of a recorded subdivision, partition or condominium to a point on the recovered centerline. (A section corner, one-quarter corner, one-sixteenth corner or Donation Land Claim corner is preferred)

32. Private Property Lines: Show all property lines abutting the Highway right-of-way in areas where right-of-way acquisitions have occurred. These lines will be placed graphically for distance and bearing according to surveys, plats, deeds, etc. Place the lines relative to the current project's basis of bearing.

33. Deeds: The deed recording information listed should be noted on the parcel that was acquired for the project. They can be shown in a table when a symbol is noted in the parcel.
See the "CADD STANDARDS" (Sheet 2 note 7.) for details.

34. List the route name and number along the right-of-way. The route name is the common name used. There are two general systems: Route names and number and Straight line chart names and numbers, they generally are not the same.

35. List the names of cross streets on the sheets where they occur.

36. Topo features: The following items should be displayed if they have been surveyed or tied in the normal course of building the base map for the project. Extra effort should **NOT** be made to include topographical features that are not essential for the monumentation of the project.

    A) Significant bodies of water such as rivers, creeks, ponds and lakes. Also include their names.

    B) New edge of roadway (gutter or edge of pavement).

    C) Railroad tracks: If you display railroad tracks when they cross or are adjacent to the highway right-of-way, indicate in the narrative how the position of the railroad tracks was determined.

37. All features, text and other elements of the map shall be displayed in black and white. No halftone gray shall be used.

Drafting Standard Examples

Oregon Department of Transportation

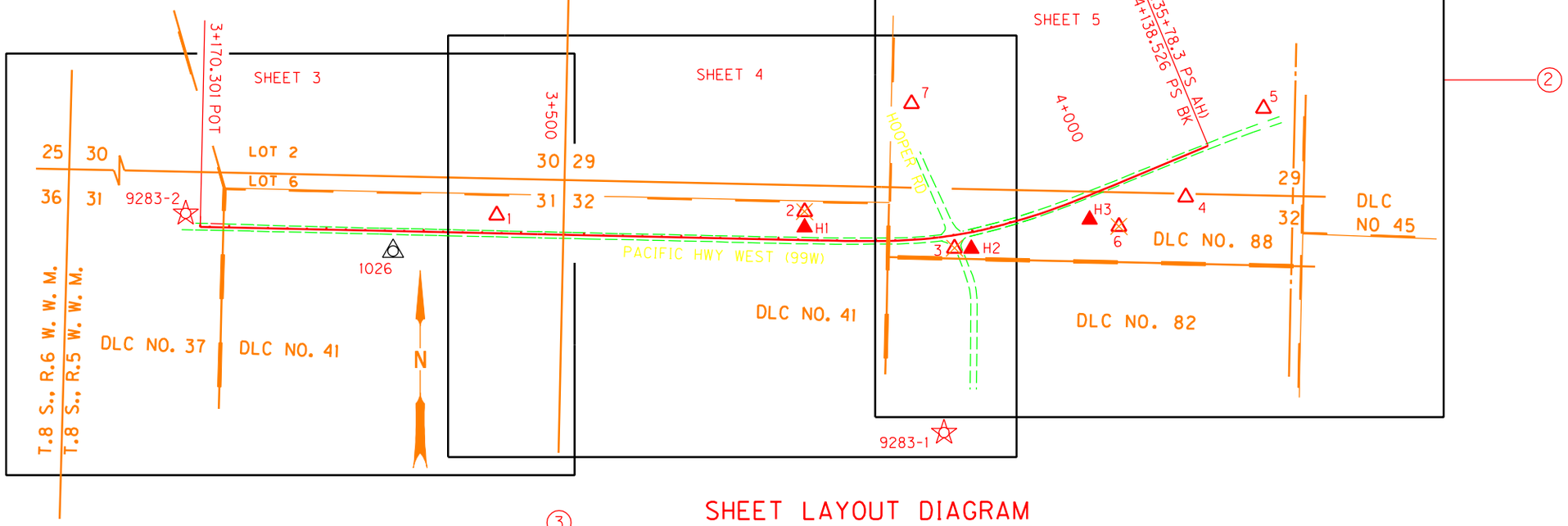
Survey Mapping and Content Standards

Monumentation By Boundary

Survey Technical Advisory Committee

Revised March 1, 2001

N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.



SHEET LAYOUT DIAGRAM

NOT TO SCALE

Reserve An Area This Size For County Recording Stamp. See County Standard For Placement

50 mm

75 mm

NARRATIVE

THIS SURVEY MONUMENTS THE CENTERLINES (CL) AND RIGHT-OF-WAY (R/W) ACQUIRED FOR THE CONSTRUCTION OF PACIFIC HIGHWAY WEST (HWY 99 W) AT HOOPER RD., AN OREGON DEPARTMENT OF TRANSPORTATION (ODOT) PROJECT. IT IS BASED ON ODOT DRAWING NO (DRG) 10B-15-4, DATED JULY 1998. THE SURVEY IS LOCATED ON HWY 99W AT HOOPER RD. THE CONSTRUCTION OF THE PROJECT WAS DONE BETWEEN JULY 15, 1998 AND OCTOBER 15, 1998.

REFERENCE DOCUMENTS USED: ODOT DRG 10B-8-22 AND CS 15516.

DEED REFERENCES USED: BK 213 PG 352; BK 213 PG 353; BK 213 PG 354; BK 117 PG 167; BK 152 PG 616; BK 91 PG 357; BK 213 PG 634; BK 137 PG 611; BK 190 PG 33.

THE BEGINNING OF THIS MONUMENTATION SURVEY IS AT STATION (STA) 3+170.301 PT, AND ENDS AT STA 4+138.526 PS BACK = STA 135+78.3 PS AHEAD ON HWY 99 W. THE ALIGNMENTS USED FOR THE NEW R/W WERE FROM THE RESOLVED R/W RECORDS OF SURVEY, POLK CO. SURVEY NUMBER 15516.

THE CONTROL NETWORK WAS RE-DENSIFIED TO REPLACE NETWORK CONTROL POINTS DESTROYED DURING CONSTRUCTION. THE NETWORK WAS THEN ADJUSTED FROM LISCAD FIELD DATA USING LEAST SQUARES ADJUSTMENT SOFTWARE CONSTRAINED TO UNDISTURBED REMAINING CONTROL. THE RIGHT-OF-WAY MONUMENTATION WAS THEN ESTABLISHED UTILIZING ODOT RESOLVED ALIGNMENTS AND THE STATION AND OFFSET CALLS GIVEN ON ODOT DRG 10B-8-22. THE CALLS ARE RELATIVE TO THE CL OF HWY 99 W. THE MONUMENTS WERE SET BY RADIAL COORDINATE STAKEOUT FROM THE CONTROL NETWORK.

THE BASIS OF BEARING WAS ESTABLISHED BY HOLDING 2 GLOBAL POSITIONING SYSTEM (GPS) POINTS, 9283-1 AND 9283-2. W & H PACIFIC SET THESE ON SEPTEMBER 2, 1997 AT THE REQUEST OF ODOT. THE DOCUMENTATION OF THESE GPS STATIONS IS FILED WITH THE POLK COUNTY SURVEYOR'S OFFICE AS C.S. 12506.

THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE SYSTEM (OCS) OF 1983 NORTH ZONE WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

SURVEY WORK WAS PERFORMED BY ODOT SURVEY CREWS FROM DECEMBER 1, 1998 TO DECEMBER 15, 1998. THE SURVEY EQUIPMENT USED WAS A WILD TCA1800 ELECTRONIC THEODOLITE WITH INTEGRATED EDM S/N 426580.

NETWORK POINTS SET DURING THIS SURVEY DO NOT REPRESENT PROPERTY LINE OR R/W LINES. THEY ARE INTENDED TO PERPETUATE THE ALIGNMENTS AND RIGHT-OF-WAY DEVELOPED FOR THIS PROJECT IN CONFORMANCE WITH ORS. CHAPTER 209, SECTION 155.

LEGEND

- FOUND GPS STATION
- DESTROYED NETWORK POINT
- FOUND NETWORK POINT
- SET NETWORK POINT
- FOUND MONUMENT USED AS NETWORK POINT

METRIC SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY BOUNDARY MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 SHEET 1 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 1

TECHNICAL INFORMATION SHEET

① Exception to text size standard. This required information may be larger depending on aesthetics and available space. Include all 1/4 sections on this sheet. Other sheets may be limited to 1/4 section information for that sheet.

② Sheet layout illustration. This can facilitate moving about in large surveys

③ Survey narrative: Details regarding the content of the survey narrative can be found in the written portion of these standards

All elements of the survey are to be plotted in black and white. Gray shade is not acceptable
The following is a list of required elements and features. Others may be added depending on the nature of the survey.

- Alignment centerline
- Stationing: regular, cardinal (control points), PI and equation stationing
- Tangent bearing
- Curve data
- R/W lines (see example) and property lines
- DLC lines and names, 1/4 section lines, township and range lines and text (requirements differ by county)
- Curbs, edge of pavement or roadway (include road or street names)
- Subdivision names and block nos., vol. and page nos., buildings (optional)
- Natural water features (include names)
- Fence
- Railroad (include names)
- Track symbol
- Monuments w/point numbers (no descriptions)
- GPS and traverse/network points (no observation lines, no descriptions)
- Network point coordinate table
- Network point residual table
- Network point confidence level chart
- Network/traverse/basis-of-bearing diagram
- Line and symbol legend
- Surveyors' stamp
- North arrow
- Title block
- Other items specified by the Surveyor of Record or the County Surveyor.

Note to consultants:

Attribute codes such as color codes and line weights referred to here are Microstation defaults. Line styles, however, are ODOT custom styles that are found in a folder called ℄LSTYLE which is part of the ODOT engineering package. The package also includes the Metric Plans Menu from which line styles and other standard attributes are set. This package may be gotten from ODOT's Information Systems Unit.

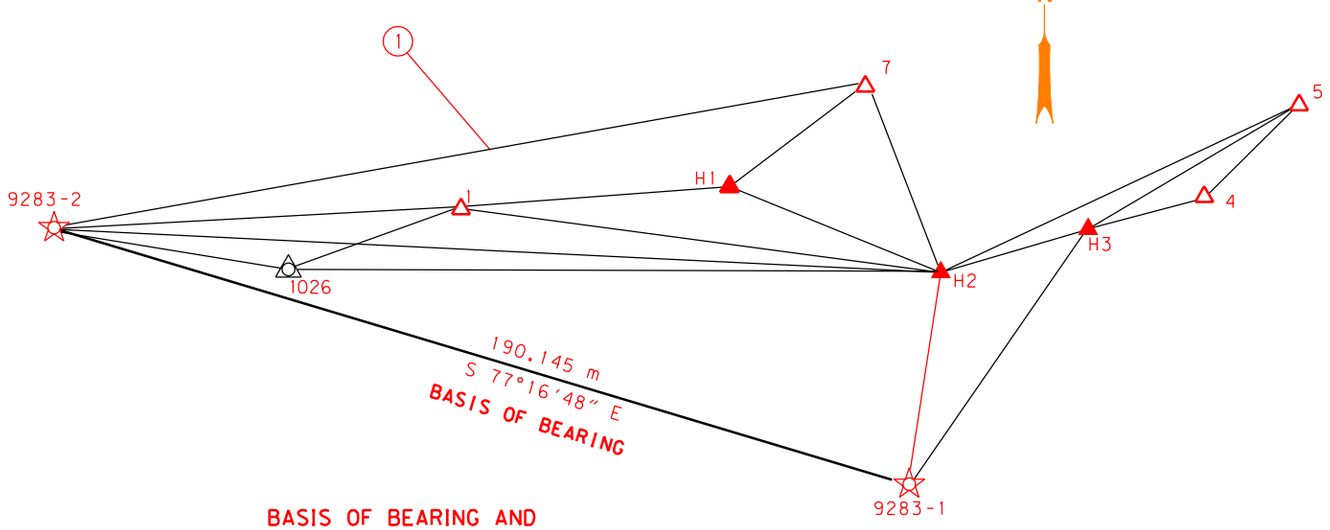
N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.

RESIDUALS FOR ANGLES AND DISTANCES

AT	TO	DISTANCE*	DISTANCE RESIDUAL	ANGLE RESIDUAL
9283-2	9283-1	760.580 m	0.000 m	0°00'00"
9283-2	1	340.410 m	0.000 m	0°00'00"
9283-2	1026	202.858 m	0.001 m	0°00'02"
1	9283-2	340.411 m	-0.001 m	-0°00'01"
1	H1	242.475 m	0.002 m	0°00'01"
1	1026	155.743 m	0.000 m	-0°00'01"
H1	1	242.477 m	0.000 m	0°00'00"
H1	H2	153.381 m	0.001 m	0°00'00"
H2	H1	153.380 m	0.001 m	0°00'01"
H2	4	231.198 m	0.001 m	-0°00'01"
H2	1026	385.521 m	0.002 m	-0°00'02"
4	H2	232.197 m	0.003 m	0°00'00"
4	5	114.677 m	-0.003 m	-0°00'01"
5	4	114.677 m	-0.003 m	-0°00'05"
5	H3	201.421 m	-0.001 m	0°00'09"
H3	5	201.421 m	-0.001 m	0°00'06"
H3	9283-1	221.385 m	0.000 m	-0°00'13"
9283-1	H3	221.385 m	0.000 m	-0°00'03"
9283-1	9283-2	760.574 m	0.006 m	0°00'06"
H3	9283-1	244.387 m	-0.002 m	0°00'02"
H3	4	86.888 m	-0.003 m	-0°00'10"
H3	H2	121.396 m	0.000 m	0°00'06"
H2	4	232.201 m	-0.002 m	0°00'00"
H2	5	331.435 m	0.002 m	-0°00'02"
H2	9283-1	145.447 m	-0.002 m	0°00'05"
H2	4	222.201 m	-0.002 m	0°00'00"
H2	1	398.857 m	0.000 m	-0°00'02"
H2	9283-2	739.237 m	-0.001 m	-0°00'01"
5	4	114.670 m	0.004 m	-0°00'02"
5	H2	331.435 m	0.002 m	0°00'03"
H2	9283-1	139.446 m	-0.001 m	0°00'00"
H2	7	94.351 m	0.000 m	0°00'00"
7	H2	94.351 m	0.000 m	-0°00'01"
7	1	355.615 m	0.000 m	0°00'00"
7	9283-2	692.277 m	0.001 m	0°00'02"
1	9283-2	340.406 m	0.004 m	0°00'00"
1	7	355.614 m	0.001 m	0°00'00"
1026	1	155.744 m	0.001 m	0°00'00"
1026	9283-2	202.858 m	0.001 m	0°00'02"
1026	H2	385.522 m	0.001 m	-0°00'02"

*CALCULATED HORIZONTAL DISTANCE IN METERS
DERIVED FROM THE MEASURED SLOPE DISTANCE

(2)



BASIS OF BEARING AND CONTROL NETWORK SCHEMATIC

NOT TO SCALE

(3)

CONFIDENCE LEVEL LIMITS

POINT #	SEMI MAJOR	SEMI MINOR	ORIENTATION*
1	0.006 m	0.003 m	1°50'38"
H1	0.005 m	0.002 m	3°21'09"
H4	0.003 m	0.002 m	161°08'08"
4	0.007 m	0.003 m	148°24'43"
5	0.010 m	0.003 m	150°12'24"
H3	0.003 m	0.002 m	131°48'05"
7	0.005 m	0.004 m	163°57'15"
1026	0.003 m	0.005 m	141°33'51"

* NORTH AZIMUTH

FIXED POINTS NOT SUBJECT TO LEAST SQUARES ADJUSTMENT OR CONFIDENCE LEVEL ANALYSIS:
9283-1
9283-2

LEGEND

- SET TRAVERSE/ NETWORK POINT
- FOUND TRAVERSE/ NETWORK POINT
- GPS POINT
- FOUND MONUMENT USED AS TRAVERSE/ NETWORK POINT
- LINES OF OBSERVATION

(4)

NETWORK POINT COORDINATE TABLE

PT ID	LDP NORTHING	LDP EASTING	DESCRIPTION
1	134141.253	2276773.551	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 1" SET BY ODOT CS 2143
H1	134144.009	2277018.052	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H1" SET BY ODOT
H2	134120.436	2277179.480	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H2" SET BY ODOT
4	134202.326	2277380.780	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 4" SET BY ODOT CS 2143
5	134253.055	2277483.623	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 5" SET BY ODOT CS 2143
H3	134168.113	2277292.647	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H3" SET BY ODOT
7	134207.639	2277122.914	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 7" SET BY ODOT CS 2143
9283-1	133980.548	2277175.122	FND 2" BRASS DISK STAMPED "9283-1 W&H PACIFIC" SET 9-2-97 FOR ODOT BY W&H PACIFIC CS 2112
9283-2	134148.018	2276433.208	FND 2" BRASS DISK STAMPED "9283-2 W&H PACIFIC" SET 9-2-97 FOR ODOT BY W&H PACIFIC CS 2112
1026	134124.392	2276603.649	FND 3/4" IRON ROD, R/W PIN ODOT DRG 6B-8-5 (11+000)

(5)

R.P.C. = RED PLASTIC CAP

METRIC SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY BOUNDARY MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 — 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 — SHEET 2 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 2

NETWORK/TRAVERSE DATA

① Network/Traverse schematic. Scale and modify shape to fit available space. Include roadway or alignment features to aid in orientation. Note heavier line weight on basis of bearing line.

② Angular and distance residual report table derived from Liscad report, observation section. Instructions for converting Liscad report to MicroStation table are available from the ODOT Geometronics Unit

③ Confidence level limits table derived from Liscad report, error analysis section

④ Network/Traverse point description table, created from Inroads geometry report tool. DBAccess Library and DBAccess Templates available from ODOT Geometronics Unit. Table template cell = nettbl

⑤ Abbreviation definition required only if abbreviation is not industry standard.

N.W. 1/4 SEC. 31 T.8 S. R.5 W. W .M.

25 30 36 31

POINT NO 1000
N 134264.331
E 2276772.468

GOVERNMENT LOT 2

GOVERNMENT LOT 6

SW 1/4 SEC. 30
NW 1/4 SEC. 31

ALBERT ANDERSON DLC NO. 41

T.8 S., R.6 W. W. M.

T.8 S., R.5 W. W. M.

275.923 m
N 24°44'36" W

3+170.301 PT
(104+01.28 PT)
N 163786.575
E 2334988.245

GOVERNMENT LOT 4

TO KINGS VALLEY HWY

9283.2

N

3+200

3+300

3+400

3+500

+508.121

12.192 m

18.288 m

S 88°44'48" E

PACIFIC HWY WEST (99W)

1

1026

JIM JONES
DLC NO. 37

ALBERT ANDERSON DLC NO. 41

2 3 4 5 6 7 8 9

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

LEGEND

- FOUND MONUMENT
- UTILITY POLE
- GPS POINT
- FOUND NETWORK POINT
- FOUND MONUMENT USED AS NETWORK POINT
- OLD RIGHT-OF-WAY
- EDGE PAVE. OR CURB

METRIC SURVEY

SCALE 1:1000

20 10 0 20 40 60 80 100

METERS

TO CONVERT METERS TO FEET DIVIDE BY 0.3048

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY BOUNDARY MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR 97666-1234

MAY 13, 2000 SHEET 3 OF 5

NOTES AND EXPLANATIONS FOR SHEET 3

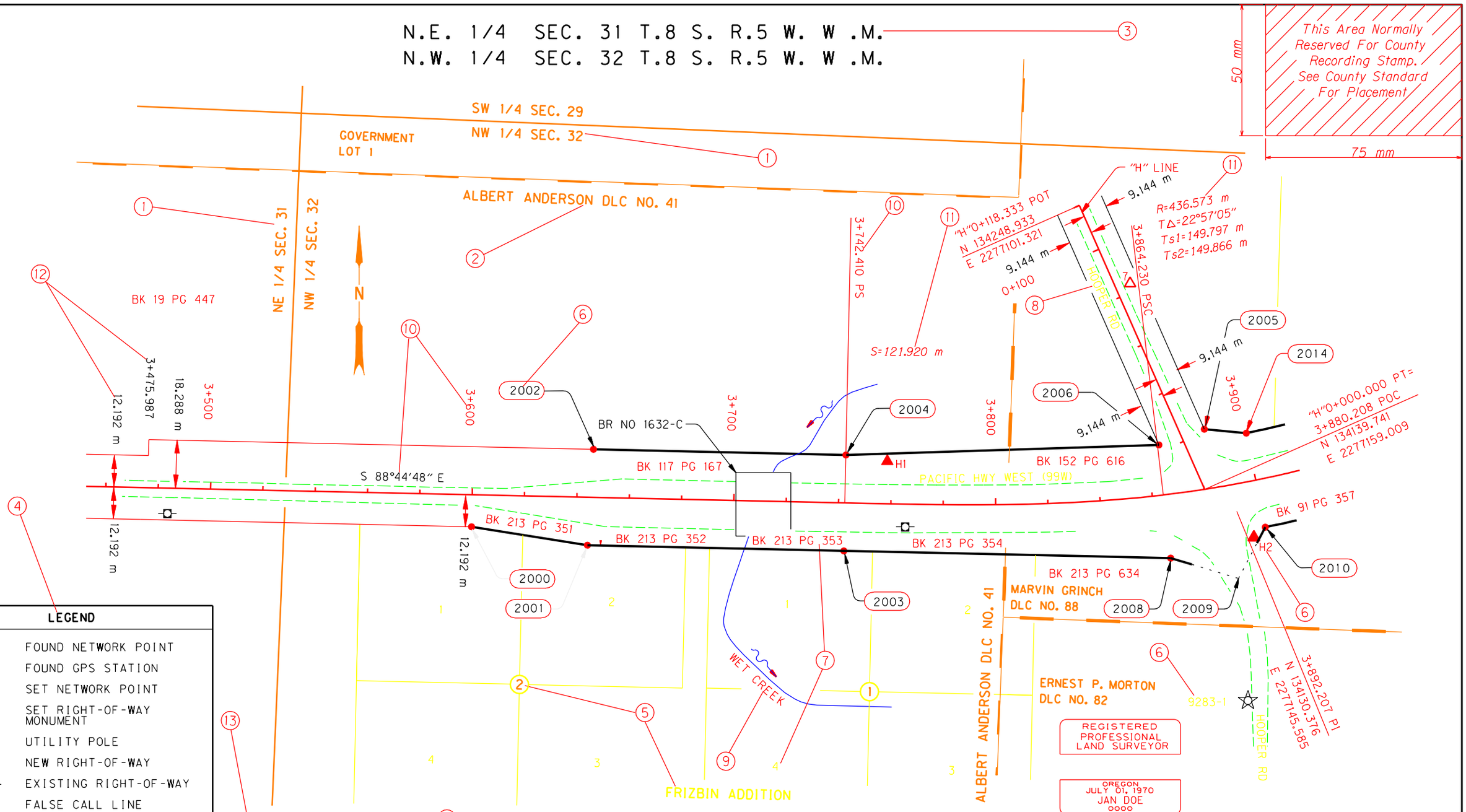
CELL AND SYMBOL STANDARDS

1. Found monument cell = PROPIN*
   (Tied during this survey)
2. Found GPS station cell = GPSFND*
3. Found traverse/network point cell = DELTA or symbol = font 84 (lower case) u
   Not shown: Set traverse/network point cell= SETMON
   Set R/W monument cell = SETROD
   See sheet 4 map legend for examples
4. Found monument used as trav./net. point cell = TRISTA*
5. North arrow cell = ARROW
6. Metric survey/metric conversion data cell = METCON**
7. Generic PLS stamp cell = PLS**
8. Symbol legend cell = LEGEND**
9. Generic SFM title block cell = TBLOCK**

* Preset in Inroads civil.prf and WYSIWYG.prf, preference = SFM
available from ODOT Geometronics unit

** Contained in cell library SFM.cel available from ODOT
Geometronics unit

N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.



SET MONUMENT LIST

YPC = YELLOW PLASTIC CAP

PT ID	LDP NORTHING	LDP EASTING	STATION	OFFSET	DESCRIPTION
2000	134118.304	2276881.265	3+600.000	12.192 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2001	134111.239	2276925.528	3+645.408	18.000 m RT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2002	134147.806	2276926.330	3+645.408	18.288 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2003	134109.095	2277023.508	3+742.410	18.000 m RT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2004	134145.662	2277024.308	3+742.410	18.288 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2005	134156.444	2277150.681	3+883.806	25.210 m LT	FALSE CALL
2006	134148.538	2277143.439	3+864.230	19.000 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2008	134106.363	2277148.424	3+864.230	24.000 m RT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2009	134098.564	2277174.344	3+884.329	35.621 m RT	FALSE CALL
2010	134118.099	2277184.522	3+900.000	18.000 m RT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2014	134123.554	2277166.820	3+900.000	18.000 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY BOUNDARY MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR 97666-1234

MAY 13, 2000

NOTES AND EXPLANATIONS FOR SHEET 4

TEXT STANDARDS

All text is categorized as either major or minor text as itemized here. When plotted at 1000:1 scale, major text shall have a minimum height and width of 3.5 mm (tx=3.5) and minor text shall have a minimum height and width of 3.0 mm (tx=3)

The use of major text is generally limited to government line and area labels (subdivision lot numbers excepted), table and page headings and illustration labels such as diagrams or details. Minor text is primarily used for feature labels and technical data.

All text will be font 2 with a few exceptions. Mono-spaced font 4 text will be used in tables or columns where vertical alignment is desirable. Circular curve data will be placed as slanted font 24. This is an Inroads preference setting which is used primarily because it contains a "delta" symbol. The Township-Range-Section information at the top of each sheet shall be font 4 and a minimum TH and TW of 3.5 but may vary in size as space and aesthetics dictate. Fonts in cells such as the title block and PLS stamp do not totally conform to these standards.

MAJOR TEXT: tx=3.5, wt=2

① Section & 1/4 section line label, ft=2

② DLC text, ft=2

③ Township-Range-Section sheet header, ft=4, tx=3.5 (minimum)

④ Various table and column headings, ft=2 or 4

⑤ Subdivision text, subdivision block numbers, ft=2

MINOR TEXT: tx=3.0, wt=1

⑥ Point numbers for trav./net. points, R/W monuments, GPS, etc. ft=2 *

⑦ Subdivision lot numbers, deed vol.- page numbers ft=2

⑧ Street & road names ft=2

⑨ Water feature labels ft=2

⑩ Stationing, alignment data (tangents and control points) ft=2*

⑪ Curve data including spirals ft=24*

⑫ R/W data ft=2

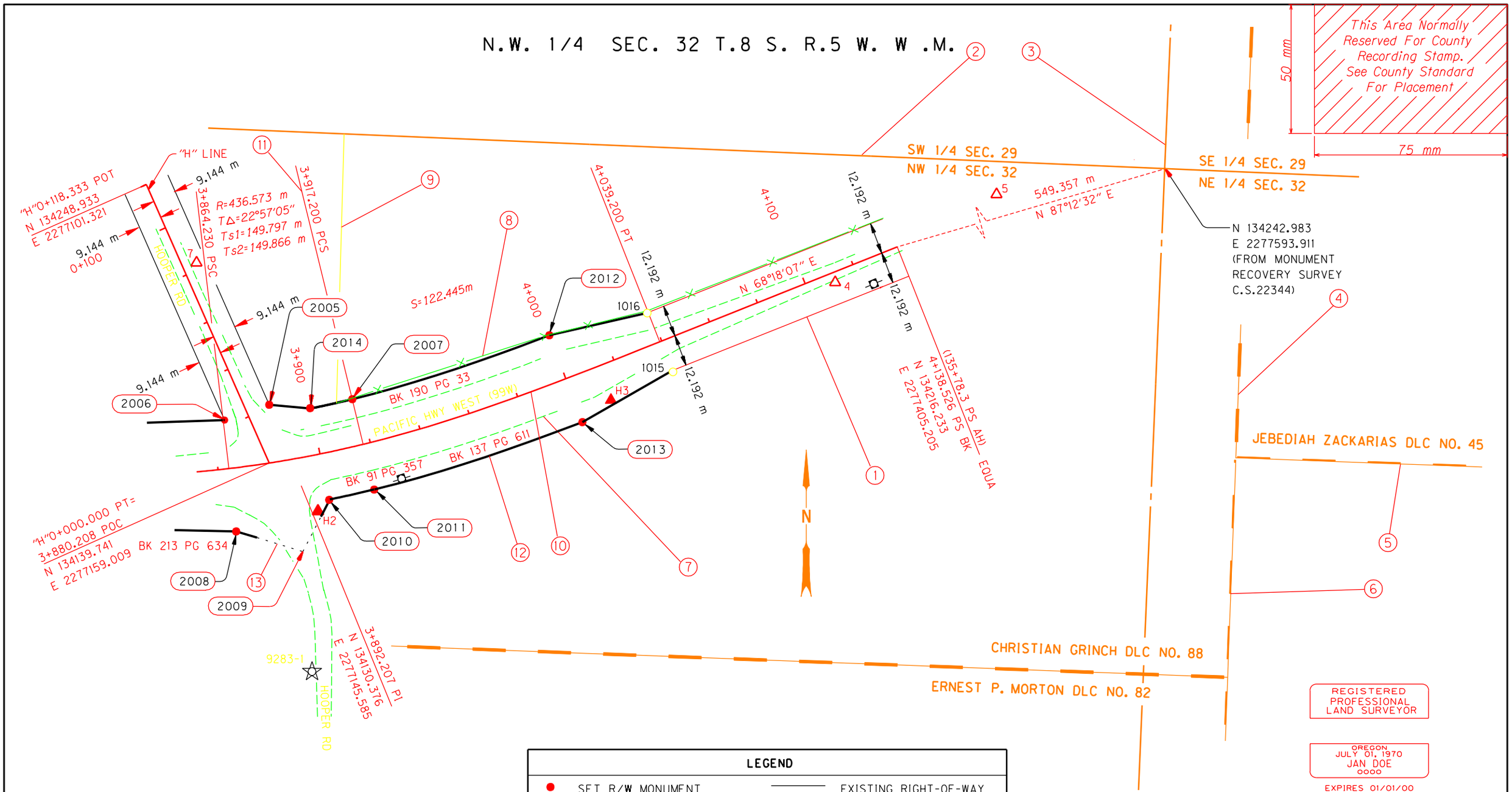
⑬ Notes ft=2

⑭ Text in tables ft=4

* Preset Inroads preference (Preference = SFM)

See Sheet 1 For Other Examples

N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.



LEGEND

SET R/W MONUMENT	EXISTING RIGHT-OF-WAY
FOUND MONUMENT	NEW RIGHT-OF-WAY
GPS POINT	FALSE CALL LINE
SET NETWORK POINT	EDGE PAVE. OR CURB
FOUND NETWORK POINT	FENCE
UTILITY POLE	RIGHT-OF-WAY POINT NO.
( ) RECORD DATA	

REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

METRIC SURVEY

SCALE 1:1000

20 10 0 20 40 60 80 100
METERS

TO CONVERT METERS TO FEET DIVIDE BY 0.3048

MONUMENT LIST

PT ID	LDP NORTHING	LDP EASTING	STATION	OFFSET	DESCRIPTION
1015	134168.150	2277317.487	4+039.252	12.246 m RT	FND 1/2" IRON ROD ODOT DRG 6B-8-5 (132+52.25 PT RECORD ENGLISH STATION)
1016	134190.795	2277308.460	4+039.152	12.246 m LT	FND 1/2" IRON ROD ODOT DRG 6B-8-5 (132+52.25 PT RECORD ENGLISH STATION)
2007	134157.534	2277193.355	3+917.200	18.000 m RT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2011	134121.997	2277202.013	3+917.200	18.000 m LT	SET 16 mm X 762 mm IRON ROD W/YPC STAMPED "ODOT RW"
2012	134157.254	2277193.423	4+000.000	18.000 m LT	SET 16 mm X 762 mm IRON ROD W/YELLOW PLASTIC CAP STAMPED "ODOT RW"
2013	134122.277	2277201.945	4+000.000	18.000 m RT	SET 16 mm X 762 mm IRON ROD W/YELLOW PLASTIC CAP STAMPED "ODOT RW"

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY BOUNDARY MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 SHEET 5 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 5

COMMON LINE STANDARDS*

1. Existing Right-Of-Way: CO=0, LVL=22, LC=0, WT=1,
2. Section line: CO=6, LVL=42, LC=0, WT=3
3. 1/4 section line: CO=6, LVL=42, LC=quarter, WT=2
4. DLC line with claim on both sides: LC=DLC3**, line scale factor=2, CO=6, WT=1
5. DLC line with claim on one side only: LC=DLC2**, line scale factor=2, CO=6, WT=1
6. DLC line with claim on one side only (opposite of DLC 2): LC=DLC1**, line scale factor=2, CO=6, WT=1
7. Edge of pavement: CO=2, LVL=11, LC=3, WT=1
8. Fence: CO=2, LVL=55, LC= fence, WT=1
9. Property line: CO=4, LVL=21, LC=0, WT=1 placed using surveys, deed information and/or found monuments.
10. Resolved centerline: CO=3, LVL=11, LC=0, WT=2 (choose different line styles for multiple alignments)
11. Control point flag: CO=3, LVL=12, LC=0, WT=1 (preset Inroads preference)
12. New Right-Of-Way: CO=0, LVL=22, LC=0, WT=4
13. False call line used for unresolved Right-Of-Way: CO=0, LVL=22, LC=1, WT=1

* In most cases these are ODOT Contract Plans Developement Guide standards set by the Metric Plans Menu. Exceptions include the R/W line symbology, centerline weight, centerline station tick length and property line weight.

** The DLC line style shows the short dash pattern on the side of the claim (LC = DLC1 or DLC2). When there is a claim on both sides of the line use line code DLC3.

Drafting Standard Examples

Oregon Department of Transportation

Survey Mapping and Content Standards

Monumentation By Network

Survey Technical Advisory Committee

Revised March 1, 2001

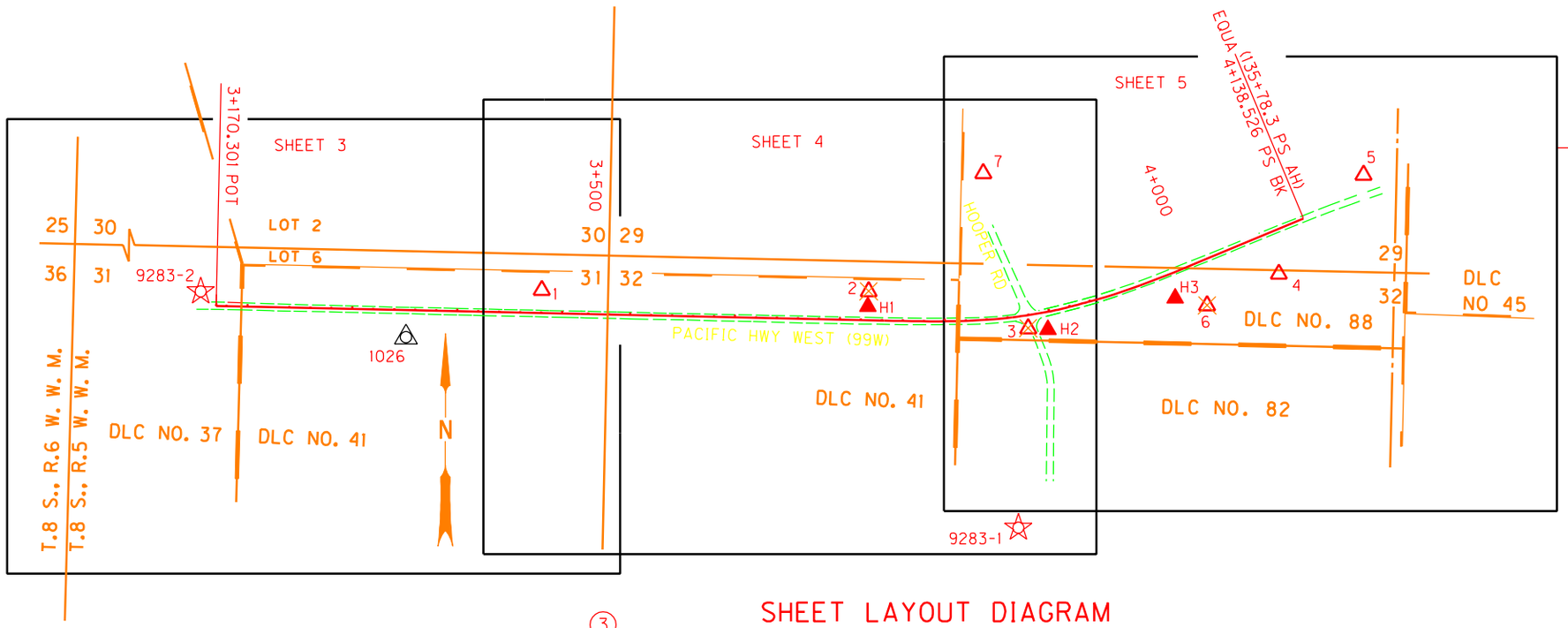
N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.

(1)

Reserve An Area
This Size For County
Recording Stamp.
See County Standard
For Placement

50 mm

75 mm



(2)

SHEET LAYOUT DIAGRAM

NOT TO SCALE

(3)

NARRATIVE

THIS SURVEY MONUMENTS THE CENTERLINE (CL) AND RIGHT-OF-WAY (R/W) ACQUIRED FOR THE CONSTRUCTION OF PACIFIC HIGHWAY WEST (HWY 99W) AT HOOPER RD., AN OREGON DEPARTMENT OF TRANSPORTATION (ODOT) PROJECT. THIS SURVEY PERPETUATES THE ALIGNMENTS AND RIGHT-OF-WAY DEVELOPED FOR THE PROJECT IN CONFORMANCE WITH ORS. CHAPTER 209, SECTION 155. THE PROJECT IS LOCATED ON HWY 99W AT HOOPER RD. THE SURVEY IS BASED ON ODOT DRAWING NO. (DRG) 10B-15-4, DATED JULY 1998. THE CONSTRUCTION OF THIS PROJECT WAS DONE BETWEEN JULY 15, 1998 AND OCTOBER 15, 1998.

REFERENCE DOCUMENTS USED: ODOT DRG 10B-8-22 AND CS 15516.

DEED REFERENCES USED: BK 213 PG 352; BK 213 PG 353; BK 213 PG 354; BK 117 PG 167; BK 152 PG 616; BK 91 PG 357; BK 213 PG 634; BK 137 PG 611; BK 190 PG 33.

THE BEGINNING OF THIS MONUMENTATION SURVEY IS AT STATION (STA) 3+170.301 PT, AND ENDS AT STA 4+138.526 PS BACK = STA 135+78.3 PS AHEAD ON HWY 99 W. THE ALIGNMENTS USED FOR THE NEW R/W WERE FROM THE RESOLVED R/W RECORDS OF SURVEY, POLK CO. SURVEY NUMBER 15516.

THE RIGHT-OF-WAY LOCATIONS WERE ESTABLISHED UTILIZING ODOT RESOLVED ALIGNMENTS AND THE STATION AND OFFSET CALLS GIVEN ON ODOT DRG 10B-8-22 AND CONFIRMED IN THE DEEDS LISTED. THE CALLS ARE RELATIVE TO THE CL OF HWY 99 W. THE R/W POINTS ARE LISTED IN THE COORDINATE TABLE AND CAN BE LOCATED USING THE CONTROL NETWORK ESTABLISHED.

THE CONTROL NETWORK WAS RE-DENSIFIED TO REPLACE NETWORK CONTROL POINTS DESTROYED DURING CONSTRUCTION. THE NETWORK WAS THEN ADJUSTED FROM LISCAD FIELD DATA USING LEAST SQUARES ADJUSTMENT SOFTWARE CONSTRAINED TO UNDISTURBED REMAINING CONTROL.

THE BASIS OF BEARING WAS ESTABLISHED BY HOLDING 2 GLOBAL POSITIONING SYSTEM (GPS) POINTS, 9283-1 AND 9283-2. W & H PACIFIC SET THESE ON SEPTEMBER 2, 1997 AT THE REQUEST OF ODOT. THE DOCUMENTATION OF THESE GPS STATIONS IS FILED WITH THE POLK COUNTY SURVEYOR'S OFFICE AS C.S. 12506.

THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE OREGON COORDINATE SYSTEM (OCS) OF 1983 NORTH ZONE WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES.

SURVEY WORK WAS PERFORMED BY ODOT SURVEY CREWS FROM DECEMBER 1, 1999 TO DECEMBER 15, 1998. THE SURVEY EQUIPMENT USED WAS A WILD TCA1800 ELECTRONIC THEODOLITE WITH INTEGRATED EDM S/N 426580.

NETWORK POINTS SET DURING THIS SURVEY DO NOT REPRESENT PROPERTY LINES OR R/W LINES.

METRIC SURVEY

LEGEND

- FOUND GPS STATION
- DESTROYED NETWORK POINT
- FOUND NETWORK POINT
- SET NETWORK POINT
- FOUND MONUMENT USED AS NETWORK POINT

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY NETWORK MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 SHEET 1 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 1

TECHNICAL INFORMATION SHEET

① Exception to text size standard. This required information may be larger depending on aesthetics and available space. Include all 1/4 sections on this sheet. Other sheets may be limited to 1/4 section information for that sheet.

② Sheet layout illustration. This can facilitate moving about in large surveys

③ Survey narrative: Details regarding the content of the survey narrative can be found in the written portion of these standards.

All elements of the survey are to be plotted in black and white. Gray shade is not acceptable
The following is a list of required elements and features. Others may be added depending on the nature of the survey.

- Alignment centerline
- Stationing: regular, cardinal (control points), PI and equation stationing
- Tangent bearing
- Curve data
- R/W lines (see example) and property lines
- DLC lines and names, 1/4 section lines, township and range lines and text (requirements differ by county)
- Curbs, edge of pavement or roadway (include road or street names)
- Subdivision names and block nos., vol. and page nos., buildings (optional)
- Natural water features (include names)
- Fence
- Railroad (include names)
- Track symbol
- Monuments w/point numbers (no descriptions)
- GPS and traverse/network points (no observation lines, no descriptions)
- Network point coordinate table
- Network point residual table
- Network point confidence level chart
- Network/traverse/basis-of-bearing diagram
- Line and symbol legend
- Surveyors' stamp
- North arrow
- Title block
- Other items specified by the Surveyor of Record or the County Surveyor.

Note to consultants:

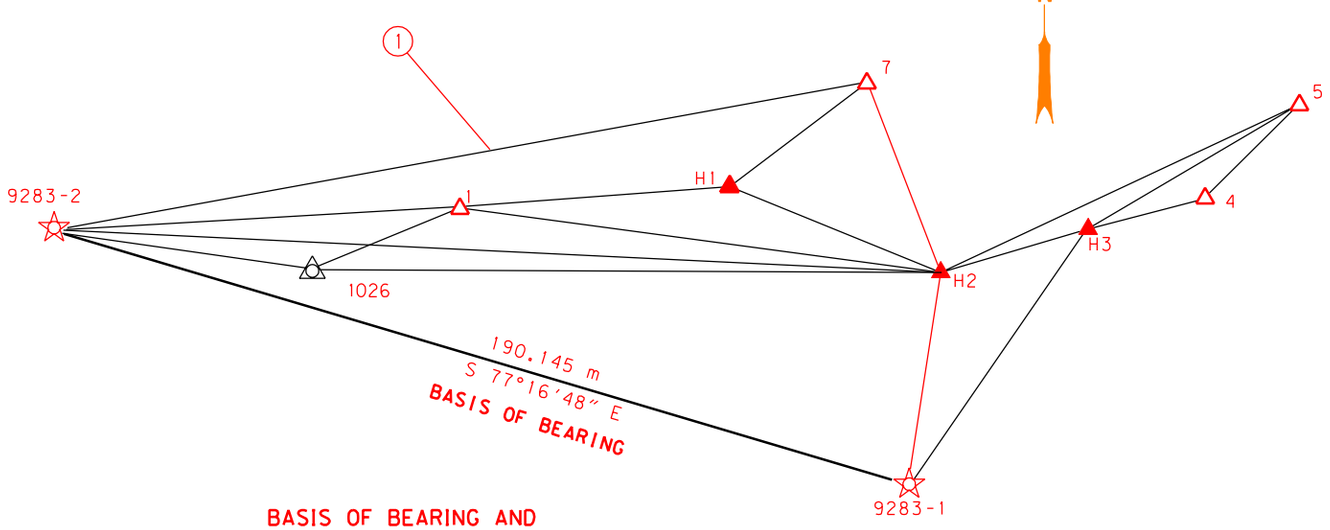
Attribute codes such as color codes and line weights referred to here are Microstation defaults. Line styles, however, are ODOT custom styles that are found in a folder called ℄LSTYLE which is part of the ODOT engineering package. The package also includes the Metric Plans Menu from which line styles and other standard attributes are set. This package may be gotten from ODOT's Information Systems Unit.

N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.

RESIDUALS FOR ANGLES AND DISTANCES

AT	TO	DISTANCE*	DISTANCE RESIDUAL	ANGLE RESIDUAL
9283-2	9283-1	760.580 m	0.000 m	0°00'00"
9283-2	1	340.410 m	0.000 m	0°00'00"
9283-2	1026	202.858 m	0.001 m	0°00'02"
1	9283-2	340.411 m	-0.001 m	-0°00'01"
1	H1	242.475 m	0.002 m	0°00'01"
1	1026	155.743 m	0.000 m	-0°00'01"
H1	1	242.477 m	0.000 m	0°00'00"
H1	H2	153.381 m	0.001 m	0°00'00"
H2	H1	153.380 m	0.001 m	0°00'01"
H2	4	231.198 m	0.001 m	-0°00'01"
H2	1026	385.521 m	0.002 m	-0°00'02"
4	H2	232.197 m	0.003 m	0°00'00"
4	5	114.677 m	-0.003 m	-0°00'01"
5	4	114.677 m	-0.003 m	-0°00'05"
5	H3	201.421 m	-0.001 m	0°00'09"
H3	5	201.421 m	-0.001 m	0°00'06"
H3	9283-1	221.385 m	0.000 m	-0°00'13"
9283-1	H3	221.385 m	0.000 m	-0°00'03"
9283-1	9283-2	760.574 m	0.006 m	0°00'06"
H3	9283-1	244.387 m	-0.002 m	0°00'02"
H3	4	86.888 m	-0.003 m	-0°00'10"
H3	H2	121.396 m	0.000 m	0°00'06"
H2	4	232.201 m	-0.002 m	0°00'00"
H2	5	331.435 m	0.002 m	-0°00'02"
H2	9283-1	145.447 m	-0.002 m	0°00'05"
H2	4	222.201 m	-0.002 m	0°00'00"
H2	1	398.857 m	0.000 m	-0°00'02"
H2	9283-2	739.237 m	-0.001 m	-0°00'01"
5	4	114.670 m	0.004 m	-0°00'02"
5	H2	331.435 m	0.002 m	0°00'03"
H2	9283-1	139.446 m	-0.001 m	0°00'00"
H2	7	94.351 m	0.000 m	0°00'00"
7	H2	94.351 m	0.000 m	-0°00'01"
7	1	355.615 m	0.000 m	0°00'00"
7	9283-2	692.277 m	0.001 m	0°00'02"
1	9283-2	340.406 m	0.004 m	0°00'00"
1	7	355.614 m	0.001 m	0°00'00"
1026	1	155.744 m	0.001 m	0°00'00"
1026	9283-2	202.858 m	0.001 m	0°00'02"
1026	H2	385.522 m	0.001 m	-0°00'02"

*CALCULATED HORIZONTAL DISTANCE IN METERS
DERIVED FROM THE MEASURED SLOPE DISTANCE



BASIS OF BEARING AND CONTROL NETWORK SCHEMATIC
NOT TO SCALE

CONFIDENCE LEVEL LIMITS

POINT *	SEMI MAJOR	SEMI MINOR	ORIENTATION*
1	0.006 m	0.003 m	1°50'38"
H1	0.005 m	0.002 m	3°21'09"
H2	0.003 m	0.002 m	161°08'08"
4	0.007 m	0.003 m	148°24'43"
5	0.010 m	0.003 m	150°12'24"
H3	0.003 m	0.002 m	131°48'05"
7	0.005 m	0.004 m	163°57'15"
1026	0.003 m	0.005 m	141°33'51"

* NORTH AZIMUTH

FIXED POINTS NOT SUBJECT TO LEAST SQUARES ADJUSTMENT OR CONFIDENCE LEVEL ANALYSIS:
9283-1
9283-2

R.P.C. = RED PLASTIC CAP

LEGEND

- SET TRAVERSE/ NETWORK POINT
- FOUND TRAVERSE/ NETWORK POINT
- GPS POINT
- FOUND MONUMENT USED AS TRAVERSE/ NETWORK POINT
- LINES OF OBSERVATION

METRIC SURVEY

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

NETWORK POINT COORDINATE TABLE

PT ID	LDP NORTHING	LDP EASTING	DESCRIPTION
1	134141.253	2276773.551	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 1" SET BY ODOT CS 2143
H1	134144.009	2277018.052	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H1" SET BY ODOT
H2	134120.436	2277179.480	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H2" SET BY ODOT
4	134202.326	2277380.780	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 4" SET BY ODOT CS 2143
5	134253.055	2277483.623	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 5" SET BY ODOT CS 2143
H3	134168.113	2277292.647	SET 16 mm X 762 mm IRON REBAR W/R.P.C. STAMPED "ODOT TRAV H3" SET BY ODOT
7	134207.639	2277122.914	FND 13 mm SQ. IRON ROD W/R.P.C. STAMPED "ODOT TRAV 7" SET BY ODOT CS 2143
9283-1	133980.548	2277175.122	FND 2" BRASS DISK STAMPED "9283-1 W&H PACIFIC" SET 9-2-97 FOR ODOT BY W&H PACIFIC CS 2112
9283-2	134148.018	2276433.208	FND 2" BRASS DISK STAMPED "9283-2 W&H PACIFIC" SET 9-2-97 FOR ODOT BY W&H PACIFIC CS 2112
1026	134124.392	2276603.649	FND 3/4" IRON ROD, R/W PIN ODOT DRG 6B-8-5 (11+000)

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY NETWORK MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 — 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 — SHEET 2 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 2

NETWORK/TRAVERSE DATA

(1) Network/Traverse schematic. Scale and modify shape to fit available space. Include roadway or alignment features to aid in orientation. Note heavier line weight on basis of bearing line.

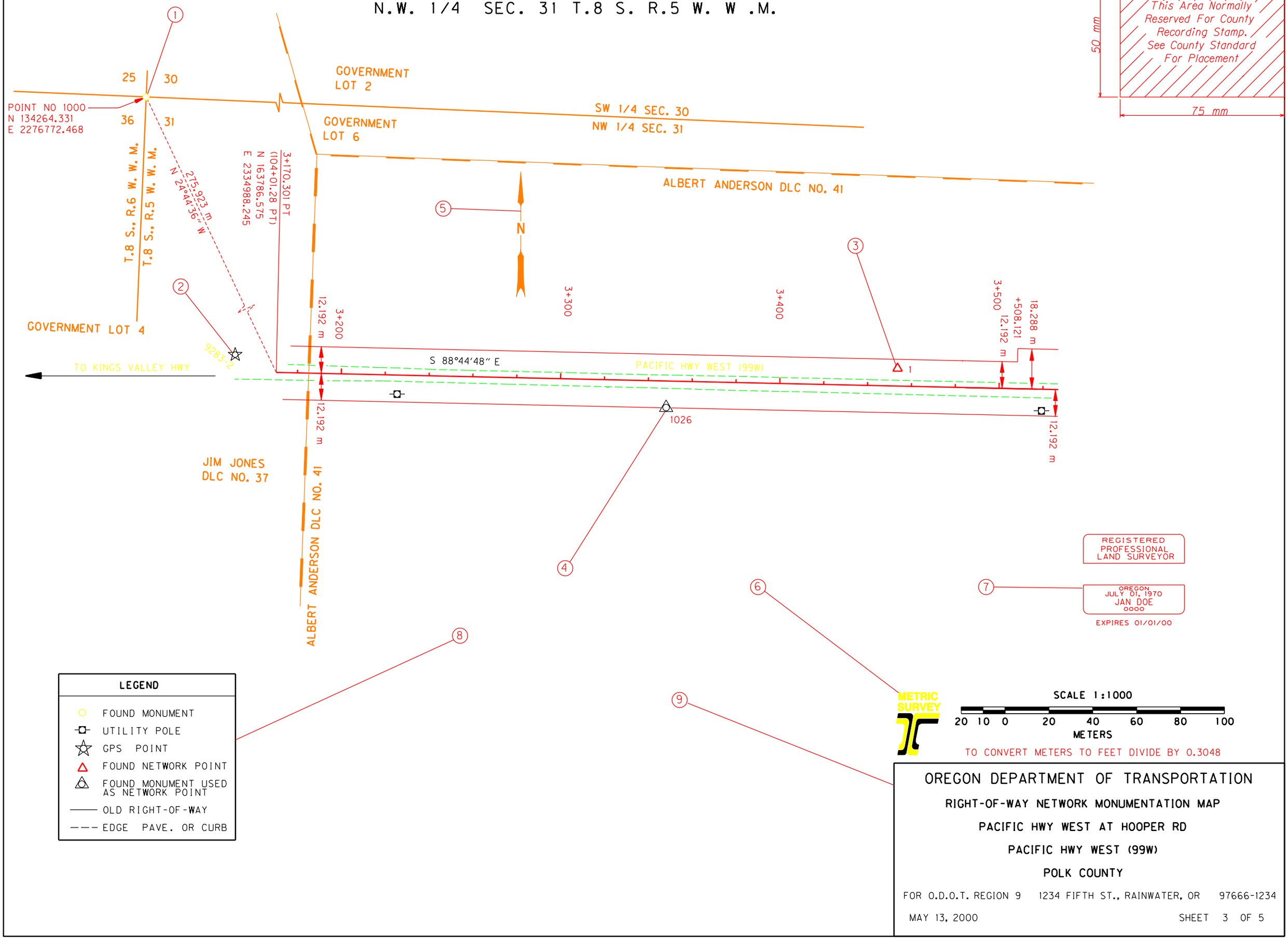
(2) Angular and distance residual report table derived from Liscad report, observation section. Instructions for converting Liscad report to MicroStation table are available from the ODOT Geometronics Unit

(3) Confidence level limits table derived from Liscad report, error analysis section

(4) Network/Traverse point description table, created from Inroads geometry report tool. DBAccess Library and DBAccess Templates available from ODOT Geometronics Unit. Table template cell = nettbl

(5) Abbreviation definition required only if abbreviation is not industry standard.

N.W. 1/4 SEC. 31 T.8 S. R.5 W. W .M.



OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY NETWORK MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR 97666-1234

MAY 13, 2000 SHEET 3 OF 5

NOTES AND EXPLANATIONS FOR SHEET 3

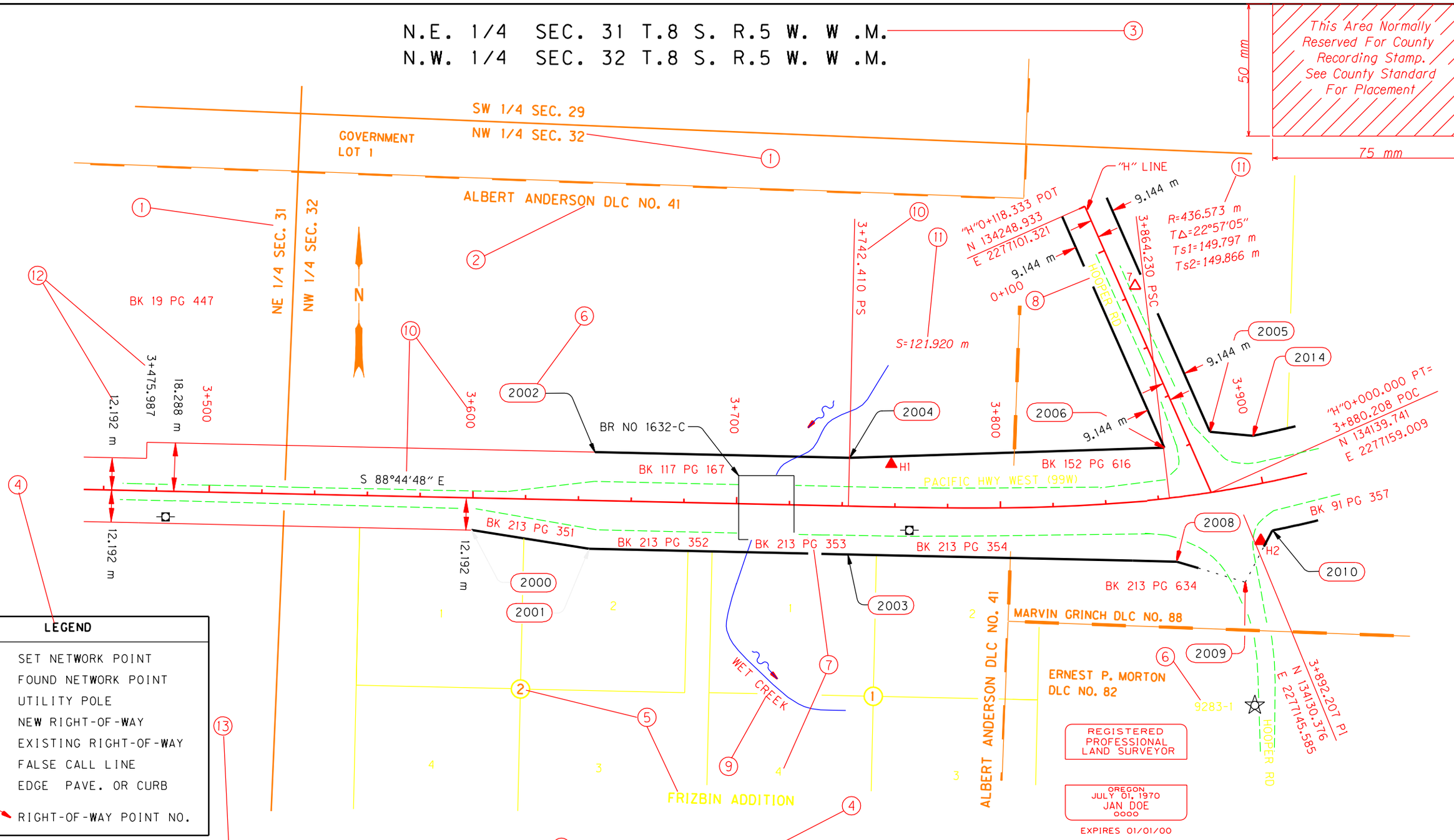
CELL AND SYMBOL STANDARDS

1. Found monument cell = PROPIN*
   (Tied during this survey)
2. Found GPS station cell = GPSFND*
3. Found traverse/network point cell = DELTA** or symbol = font 84 (lower case) u
   Not shown: Set traverse/network point cell = SETMON
   See sheet 4 map legend for example
4. Found monument used as trav./net. point cell = TRISTA*
5. North arrow cell = ARROW
6. Metric survey/metric conversion data cell = METCON**
7. Generic PLS stamp cell = PLS**
8. Symbol legend cell = LEGEND**
9. Generic SFM title block cell = TBLOCK**

* Preset in Inroads civil.prf and WYSIWYG.prf, preference = SFM
available from ODOT Geometronics unit

** Contained in cell library SFM.cel available from ODOT
Geometronics unit

N.E. 1/4 SEC. 31 T.8 S. R.5 W. W .M.
N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.



SET MONUMENT LIST

NOTE: NO MONUMENTS SET AT R/W POINTS UNLESS OTHERWISE INDICATED

PT ID	LDP NORTHING	LDP EASTING	STATION	OFFSET	DESCRIPTION
2000	134118.304	2276881.265	3+600.000	12.192 m RT	R/W POINT
2001	134111.239	2276925.528	3+645.408	18.000 m RT	R/W POINT
2002	134147.806	2276926.330	3+645.408	18.288 m LT	R/W POINT
2003	134109.095	2277023.508	3+742.410	18.000 m RT	R/W POINT
2004	134145.662	2277024.308	3+742.410	18.288 m LT	R/W POINT
2005	134156.444	2277150.681	3+883.806	25.210 m LT	FALSE CALL
2006	134148.538	2277143.439	3+864.230	19.000 m LT	R/W POINT
2008	134106.363	2277148.424	3+864.230	24.000 m RT	R/W POINT
2009	134098.564	2277174.344	3+884.329	35.621 m RT	FALSE CALL
2010	134118.099	2277184.522	3+900.000	18.000 m RT	R/W POINT
2014	134123.554	2277166.820	3+900.000	18.000 m LT	R/W POINT

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY NETWORK MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR 97666-1234

MAY 13, 2000 SHEET 4 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 4

TEXT STANDARDS

All text is categorized as either major or minor text as itemized here. When plotted at 1000:1 scale, major text shall have a minimum height and width of 3.5 mm (tx=3.5) and minor text shall have a minimum height and width of 3.0 mm (tx=3)

The use of major text is generally limited to government line and area labels (subdivision lot numbers excepted), table and page headings and illustration labels such as diagrams or details. Minor text is primarily used for feature labels and technical data.

All text will be font 2 with a few exceptions. Mono-spaced font 4 text will be used in tables or columns where vertical alignment is desirable. Circular curve data will be placed as slanted font 24. This is an Inroads preference setting which is used primarily because it contains a "delta" symbol. The Township-Range-Section information at the top of each sheet shall be font 4 and a minimum TH and TW of 3.5 but may vary in size as space and aesthetics dictate. Fonts in cells such as the title block and PLS stamp do not totally conform to these standards.

MAJOR TEXT: tx=3.5, wt=2

1. Section & 1/4 section line label, ft=2
2. DLC text, ft=2
3. Township-Range-Section sheet header, ft=4, tx=3.5 (minimum)
4. Various table and column headings, ft=2 or 4
5. Subdivision text, subdivision block numbers, ft=2

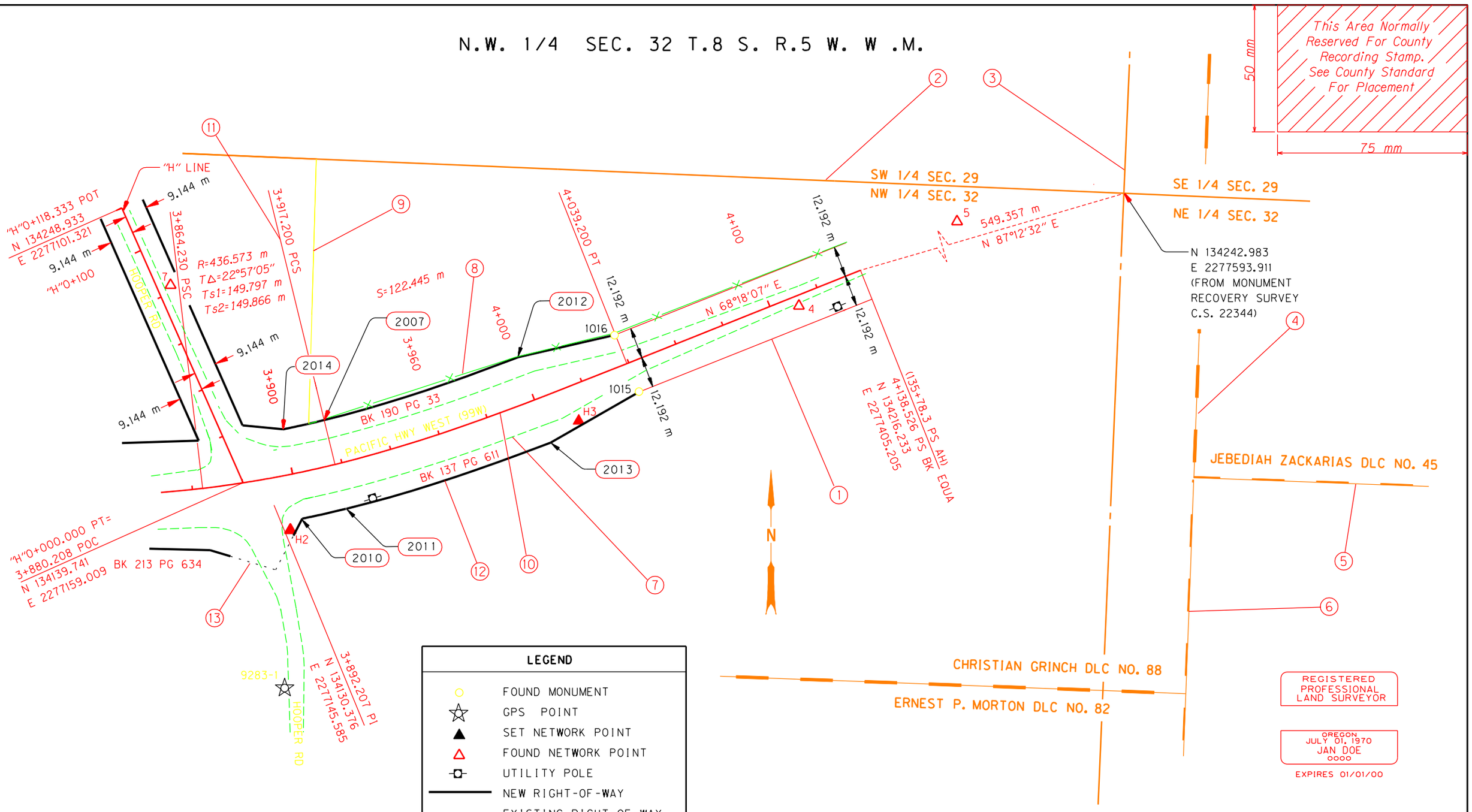
MINOR TEXT: tx=3.0, wt=1

6. Point numbers i.e. trav./net. points, R/W monuments, GPS, etc. ft=2 *
7. Subdivision lot numbers, deed vol.- page numbers ft=2
8. Street & road names ft=2
9. Water feature labels ft=2
10. Stationing, alignment data (tangents and control points) ft=2*
11. Curve data including spirals ft=24*
12. R/W data ft=2
13. Notes ft=2
14. Text in tables ft=4

* Preset Inroads preference (Preference = SFM)

See Sheet 1 For Other Examples

N.W. 1/4 SEC. 32 T.8 S. R.5 W. W .M.



LEGEND

- FOUND MONUMENT
- GPS POINT
- SET NETWORK POINT
- FOUND NETWORK POINT
- UTILITY POLE
- NEW RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- FALSE CALL LINE
- EDGE PAVE. OR CURB
- FENCE
- RIGHT-OF-WAY POINT NO.

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
JULY 01, 1970
JAN DOE
0000

EXPIRES 01/01/00

METRIC SURVEY

SCALE 1:1000

20 10 0 20 40 60 80 100
METERS

TO CONVERT METERS TO FEET DIVIDE BY 0.3048

MONUMENT LIST

PT ID	LDP NORTHING	LDP EASTING	STATION	OFFSET	DESCRIPTION
1015	134168.150	2277317.487	4+039.252	12.246 m RT	FND 1/2" IRON ROD ODOT DRG 6B-8-5 (132+52.25 PT RECORD ENGLISH STATION)
1016	134190.795	2277308.460	4+039.152	12.246 m LT	FND 1/2" IRON ROD ODOT DRG 6B-8-5 (132+52.25 PT RECORD ENGLISH STATION)
2007	134157.534	2277193.355	3+917.200	18.000 m RT	R/W POINT
2011	134121.997	2277202.013	3+917.200	18.000 m LT	R/W POINT
2012	134157.254	2277193.423	4+000.000	18.000 m LT	R/W POINT
2013	134122.277	2277201.945	4+000.000	18.000 m RT	R/W POINT

OREGON DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY NETWORK MONUMENTATION MAP

PACIFIC HWY WEST AT HOOPER RD

PACIFIC HWY WEST (99W)

POLK COUNTY

FOR O.D.O.T. REGION 9 1234 FIFTH ST., RAINWATER, OR. 97666-1234

MAY 13, 2000 SHEET 5 OF 5

ODOT SURVEY FILING MAP DRAFTING STANDARDS VER. 1.0 REVISION DATE MARCH 1, 2001

NOTES AND EXPLANATIONS FOR SHEET 5

COMMON LINE STANDARDS*

1. Existing Right-Of-Way: CO=0, LVL=22, LC=0, WT=1,
2. Section line: CO=6, LVL=42, LC=0, WT=3
3. 1/4 section line: CO=6, LVL=42, LC=quarter, WT=2
4. DLC line with claim on both sides: LC=DLC3**, line scale factor=2, CO=6, WT=1
5. DLC line with claim on one side only: LC=DLC2**, line scale factor=2, CO=6, WT=1
6. DLC line with claim on one side only (opposite of DLC 2): LC=DLC1**, line scale factor=2, CO=6, WT=1
7. Edge of pavement: CO=2, LVL=11, LC=3, WT=1
8. Fence: CO=2, LVL=55, LC= fence, WT=1
9. Property line: CO=4, LVL=21, LC=0, WT=1 placed using surveys, deed information and/or found monuments.
10. Resolved centerline: CO=3, LVL=11, LC=0, WT=2 (choose different line styles for multiple alignments)
11. Control point flag: CO=3, LVL=12, LC=0, WT=1 (preset Inroads preference)
12. New Right-Of-Way: CO=0, LVL=22, LC=0, WT=4
13. False call line used for unresolved Right-Of-Way: CO=0, LVL=22, LC=1, WT=1

* In most cases these are ODOT Contract Plans Developement Guide standards set by the Metric Plans Menu. Exceptions include the R/W line symbology, centerline weight, centerline station tick length and property line weight.

** The DLC line style shows the short dash pattern on the side of the claim (LC = DLC1 or DLC2). When there is a claim on both sides of the line use line code DLC3.