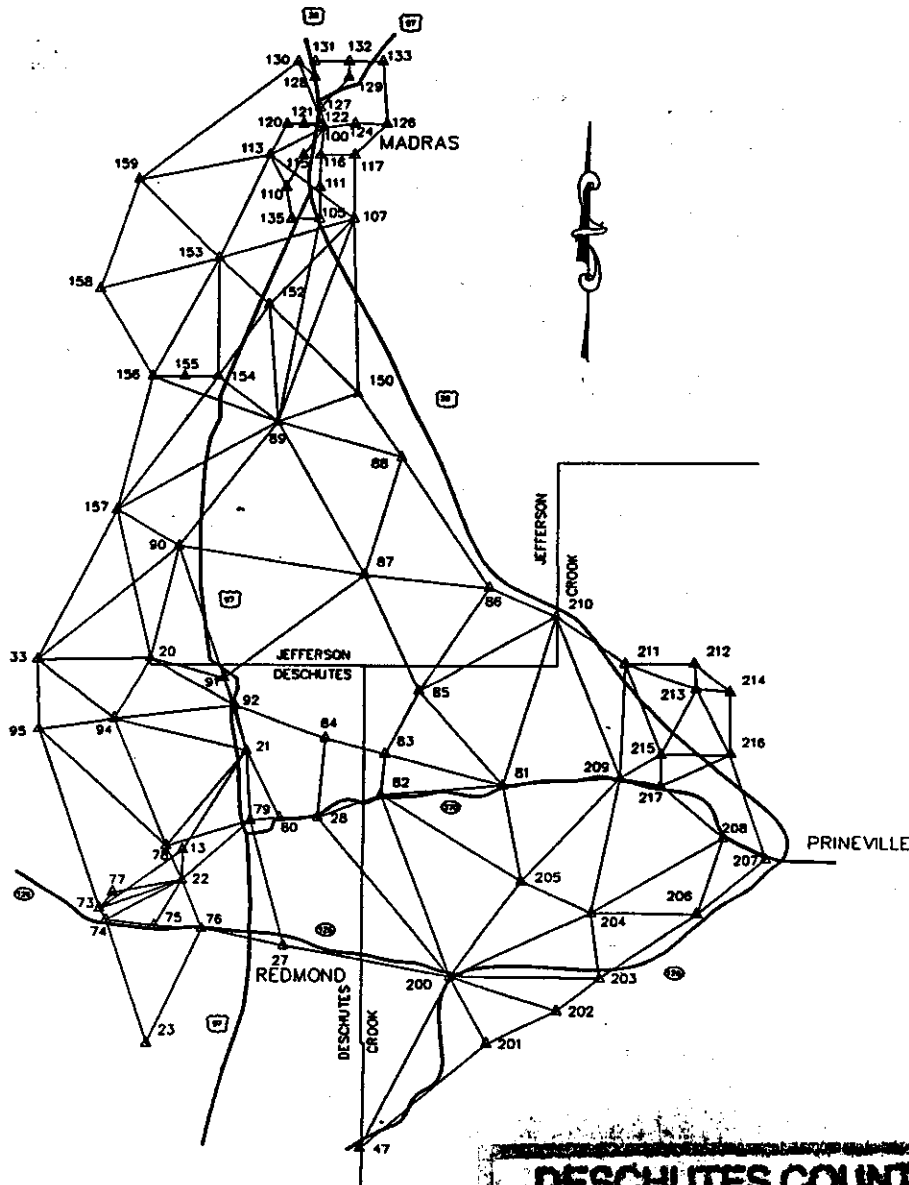


# EXPANSION OF DESCHUTES COUNTY PRIME CONTROL NETWORK

BY

DESCHUTES COUNTY SURVEYOR'S OFFICE  
BEND, OREGON

DGMC # 14



DESCHUTES COUNTY SURVEYOR  
FILED 10/06/94 BY: J. Odle

**EXPANSION  
OF  
DESCHUTES COUNTY  
PRIME CONTROL NETWORK**

**GENERAL:**

The purpose of this survey was to expand the Deschutes County Prime Control Network into Jefferson and Crook Counties and to establish high precision mapping coordinates on existing control points, bench marks, government land corners, section and quarter section corners with G.P.S. The project is a compilation of G.P.S. vectors by Gary De Jarnat (Jefferson County Surveyor) in the Madras quadrant in 1992, by David Evans and Associates made from Red 13 , GIS 22 in 1993 and the remainder by the Deschutes County Surveyor's Office in 1994 with some field help by the Jefferson and Crook County Surveyor's in their respective county. Deschutes County Surveyor's Office reduced the baseline measurements and computed geodetic coordinates on the NAD 83-91 (North American Datum of 1983, readjusted in 1991) and NAD 83-91 Deschutes County Plane Coordinates in international feet.

**MEASUREMENTS:**

All measurements where made with Trimble 4000ST, SE AND SSE type equipment on tripods and check centered over control points, height of instrument was measured in meters and feet.

We used Trim 640 single baseline processor and GPSurvey single baseline processor for the reduction of GPS measurements to produce fix solution base lines and holding to Trimble's guideline to high confidence limits for the ratio and rms criteria.

Level loops were run with a Wild Ni 2 level and standard rod. Most were 1 turn from bench to control point.

## **CLOSURES:**

We ran numerous loop closures on the base lines to check for HI errors and isolation of bad lines for remeasure. In the most part loop closures were 0.5 to 1 ppm for lines from 8 to 40 km in length with the majority being independent sessions. The computations of open end closures from one fix point to another fix point (high precision points) using all independent sessions with closures of 0.86 to 1.76 ppm.

## **ADJUSTMENT:**

### **HORIZONTAL**

A minimal constrained adjustment was accomplished by holding Big Falls fix with excellent result and many partial constrained adjustments using combinations of two to five fix points, all showing excellent internal consistency. For completion of the final adjustment we held Big Falls, Cline Falls, GIS ( 21,22,23), HAY, Prineville, Round, T 463, 14120188, 14132500, and 15140100 fix for the fully constrained adjustment of the network. Datum for all adjustments was NAD 83 (1991) in latitude, longitude and ellipsoidal height.

### **ORTHOMETRIC**

First we used NGS GEOID 90 program to compute geoid heights at each control point to make a geoid model of the control area. By fixing orthometric heights of three reliable points in a constrained adjustment, we can cause the geoid model transformation (deflection in latitude and longitude plus a height constant) onto the same orthometric datum. Here we can analyze the record elevation at our control points by using different combinations of fixed height to find errors in data entry, movement of bench marks and bad elevations. Of the 43 known orthometric elevations we held 37 fix for ngvd 27. The coordinate adjustment summary shows the points held fix.

Of previous control points 14120188(GIS 20), BIG FALLS, GIS 22 we readjusted the orthometric elevation and ran a bench loop to GIS 22 to determine a new elevation that we held fix.

## **DATUM DIFFERENCES:**

NAD 83 is the readjustment and shift of existing control points from NAD 27 to NAD 83 (GRS 80). In 1991 the NGS completed the Oregon High Precision GPS Network and this data being labeled NAD 83-(1991). Then the NGS readjusted the old NAD 83 control points to NAD 83(1991),but this still reflects the poor internal consistency as compared to GPS survey measurements.

Round and Cline Falls where in the readjustment, but had G.P.S. measurements made before the High Precision Network by the N.G.S. for O.D.O.T. We held both points fix since they check within 1 cm in Lat. and Lon. in a constrain adjustment as to published.

## **DESCRIPTION SHEET:**

The mark data sheet shows information about each control station in the network, such as name, number, horizontal & vertical datum, coordinates, scale factor, convergence, general information and sketch.

**NOTE: ALL VALUES ARE NAD 83 (1991) GPS**

## **COUNTY COORDINATE SYSTEM:**

The County Surveyors Office and the County GIS Section agreed on a conformal mapping projection for the best fit of the 80 % population area of Deschutes County, for a grid to ground distances, being no worse than 1 part in 50,000. This system is the best for the integration maps, deeds, etc., into the County GIS and should be of assistance to local surveyors. The County Surveyor in the process of establishing coordinates at section and 1/4 section corners on the Deschutes County Plane Coordinate System.

### SYSTEM DATA:

DATUM = NAD 83(1991)

PROJECTION = TRANSVERSE MERCATOR

ZONE = NONE

CENTRAL MERIDIAN = W 121° 17' 00.0000"

LATITUDE OF ORIGIN = N 43° 00' 00.000"

ORIGIN NORTHING = 0.00000

ORIGIN EASTING = 3,300,000.00

LINEAR UNITS = INTERNATIONAL FOOT

**ACKNOWLEDGMENT:**

A county wide control project of this magnitude and complexity could not be accomplished with the help and cooperation of many people. To the people who worked in the field on this project, Jeff Kern, Ken Grantham and Don Sweet, Deschutes Co. Surveyor's Office, Gary DeJarnat (Jefferson County Surveyor), Ron Blue (DeJarnat Land Surveying), Dave Armstrong ( Crook County Surveyor).

A special recognition goes to the author-programmer of Trimnet-Plus, Mike Potterfield of Trimble Navigation, for the opportunity to beta test this very extraordinary gps survey adjustment program. Also his guidance and technical advice helped set the direction of this project.

REGISTERED  
PROFESSIONAL  
LAND SURVEYOR

*W.C. Kauffman*

OREGON  
AUGUST 22, 1978  
W. C. KAUFFMAN  
1031

*EXP 6-30-95*

**GENERAL INFORMATION**  
**ON**  
**DATA SHEET**  
**CORNER NUMBERING**  
**GROUND TO GRID REDUCTION**  
**AND**  
**LEAST SQUARES ADJUSTMENT**

**GENERAL INFORMATION  
ABOUT  
CONTROL MARK DATA SHEET**

**BOX 1**

**MARK NAME:** Is a name that may be stamped on the monument ( FIRST ) or a point identifier ( 17122604 ).

**MARK SET BY:** Best information obtainable of who may have set mark.

**DATE OF MARK:** Best information obtainable of date that mark was set.

**LOCATION:** What section, township and range that mark is located.

**REFERENCE NUMBER** The reference document and number that has important information about mark at the time the G.P.S. survey was performed. ( CS # = COUNTY SURVEY NUMBER ) (OCRR # = OREGON CORNER RESTORATION RECORD NUMBER) ( DGMC # = DESCHUTES GEODETIC MAPPING CONTROL NUMBER )These records are on file in the County Surveyor's Office.

**BOX 2**

**MARK SKETCH:** A quick free hand sketch of mark to show general location and brief description.

**BOX 3**

**PART 1** Self-explanatory

**PART 2** All the needed information about the datum's and coordinate system to use for transformations.

**PART 3** Latitude and longitude of the horizontal datum used.

Northing, easting, convergence and scale factor of the coordinate system used.

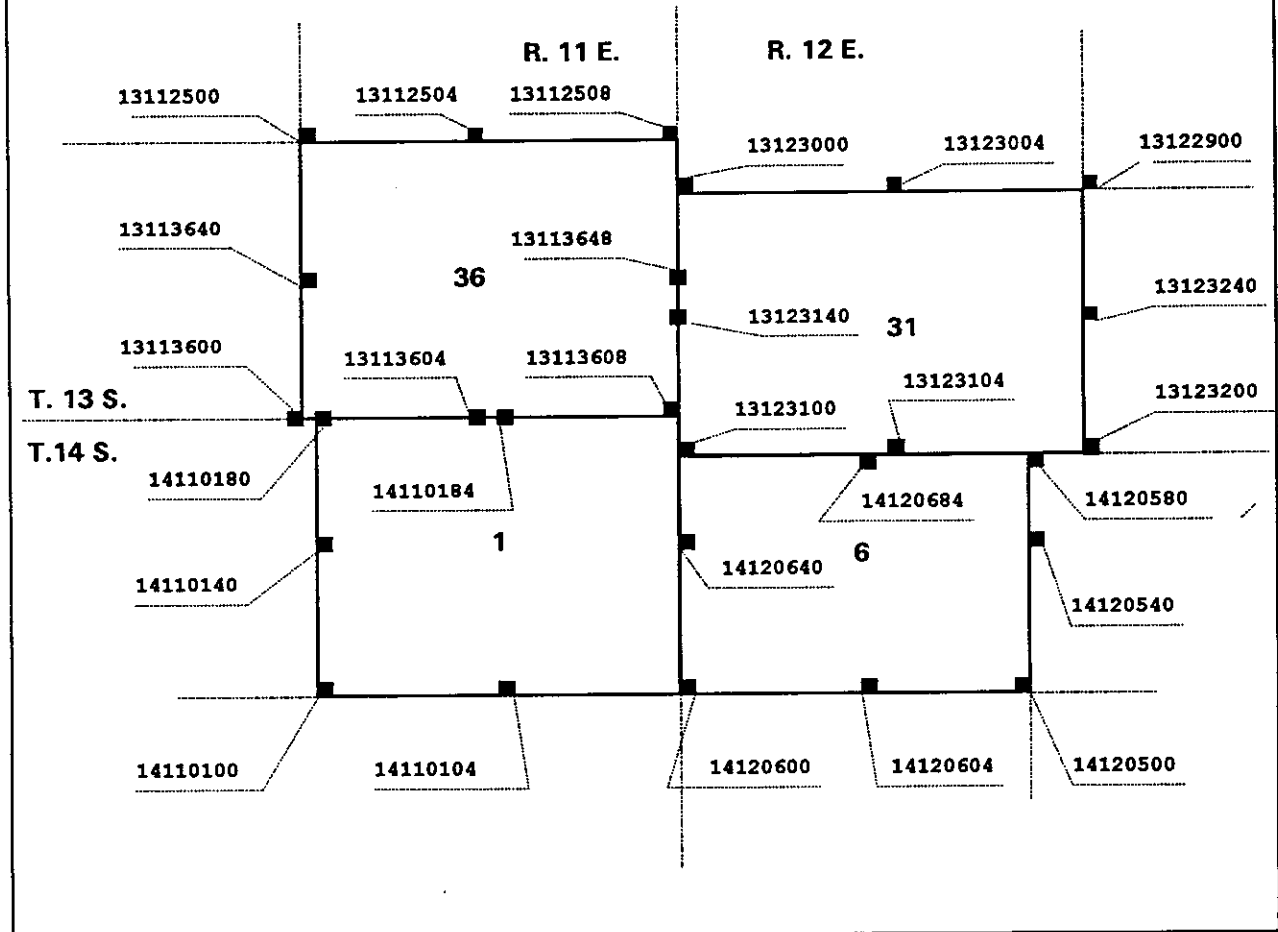
Ellipsoid height: height of mark above the reference ellipsoid

Orthometric height: height of mark on the vertical datum ( elevation ).

Geoid height: the difference between the reference ellipsoid and zero elevation of the vertical datum.

One sigma error: the estimated error of uncertainty at the 68% confidence region.( FGCC Standard )

## CORNER NUMBERING DIAGRAM



### SECTION & QUARTER CORNER NAMING CONVENTION

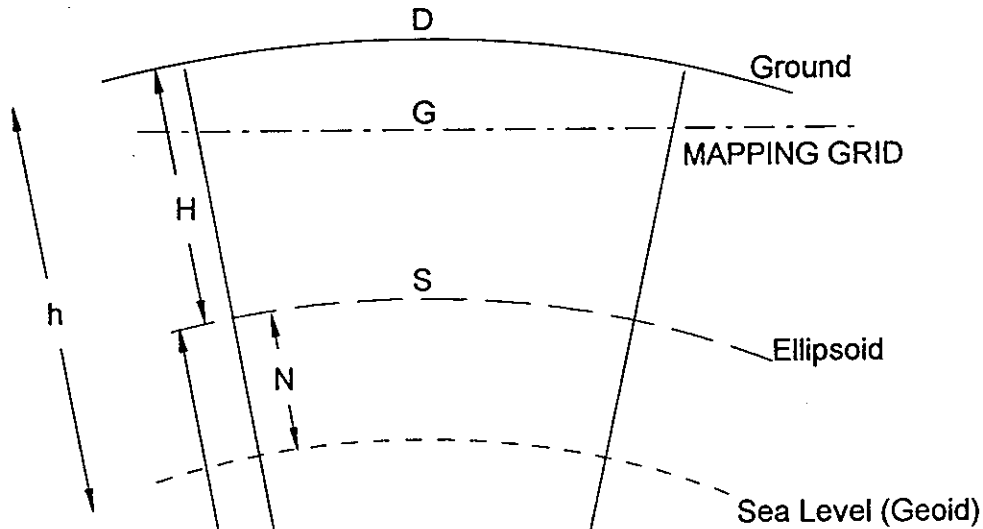
MARK NAME: 17 12 23 4 0 A

- |           |  |
|-----------|--|
| <u>17</u> | Township 17 South of the Willamette Base Line      |
| <u>12</u> | Range 12 East of the Willamette Principal Meridian |
| <u>23</u> | Section 23   |
| <u>4</u>  | 4 X 10 chains North from SW. Cor. of Section 23.   |
| <u>0</u>  | 0 X 10 chains East from SW. Cor. of Section 23.    |
| <u>A</u>  | More than one important corner in proximity.       |

Note: The 10 chains is more a fractional part than a distance.



# SATISFACTORY APPROXIMATION OF GROUND TO GRID REDUCTION



Where D=Horizontal Distance  
 G=Grid Distance  
 S=Ellipsoid Distance  
 H=Mean Elevation Above Ellipsoid  
 h=Mean Elevation Above Geoid  
 N=Mean Geoid Height  
 R=Mean Radius of Earth  
 SF=Ellipsoid to grid factor  
 F1=Ground to ellipsoid factor  
 F2=Ground to grid factor

### FROM LA PINE TO MADRAS

N = -65 feet mean geoid height ( NEGATIVE HEIGHT )  
 R = 20,906,000 feet mean elevation ( ELLIPSOID )

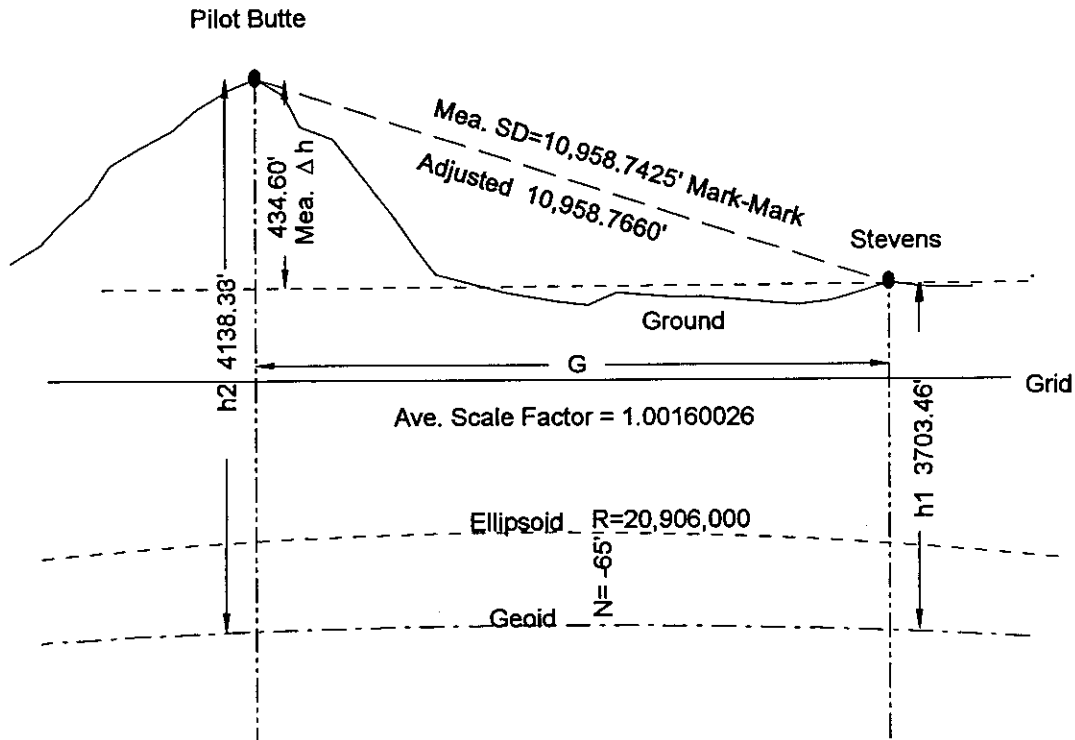
$$S = D \left( \frac{R}{R + h + N} \right) \quad H = h + N$$

$$F1 = \left( \frac{R}{R + h + N} \right) \quad F2 = SF \times F1$$

Center  
of  
Earth

NOTE: See NOAA Manual NOS NGS 5, State Plane Coordinate System of 1983 by James E. Stem, for more information on this subject

Transformation of Mark to Mark  
Distance to Grid Distance



$$G = (SF) \left( \sqrt{\frac{SD^2 - \Delta h^2}{\left(1 + \frac{h_1 + N}{R}\right) \left(1 + \frac{h_2 + N}{R}\right)}} \right)$$

$$G = 1.000160026 \sqrt{\frac{10,958.7425^2 - 434.60^2}{\left(1 + \frac{3703.46 + (-65)}{20906000}\right) \left(1 + \frac{4138.38 + (-65)}{20906000}\right)}}$$

$$G = 1.000160026 \sqrt{\frac{119,905,160.0}{1.00036892}} = 1.000160026 \sqrt{119860941.3}$$

$$G = 1.000160026 \cdot 10,948.1022 = 10,949.8542'$$

Below is the inverse of adjusted coordinates in our data base. As we can see that the measured slope distance from Pilot Butte to Stevens in the EC CARTESIAN column was adjusted by +0.0235 feet, when we add 0.0235 feet to the transformed distance that we computed from the measured slope distance it fits quite well with the inverse of the MAPPING PROJECTION coordinates.

In using a approximation for the radius of the ellipsoid and the geoid height with an average ground to grid factor at intervals for ever 100 feet of elevation should keep the transformation to 1 part to 200,000 or better in a local area.

For more information on this subject see NOAA Technical Memorandum NOS NGS-10 , USE OF CALIBRATION BASE LINES, by Charles J. Fronczek, Appendix I. The geometrical transformation of electronically measured distances.

Datum = NAD-83  
 Coordinate system = User-Defined Transverse Mercator  
 Zone = DESCHUTES COUNTY  
 Linear unit = Internatl Foot

POINT	MAPPING PROJECTION	GEODETIC	EC CARTESIAN
Pt# 19 COORDINATES	N= 386640.6780 E= 3300025.6995	N 44°03'37.943010" W 121°16'59.648110"	X= -7822586.5374 Y=-12874379.0293
GIS 31 PILOT BUTTE		H 4073.9731F h 4138.3327F	Z= 14480943.1881
INVERSE:		Az=141°52'23.783806" NSFA=141°52'24.023877"  _+ 0°00'00.244711" NSBA=321°53'28.357821"  t-T Corr=+.004639" Ell Dist= 10948.1255F  Dist= 10949.8773F Delta H = -434.6198F  Scale=1.000160017592 Delta h = -434.8681F  Gnd Dist= 10950.1443F  Rad(_)= 20914559.5776F  Skew Corr= -0.060692"  GsFA=141°52'24.023893"  Gsc Dist= 10948.1255F  GsBA=321°53'28.357837"	D X= +2830.3733  D Y= -8361.1757  D Z= -6494.1727  S D= 10958.7660
Pt# 62 COORDINATES	N= 378026.9887 E= 3306786.1854	N 44°02'12.883064" W 121°15'27.117216"	X= -7819756.1641 Y=-12882740.2050
STEVENS		H 3639.3533F h 3703.4646F	Z= 14474449.0154

# Getting the Most Out of Least Squares

by Sean Curry and Ron Sawyer

“Least squares! I don’t do that kind of survey—haven’t done a large network in years. Most of our work is just *regular* survey work. Our compass rule works fine, just press a button and the whole thing’s balanced. Why would we want to use something as sophisticated as least squares? Anyhow, I’m not quite sure what it does.”

Does this sound familiar? Unfortunately, the least squares adjustment method seems to be a mysterious creature to most surveyors. It is frequently thought of as being difficult to learn, or not being applicable to “the type of surveys that I do.” The fact is that least squares is not difficult to understand once a few basic principles are explained; more importantly, it is applicable to nearly all types of survey work, including the small “regular” job. It does not require you to make major changes in your daily practice, although certain field procedures enhance its power.

In addition to producing the best adjustment of field data, least squares provides other benefits not even possible with other adjustment methods. It helps you to locate errors in your survey data, gives you an easy way to plan surveys, and provides a statement on the amount of uncertainty for every point in your network. Our goal in this article is to remove the mystery of least squares by explaining, in nonmathematical terms, some of the basic concepts, and to illustrate its application to a number of common surveying problems.

## Exactly What Is Least Squares?

A least squares adjustment is a rigorous mathematical method for adjusting survey data. It has actually been used by surveyors for a number of years, but was generally implemented only on mainframe computers and was somewhat difficult to handle for the uninitiated user. With the advent of new high-speed, inexpensive personal computers and especially modern software techniques, least squares is now readily available to every surveyor.

As surveyors we have long recognized that adding extra angle and distance observations adds strength to our surveys and allows for error checking. But we also realize that these extra measurements make the resulting survey computations more complex. What can we do to resolve these redundant observations to arrive at a single set of coordinates for all our points? Some type of adjustment must be applied. In the case of interconnecting traverse loops, arriving at the single best solution can be difficult. In fact, how can you even define a “best” solution?

Various approximate adjustment methods such as the compass rule and transit rule have traditionally been used. But how, for example, do you resolve a multiloop traverse

with a compass rule adjustment? You probably attack one loop at a time, first “balancing” the angles by adding the same amount of correction to each angle, and then “correcting” the bearing and distance of each leg, based on some mechanical proportioning of the closure error. Then you move on to the next loop and repeat the process. When all the loops are adjusted, you call it quits if they all fit together pretty well. Otherwise, you might rebalance the loops in some other order to see if the fit gets better.

If this procedure sounds messy and potentially time-consuming, you are right. But even more importantly, it can be shown that the underlying logic of these approximate adjustments is wrong, even for a single traverse loop. Survey errors are random! These methods make assumptions about measurement errors accumulating in proportion to the lengths of traverse legs that just are not true—in fact, they can introduce distortions into the final coordinates that were not present in the original survey.

In addition, approximate adjustment methods provide no means of analyzing your survey. But, you ask, is not a traverse closure good enough? Not at all! It is like your accountant giving you a final bank balance for the year, but not giving you a breakdown of income and expenses by various categories. You would be hard pressed to determine exactly why you ended up where you did financially. Least squares gives you an itemized “accounting sheet” for your survey, showing exactly how each of your field observations fits into the overall survey.

## What Does Least Squares Adjust And How?

As a surveyor, you know that all measurements contain errors. In fact, a measurement is only an estimate of the true value, which is never really known. The table below shows three types of errors commonly present in surveying data (although strictly speaking blunders are not errors), and three methods for handling them.

TABLE 1 - Error Types

Error Type	Method for Handling
Blunders (Mistakes, recording errors, etc.)	Eliminate
Systematic Errors (EDM calibration, etc.)	Compensate
Random Errors (Normal, unavoidable)	Adjust with Least Squares

Blunders (mistakes, recording errors, etc.) must be eliminated! No adjustment method can tolerate blunders, although least squares can help you detect and remove them from your field data. Systematic errors, such as in

## Getting the Most Out of Least Squares

electronic distance meter (EDM) calibration, must be compensated for before any adjustment takes place. What is left?

Random errors! These are small unavoidable errors that are an integral part of the measuring process. They are the few seconds difference in angle readings, and the few hundredths difference in distances that you see all the time in the field. They are no cause for concern, except that they must be adjusted correctly, and that is the job least squares does right.

Least squares simultaneously adjusts all field data, even in multiloop traverses. In a least squares adjustment, the "best" solution is defined as the solution producing the smallest changes to the input field measurements. These changes between the best-fit measurements and the original field data are called residuals. Technically speaking, the least squares adjustment method minimizes the sum of the squares of the weighted residuals—hence its name.

But now we have introduced a new term—weight. The weight tells the adjustment how much influence a measurement should have. In least squares each observation (distance, angle, etc.) can be given an individual weight.

The weight you place on your measurements might be based on the type of instrument you are using, the method of observation (chained or EDM distance), and the skill of the field crew. Low weights can be given to less accurately known field data and greater weights to observations that are more accurately known. During the adjustment, larger changes will be given to the less accurate data, minimizing the changes to the more accurate data. For example, an angle with short sights can be given a low weight so that it does not influence stronger angles with longer sights. Table 2 summarizes the relationship between weights, precision, and influence on the adjustment.

TABLE 2 - Weights

	"Strong" Measurement	"Weak" Measurement
Weight	HIGH	LOW
Precision	HIGH	LOW
Influence	HIGH	LOW
Standard Error	LOW	HIGH

This ability to weight individual measurements is only available in least squares, and it gives you the extra control needed to produce the best adjustment. However, least squares does far more than compute the best adjustment. It also provides a complete analysis of the survey, including a list of residuals for all measurements, and a statement on the positional accuracy of each computed point. This analysis can assist in the detection of survey blunders and the preplanning of surveys to meet specified accuracy requirements.

### What Are Its Advantages?

Least squares provides a number of advantages over other adjustment methods.

- It is mathematically correct for all types of surveys, including traverses, triangulation, trilateration, resection, and intersection in any combination.

## Why We Use Least Squares

*continued*

are "statistically most probable to have occurred," not where they actually happened. Unfortunately, cross-ties always seem to find the points where the errors actually occurred.

My partners and I knew that if we practiced in a specific location long enough we would eventually uncover our own errors. That thought has been in our minds since the day we began our practice. Our philosophy has been to isolate and correct those errors as they were found rather than to bury them and hope they disappeared. Over the years we have been careful enough not to have experienced many instances where we had to admit our mistakes. Nevertheless, we have had to admit a few, which is never a comfortable thing to do.

We have all heard about network adjustments. They are exotic routines that were once only used by the National Geodetic Survey. What did they do? Simply put, they considered all the measurements of a traverse network simultaneously rather than one at a time. This simultaneous approach considered the fourth loop at the same time it considered the first. Although it still put the errors where they were statistically most likely to occur, the analysis considered all the data rather than just a part of it.

As a practical matter, the least squares adjustment method was rigorous, costly, and took too long to achieve within the time and budget constraints of a particular job. The fact is, we could meet the specifications for the job using one of the less rigorous routines. So why try harder?

The effort involved in "trying harder" is not just for the individual job. It is for your practice. It is why you traverse around the entire block rather than setting out a single baseline with the hope that you will not have to shove the front corners of your rear adjoiner onto the sidewalk. It is so people believe you when you say you have better evidence and measurements now than you did five years ago.

However, something has finally made our lives easier. For the past two years we have been using STAR\*NET—one of a number of available programs—a least squares solution that allows us to solve our traverses. With just a few minutes of additional time we have been able to solve our traverses as networks. I believe the network adjustment could be accomplished in less time, but we have elected to balance the individual loops of the traverses independently before performing the network adjustment. The payoff has resulted in less time spent rechecking material that was checked twice before, fewer returns to the field, and more reliable coordinate values for individual points. The proof of this is not in the abstract, but in the quality of the fourth- and fifth-generation cross-tie traverses added after the adjustment is complete and the map published.

*continued*

## Getting the Most Out of Least Squares

legs. The sample data field uses a simple code to indicate coordinates (C), traverse lines (TB, TE, and T), and distances (D).

Once the field data has been prepared, you need to decide how the observations will be weighted. You do this by establishing a "standard error" for each observation. Think of the standard error as a way of expressing your confidence in your field data. For example, you might decide that your distances have standard errors of 0.02 feet  $\pm 3$ ppm, and your angles five seconds. These values are normally determined from instrument specifications and observation procedures. In addition, you might choose a centering error of 0.005 feet to account for imprecise instrument centering. This centering error value will increase the standard error value for angles with short sights so that they have less influence in the adjustment than those with long sights. The least squares adjustment will use these standard error values to determine weights for all the field data in order to arrive at the best solution.

Now that you have established the amount of influence that each measurement will have, you can run the adjustment and analyze the output. Although the specifics of running an adjustment depend on the package being used, some output elements are common to most least squares programs. These include:

- A brief summary of the overall strength of the adjustment. This summary often provides a useful breakdown of how individual measurement types (distances, angles, etc.) fit into the adjustment.
- A list of residuals for all input observations. This list is a valuable tool for finding blunders in the survey and for checking the weights you assigned to your input observations.
- A list of adjusted coordinates for all stations in the survey. These coordinates can be transferred to your CAD or COGO package.
- A list of the computed positional tolerances (error ellipses) for all stations in the adjustment. The ellipses (to be discussed next) show the amount of uncertainty in the computed position of each point, and can often be viewed graphically.

### What Do Error Ellipses Reveal?

Error ellipses are used to indicate the amount of uncertainty in a computed point's position, sometimes called the point's positional tolerance. As one surveyor put it, "It's not that the *point* is uncertain—it's a well-established monument. It's my *idea* of where the point is (as expressed by its coordinates) that has some possible error." If you look at the northing or easting of a point by itself, you can express its error as plus or minus so many hundredths of a foot. However, to show the combined effects of the uncertainty in northing and easting requires an error ellipse.

Why does the point have this positional uncertainty anyway? Again, as the surveyor said, "Surveying is one of the few professions where you rarely get to measure what you really want. You want coordinates, but you have to settle for measuring angles and distances, and then com-

puting coordinates." Remember that all your measurements are affected by small random errors. Therefore, you would expect any value computed from these measurements to also be affected. Least squares, as a part of the solution process, computes how much uncertainty in the coordinates results from the random errors in the field measurements. It is all there in the solution—you do not need to go to any trouble. These positional uncertainties, as represented by the error ellipses, are also affected by the geometry of the survey.

Two simple cases of error ellipses are illustrated in Figure 2. The ellipse dimensions indicate the size of the error region, and the orientation indicates the weaker and stronger directions.

### Why We Use Least Squares

*continued*

to distinguish his baselines. The solution used the weighting options in the least squares network program. First, we balanced the network of our new measurements as a control. Then we added the older survey measurements, giving them considerably looser constraints, and readjusted. After all the observations were subjected to the network solution, we compared the residuals (the differences between the observed values and the adjusted values) in our angles and distances to those that were produced when our data alone was considered. There was very little change. When we compared the older data (that had been adjusted by the original surveyor) we noticed larger residuals, as might be expected with the older methods. As a result, we were able to isolate errors into specific sections of the earlier survey and replace the corners much closer to the original surveyor's positions than if we had simply translated and rotated his data to fit our new baseline.

The foregoing is not the product of a mathematician. Had it been, the reasons why the least squares network solution works would be explained in detail. Rather, it is the product of a surveyor who tries to deliver a reliable product to his client and still profit from the work. Not only has the use of least squares network solutions enhanced our ability to do both, but it has made it simple to do so. It has improved our product while decreasing the time necessary to reach a solution that meets specifications. We have concluded that a least squares network solution has brought our balancing procedures into line with improvements in our traversing procedures, which occurred when our transit and tape were retired in favor of a theodolite and EDM. ▲

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precision resulting from a compass rule adjustment tells you nothing about the positional accuracies of individual points. Only error ellipses can do that correctly.

### A Word About Finding Blunders

As you know by now, blunders cannot be part of the adjustment; they must be located and removed from your field data. Least squares provides some useful tools for locating blunders. Normally, the entire adjustment is subjected to a statistical test (called the Chi Square test for the experts in the crowd) that checks the overall validity of your data, the standard errors that you assigned, and the adjustment results. You do not have to understand statistics to know that if your adjustment fails this test, you had better start looking for the source of the problem. This test is usually a part of the adjustment program, and failing it sounds a warning bell to alert you to a potential problem.

Let us imagine that you carefully prepared your field data, assigned standard errors that really reflect the way you survey, and have run your first least squares adjustment. Unfortunately, the program has told you that your survey "Fails the Test." Should you give up and return to the compass rule, because it never gave you such discouraging news? If you have read this far, you know by now we are not going to allow that.

At this point, you need to perform some detective work, with the adjustment providing all the clues you need to find the source of your problems. There are a number of techniques for finding blunders in a least squares adjustment, including automated blunder detection routines in some software. However, one simple manual technique is to look at the resulting *residuals* on your field data after the adjustment. If everything was perfect, you would expect the residuals to be roughly equal to the standard errors that you chose for your field data. Due to random errors, there will be some variation up and down, but if a residual exceeds three times its standard error, there may be a problem.

TABLE 3 - Checking For Blunders

Residuals in Angles						
At	From	To	Adj Angle	Residual	StdErr	StdRes
1	4	2	+58-15-40.22	+0-00-27.22	4.00	6.8'
3	2	4	+129-57-21.68	+0-00-32.68	4.00	8.2'
4	3	1	+99-58-37.68	+0-00-29.68	4.00	7.4'
1	2	6	+61-47-49.93	-0-00-02.07	4.00	0.5
6	1	7	+90-00-02.47	-0-00-02.53	4.00	0.6
Residuals in Distances						
At	To	Adj Dist	Residual	StdErr	StdRes	
1	2	973.9700	-0.0090	0.030	0.3	
2	3	422.5785	0.0675	0.030	2.3	
3	4	512.6738	0.0298	0.030	1.0	

Table 3 shows an excerpt from an actual adjustment containing a blunder. The last column in the table, called the *standardized residual*, is the ratio of the residuals to the input standard errors. Those with values above 3.0 are flagged to draw your attention to them. You can see imme-

control and conventional surveys with least squares adjustment work hand in hand. One of the great advantages of GPS is that the points do not have to be intervisible. One of the disadvantages of GPS points when later used in conventional surveys, is that they generally are *not* intervisible, and hence, no backsight is available. Using least squares we can easily start at one known GPS point with no backsight, conventionally survey to another known point, and adjust between the two. If a third known point is included anywhere in the traverse, sufficient redundancy is introduced to allow complete confidence in this no-backsight, no-check-in-azimuth type of survey.

Given the task of locating a series of intersecting transmission lines in a refinery and determining clearances for additional construction, we measured a baseline along one side of the project, turned horizontal and vertical angles from the ends of this baseline to all the insulators at each end of the subject lines and to the low point of each line, and coded the angles into the least squares program. The software produced the horizontal locations of all the subject lines, the elevation of both ends of each line, and the low point of the catenary. Although these results could have been achieved by other methods, this procedure saved us much time in both the field and the office, and again, we have a lot of confidence in our answers.

When we were surveying the centerline of a winding mountain road with 300-plus courses, most of which were 50 to 100 feet in length but with visibility into a broad river wash on one side, we set a large sight on a known control station in the wash area about two miles away. We then turned angles to this sight at all the traverse points from which it could be seen. Using least squares, this redundant data was easily incorporated into the traverse adjustment along the road and allowed us to have a high level of confidence in our azimuths and in the entire survey. It might be worthy to note here that using this same technique, but turning to a natural sight whose position is not known from a number of points in the survey, should control azimuth nearly as well.

Somewhere in the past I have heard that the difference between a technician and a professional is that the technician uses his education, training, and the available equipment to perform his job as trained or educated, while a professional uses his education, training, and equipment to innovate new, better, or more efficient methods of performing his projects.

The least squares method is a valuable tool that is now readily available to all professional surveyors. It allows these professionals to expand their capabilities to the limits of their imaginations. ▲

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**LOOP**

**CLOSURES**



Closure Log

\*\*\*\*\*

New Closure

From: 0082

To: 205	L1 fixed	3/24/94 21:33:00	00003730.SSF
	Slope (m):	7919.310 44°17'27.79969" N	02050838.DAT
	Total (m):	7919.310 121°00'28.81092" W	00820838.DAT
		902.2541 m	
To: 0081	L1 fixed	3/24/94 21:02:30	00003720.SSF
	Slope (m):	4902.736 44°20' 4.04101" N	02050838.DAT
	Total (m):	12822.045 121°01' 8.35453" W	00810837.DAT
		831.5502 m	
To: 0082	L1 fixed	3/24/94 19:21:45	00003690.SSF
	Slope (m):	5766.675 44°19'48.33365" N	00810835.DAT
	Total (m):	18588.720 121°05'27.68918" W	00820836.DAT
		834.3877 m	

Closed

Precision (ppm): 0.4958  
Errors (m) X: -0.0026 Y: -0.0082 Z: 0.0033

\*\*\*\*\*

New Closure

From: 0083

To: 0085	L1 fixed	3/17/94 19:19:30	00003401.SSF
	Slope (m):	3600.527 44°22'40.87741" N	00830763.DAT
	Total (m):	3600.527 121°04' 7.13233" W	00850768.DAT
		857.1865 m	
To: 0081	L1 fixed	3/24/94 18:54:00	00003695.SSF
	Slope (m):	6254.670 44°20' 4.04223" N	00810835.DAT
	Total (m):	9855.197 121°01' 8.35388" W	00850835.DAT
		831.5829 m	
To: 0083	L1 fixed	3/17/94 20:11:15	00003406.SSF
	Slope (m):	5781.638 44°20'56.25251" N	00830763.DAT
	Total (m):	15636.835 121°05'18.98077" W	0081A761.DAT
		845.3016 m	

Closed

Precision (ppm): 0.6712  
Errors (m) X: 0.0035 Y: 0.0092 Z: 0.0036

\*\*\*\*\*

New Closure

From: 0085

To: 210	L1 fixed	3/24/94 17:17:45	00003705.SSF
	Slope (m):	7407.352 44°24'42.34882" N	02100834.DAT
	Total (m):	7407.352 120°59'18.61528" W	00850834.DAT
		1010.2615 m	
To: 0081	L1 fixed	3/24/94 17:44:30	00003700.SSF
	Slope (m):	8930.403 44°20' 4.04192" N	00810835.DAT
	Total (m):	16337.755 121°01' 8.35380" W	02100834.DAT

831.5873 m

To: 0085		L1 fixed	3/24/94 18:54:00	00003695.SSF
	Slope (m):	6254.670	44°22'40.87711" N	00810835.DAT
	Total (m):	22592.425	121°04' 7.13225" W	00850835.DAT
			857.1908 m	

Closed

Precision (ppm):	0.6001			
Errors (m) X:	0.0027	Y:	0.0022	Z: 0.0131

\*\*\*\*\*  
 New Closure

From: 0085

To: 0086		L1 fixed	3/24/94 16:38:00	00003710.SSF
	Slope (m):	6175.141	44°25'29.83602" N	00850834.DAT
	Total (m):	6175.141	121°01'37.82729" W	00860833.DAT
			942.1300 m	

To: 210		L1 fixed	3/24/94 16:39:30	00003715.SSF
	Slope (m):	3411.923	44°24'42.34886" N	00860833.DAT
	Total (m):	9587.064	120°59'18.61536" W	02100833.DAT
			1010.2467 m	

To: 0085		L1 fixed	3/24/94 17:17:45	00003705.SSF
	Slope (m):	7407.352	44°22'40.87677" N	02100834.DAT
	Total (m):	16994.416	121°04' 7.13239" W	00850834.DAT
			857.1692 m	

Closed

Precision (ppm):	0.8813			
Errors (m) X:	0.0045	Y:	0.0108	Z: -0.0094

\*\*\*\*\*  
 New Closure

From: 0028

To: 0084		L1 fixed	3/15/94 20:46:30	00003285.SSF
	Slope (m):	4020.860	44°21'21.82063" N	00280743.DAT
	Total (m):	4020.860	121°07'26.76128" W	0084A744.DAT
			865.7592 m	

To: 0083		L1 fixed	3/17/94 19:44:00	00003396.SSF
	Slope (m):	2938.428	44°20'56.25157" N	00830763.DAT
	Total (m):	6959.288	121°05'18.98087" W	00840769.DAT
			845.3300 m	

To: 0082		L1 fixed	3/17/94 20:39:15	00003391.SSF
	Slope (m):	2105.534	44°19'48.33389" N	00830763.DAT
	Total (m):	9064.822	121°05'27.68896" W	0082A762.DAT
			834.4112 m	

To: 0028		L1 fixed	3/15/94 20:04:15	00003290.SSF
	Slope (m):	3187.229	44°19'12.05200" N	00280743.DAT
	Total (m):	12252.050	121°07'42.32423" W	0082A742.DAT
			881.1265 m	

Closed

Precision (ppm):	1.2574			
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Errors (m) N: -0.0131 E: -0.0073 U: -0.0035

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New Closure

From: 0076

To: 0022	L1 fixed	3/14/94 15:54:45	00003215.SSF
	Slope (m):	2638.882 44°17'28.64822" N	00220731.DAT
	Total (m):	2638.882 121°12'33.56546" W	00760731.DAT
		878.9980 m	
To: 0079	L1 fixed	3/14/94 18:43:30	00003225.SSF
	Slope (m):	4433.373 44°19' 6.72456" N	00220731.DAT
	Total (m):	7072.255 121°10' 7.47597" W	00790736.DAT
		879.9667 m	
To: 0027	L1 fixed	3/22/94 19:58:15	00003620.SSF
	Slope (m):	6480.174 44°15'43.38637" N	00270812.DAT
	Total (m):	13552.429 121°08'54.90624" W	0079A811.DAT
		909.7832 m	
To: 0076	L1 fixed	3/22/94 20:32:45	00003615.SSF
	Slope (m):	3979.661 44°16' 8.88997" N	00270812.DAT
	Total (m):	17532.090 121°11'50.76078" W	0076A812.DAT
		896.0756 m	

Closed

Precision (ppm): 0.7560  
Errors (m) N: -0.0018 E: 0.0035 U: -0.0127

\*\*\*\*\*  
New Closure

From: 0095

To: 0094	L1 fixed	3/17/94 17:20:30	00003361.SSF
	Slope (m):	3538.717 44°21'54.05545" N	00950761.DAT
	Total (m):	3538.717 121°15' 2.78058" W	00940764.DAT
		806.0310 m	
To: 0021	L1 fixed	3/15/94 17:46:30	00003275.SSF
	Slope (m):	6541.440 44°21' 1.23084" N	0021B742.DAT
	Total (m):	10080.157 121°10'16.76336" W	00940746.DAT
		854.0286 m	
To: 0078	L1 fixed	3/15/94 18:22:15	00003270.SSF
	Slope (m):	6136.475 44°18'24.81881" N	0021B742.DAT
	Total (m):	16216.632 121°13' 7.66581" W	00780747.DAT
		840.0813 m	
To: 0095	L1 fixed	3/23/94 17:56:15	00003655.SSF
	Slope (m):	8450.398 44°21'36.02490" N	00950827.DAT
	Total (m):	24667.029 121°17'40.56212" W	00780823.DAT
		752.4097 m	

Closed

Precision (ppm): 0.5357  
Errors (m) N: 0.0081 E: 0.0104 U: 0.0004

\*\*\*\*\*  
New Closure

From: 0021

To: 0079		L1 fixed	3/15/94 18:54:30	00003265.SSF
	Slope (m):	3540.956	44°21' 1.23134" N	0021B742.DAT
	Total (m):	3540.956	121°10'16.76354" W	00790748.DAT
			854.0170 m	

To: 0022		L1 fixed	3/14/94 18:43:30	00003225.SSF
	Slope (m):	4433.373	44°17'28.64851" N	00220731.DAT
	Total (m):	7974.330	121°12'33.56516" W	00790736.DAT
			878.9962 m	

To: 0078		L1 fixed	3/14/94 18:09:00	00003200.SSF
	Slope (m):	1892.052	44°18'24.81906" N	00220731.DAT
	Total (m):	9866.382	121°13' 7.66637" W	00780735.DAT
			840.0705 m	

To: 0021		L1 fixed	3/15/94 18:22:15	00003270.SSF
	Slope (m):	6136.475	44°21' 1.23108" N	0021B742.DAT
	Total (m):	16002.857	121°10'16.76393" W	00780747.DAT
			854.0178 m	

Closed

Precision (ppm): 0.7390  
 Errors (m) N: -0.0080 E: -0.0087 U: 0.0008

\*\*\*\*\*  
 New Closure

From: 0078

To: 0095		L1 fixed	3/23/94 17:56:15	00003655.SSF
	Slope (m):	8450.398	44°18'24.81855" N	00950827.DAT
	Total (m):	8450.398	121°13' 7.66628" W	00780823.DAT
			840.0808 m	

To: 0073		L1 fixed	3/17/94 16:18:30	00003371.SSF
	Slope (m):	9529.343	44°16'41.80982" N	00950761.DAT
	Total (m):	17979.741	121°15'30.54231" W	00730762.DAT
			869.7767 m	

To: 0077		L1 fixed	3/23/94 16:29:30	00003650.SSF
	Slope (m):	1023.656	44°17' 8.07676" N	00730822.DAT
	Total (m):	19003.397	121°15' 2.36940" W	00770824.DAT
			866.4625 m	

To: 0022		L1 fixed	3/14/94 17:35:45	00003210.SSF
	Slope (m):	3360.208	44°17'28.64759" N	00220731.DAT
	Total (m):	22363.605	121°12'33.56507" W	00770734.DAT
			878.9978 m	

To: 0078		L1 fixed	3/14/94 18:09:00	00003200.SSF
	Slope (m):	1892.052	44°18'24.81814" N	00220731.DAT
	Total (m):	24255.657	121°13' 7.66629" W	00780735.DAT
			840.0721 m	

Closed

Precision (ppm): 0.6359  
 Errors (m) N: -0.0127 E: -0.0002 U: -0.0087

\*\*\*\*\*  
 New Closure

From: 0022

To: 0074		L1 fixed	3/14/94 17:04:30	00003220.SSF
	Slope (m):	4127.652	44°17'28.64822" N	00220731.DAT
	Total (m):	4127.652	121°12'33.56546" W	00740733.DAT
			878.9980 m	

To: 0075		L1 fixed	3/23/94 15:43:00	00003625.SSF
	Slope (m):	2306.493	44°16'13.80945" N	00750821.DAT
	Total (m):	6434.145	121°13'32.88848" W	00740822.DAT
			895.9624 m	

To: 0022		L1 fixed	3/14/94 16:38:00	00003205.SSF
	Slope (m):	2658.683	44°17'28.64808" N	00220731.DAT
	Total (m):	9092.827	121°12'33.56548" W	00750732.DAT
			879.0009 m	

Closed

Precision (ppm): 0.5699  
 Errors (m) N: -0.0043 E: -0.0004 U: 0.0029

\*\*\*\*\*

New Closure

From: 0076

To: 0022		L1 fixed	3/14/94 15:54:45	00003215.SSF
	Slope (m):	2638.882	44°17'28.64822" N	00220731.DAT
	Total (m):	2638.882	121°12'33.56546" W	00760731.DAT
			878.9980 m	

To: 0075		L1 fixed	3/14/94 16:38:00	00003205.SSF
	Slope (m):	2658.683	44°16'13.80959" N	00220731.DAT
	Total (m):	5297.564	121°13'32.88846" W	00750732.DAT
			895.9595 m	

To: 0076		L1 fixed	3/23/94 15:17:45	00003630.SSF
	Slope (m):	2270.408	44°16' 8.88996" N	00750821.DAT
	Total (m):	7567.973	121°11'50.76128" W	00760821.DAT
			896.0881 m	

Closed

Precision (ppm): 1.0607  
 Errors (m) N: -0.0020 E: -0.0078 U: -0.0001

\*\*\*\*\*

New Closure

From: 0074

To: 0073		L1 fixed	3/23/94 16:49:45	00003645.SSF
	Slope (m):	653.820	44°16'41.81012" N	00730822.DAT
	Total (m):	653.820	121°15'30.54161" W	00740825.DAT
			869.7624 m	

To: 0077		L1 fixed	3/23/94 16:29:30	00003650.SSF
	Slope (m):	1023.656	44°17' 8.07706" N	00730822.DAT
	Total (m):	1677.475	121°15' 2.36870" W	00770824.DAT
			866.4482 m	

To: 0022		L1 fixed	3/14/94 17:35:45	00003210.SSF
	Slope (m):	3360.208	44°17'28.64789" N	00220731.DAT
	Total (m):	5037.683	121°12'33.56437" W	00770734.DAT

878.9835 m

To: 0074

	L1 fixed	3/14/94 17:04:30	00003220.SSF
Slope (m):	4127.652	44°16'23.38203" N	00220731.DAT
Total (m):	9165.335	121°15'16.01062" W	00740733.DAT
		869.8487 m	

Closed

Precision (ppm): 1.4684  
 Errors (m) N: -0.0060 E: 0.0058 U: 0.0106

\*\*\*\*\*  
 New Closure

From: 0021

To: 0080

	L1 fixed	3/15/94 19:15:15	00003260.SSF
Slope (m):	3740.291	44°21' 1.23134" N	0021B742.DAT
Total (m):	3740.291	121°10'16.76354" W	00800749.DAT
		854.0170 m	

To: 0028

	L1 fixed	3/15/94 19:38:15	00003280.SSF
Slope (m):	1826.875	44°19'12.05169" N	00280743.DAT
Total (m):	5567.167	121°07'42.32397" W	0080A741.DAT
		881.1138 m	

To: 0084

	L1 fixed	3/15/94 20:46:30	00003285.SSF
Slope (m):	4020.860	44°21'21.81990" N	00280743.DAT
Total (m):	9588.027	121°07'26.76135" W	0084A744.DAT
		865.7430 m	

To: 0092

	L1 fixed	3/15/94 15:30:15	00003250.SSF
Slope (m):	4627.289	44°22'15.79977" N	00920741.DAT
Total (m):	14215.316	121°10'41.68395" W	00840741.DAT
		840.7291 m	

To: 0021

	L1 fixed	3/15/94 15:33:15	00003300.SSF
Slope (m):	2367.258	44°21' 1.23091" N	00210742.DAT
Total (m):	16582.574	121°10'16.76368" W	00920741.DAT
		854.0089 m	

Closed

Precision (ppm): 0.9577  
 Errors (m) N: -0.0133 E: -0.0030 U: -0.0081

\*\*\*\*\*  
 New Closure

From: 0021

To: 0091

	L1 fixed	3/17/94 18:23:30	00003381.SSF
Slope (m):	3905.143	44°23' 2.73101" N	00210762.DAT
Total (m):	3905.143	121°11' 5.83497" W	00910766.DAT
		821.1730 m	

To: 0092

	L1 fixed	3/15/94 16:23:15	00003245.SSF
Slope (m):	1544.433	44°22'15.80024" N	00920741.DAT
Total (m):	5449.576	121°10'41.68394" W	00910743.DAT
		840.7466 m	

To: 0021

	L1 fixed	3/15/94 15:33:15	00003300.SSF
Slope (m):	2367.258	44°21' 1.23138" N	00210742.DAT
Total (m):	7816.834	121°10'16.76366" W	00920741.DAT

854.0265 m

Closed

Precision (ppm): 1.2689  
Errors (m) N: 0.0012 E: -0.0027 U: 0.0095

\*\*\*\*\*  
New Closure

From: 0021

To: 0094		L1 fixed	3/15/94 17:46:30	00003275.SSF
	Slope (m):	6541.440	44°21'54.05595" N	0021B742.DAT
	Total (m):	6541.440	121°15' 2.78076" W	00940746.DAT
			806.0195 m	
To: 0092		L1 fixed	3/15/94 17:17:00	00003255.SSF
	Slope (m):	5820.717	44°22'15.80055" N	00920741.DAT
	Total (m):	12362.157	121°10'41.68373" W	00940745.DAT
			840.7275 m	
To: 0021		L1 fixed	3/15/94 15:33:15	00003300.SSF
	Slope (m):	2367.258	44°21' 1.23168" N	00210742.DAT
	Total (m):	14729.414	121°10'16.76345" W	00920741.DAT
			854.0073 m	

Closed

Precision (ppm): 0.9850  
Errors (m) N: 0.0106 E: 0.0019 U: -0.0097

\*\*\*\*\*  
New Closure

From: 0092

To: 0084		L1 fixed	3/15/94 15:30:15	00003250.SSF
	Slope (m):	4627.289	44°21'21.82077" N	00920741.DAT
	Total (m):	4627.289	121°07'26.76074" W	00840741.DAT
			865.7326 m	
To: 0083		L1 fixed	3/17/94 19:44:00	00003396.SSF
	Slope (m):	2938.428	44°20'56.25171" N	00830763.DAT
	Total (m):	7565.716	121°05'18.98033" W	00840769.DAT
			845.3034 m	
To: 0085		L1 fixed	3/17/94 19:19:30	00003401.SSF
	Slope (m):	3600.527	44°22'40.87691" N	00830763.DAT
	Total (m):	11166.244	121°04' 7.13198" W	00850768.DAT
			857.1838 m	
To: 0086		L1 fixed	3/24/94 16:38:00	00003710.SSF
	Slope (m):	6175.141	44°25'29.83620" N	00850834.DAT
	Total (m):	17341.385	121°01'37.82696" W	00860833.DAT
			942.1298 m	
To: 0088		L1 fixed	3/24/94 16:08:45	00003680.SSF
	Slope (m):	7780.643	44°29' 2.22004" N	00860832.DAT
	Total (m):	25122.028	121°04'47.27945" W	00880832.DAT
			930.6201 m	
To: 0089		L1 fixed	3/24/94 15:35:00	00003675.SSF
	Slope (m):	6156.022	44°30' 0.00514" N	00890831.DAT
	Total (m):	31278.050	121°09'13.88654" W	00880831.DAT

854.7932 m

To: 0090

L1 fixed	3/16/94 19:58:30	00003346.SSF
Slope (m):	7791.243 44°26'38.04903" N	00890758.DAT
Total (m):	39069.293 121°12'45.26625" W	00900752.DAT
	850.8309 m	

To: 0091

L1 fixed	3/16/94 20:35:15	00003351.SSF
Slope (m):	7001.759 44°23' 2.73088" N	00900752.DAT
Total (m):	46071.052 121°11' 5.83416" W	00910759.DAT
	821.1689 m	

To: 0092

L1 fixed	3/15/94 16:23:15	00003245.SSF
Slope (m):	1544.433 44°22'15.80011" N	00920741.DAT
Total (m):	47615.485 121°10'41.68313" W	00910743.DAT
	840.7425 m	

Closed

Precision (ppm): 0.6172  
 Errors (m) N: -0.0165 E: 0.0046 U: 0.0239

\*\*\*\*\*

New Closure

From: 0087

To: 0088

L1 fixed	3/16/94 17:27:45	00003316.SSF
Slope (m):	6139.604 44°29' 2.21996" N	00870751.DAT
Total (m):	6139.604 121°04'47.27952" W	00880754.DAT
	930.5651 m	

To: 0086

L1 fixed	3/24/94 16:08:45	00003680.SSF
Slope (m):	7780.643 44°25'29.83612" N	00860832.DAT
Total (m):	13920.247 121°01'37.82702" W	00880832.DAT
	942.0748 m	

To: 0087

L1 fixed	3/16/94 16:58:45	00003321.SSF
Slope (m):	5939.448 44°25'51.31760" N	00870751.DAT
Total (m):	19859.695 121°06' 4.46345" W	00860753.DAT
	1150.5058 m	

Closed

Precision (ppm): 0.5208  
 Errors (m) N: -0.0086 E: 0.0039 U: 0.0043

\*\*\*\*\*

New Closure

From: 0090

To: 0087

L1 fixed	3/16/94 18:40:45	00003341.SSF
Slope (m):	8986.839 44°25'51.31787" N	00870751.DAT
Total (m):	8986.839 121°06' 4.46363" W	00900756.DAT
	1150.5015 m	

To: 0089

L1 fixed	3/16/94 15:59:45	00003311.SSF
Slope (m):	8750.316 44°30' 0.00491" N	00890755.DAT
Total (m):	17737.155 121°09'13.88676" W	00870751.DAT
	854.7120 m	

To: 0090

L1 fixed	3/16/94 19:58:30	00003346.SSF
Slope (m):	7791.243 44°26'38.04880" N	00890758.DAT
Total (m):	25528.398 121°12'45.26647" W	00900752.DAT



850.7496 m

Closed

Precision (ppm): 0.9053  
Errors (m) N: -0.0158 E: 0.0107 U: -0.0130

\*\*\*\*\*

New Closure

From: 0091

To: 0087 L1 fixed 3/16/94 19:13:45 00003331.SSF  
Slope (m): 8466.095 44°25'51.31787" N 00870751.DAT  
Total (m): 8466.095 121°06' 4.46363" W 00910757.DAT  
1150.5015 m

To: 0085 L1 fixed 3/16/94 16:30:00 00003326.SSF  
Slope (m): 6433.806 44°22'40.87685" N 00870751.DAT  
Total (m): 14899.901 121°04' 7.13271" W 00850752.DAT  
857.1206 m

To: 0083 L1 fixed 3/17/94 19:19:30 00003401.SSF  
Slope (m): 3600.527 44°20'56.25165" N 00830763.DAT  
Total (m): 18500.428 121°05'18.98107" W 00850768.DAT  
845.2401 m

To: 0084 L1 fixed 3/17/94 19:44:00 00003396.SSF  
Slope (m): 2938.428 44°21'21.82071" N 00830763.DAT  
Total (m): 21438.856 121°07'26.76147" W 00840769.DAT  
865.6693 m

To: 0092 L1 fixed 3/15/94 15:30:15 00003250.SSF  
Slope (m): 4627.289 44°22'15.80058" N 00920741.DAT  
Total (m): 26066.145 121°10'41.68408" W 00840741.DAT  
840.6554 m

To: 0091 L1 fixed 3/15/94 16:23:15 00003245.SSF  
Slope (m): 1544.433 44°23' 2.73135" N 00920741.DAT  
Total (m): 27610.577 121°11' 5.83511" W 00910743.DAT  
821.0818 m

Closed

Precision (ppm): 0.9321  
Errors (m) N: -0.0170 E: -0.0163 U: -0.0103

\*\*\*\*\*

New Closure

From: 0075

To: 0076 L1 fixed 3/23/94 15:17:45 00003630.SSF  
Slope (m): 2270.408 44°16' 8.88996" N 00750821.DAT  
Total (m): 2270.408 121°11'50.76128" W 00760821.DAT  
896.0881 m

To: 0023 L1 fixed 3/14/94 19:18:15 00003235.SSF  
Slope (m): 6201.841 44°13' 6.65461" N 00230732.DAT  
Total (m): 8472.249 121°13'48.38744" W 00760737.DAT  
932.7831 m

To: 0074 L1 fixed 3/14/94 19:52:45 00003230.SSF  
Slope (m): 6377.020 44°16'23.38229" N 00230732.DAT  
Total (m): 14849.269 121°15'16.01191" W 00740738.DAT

869.8450 m

To: 0075		L1 fixed	3/23/94 15:43:00	00003625.SSF
	Slope (m):	2306.493	44°16'13.80939" N	00750821.DAT
	Total (m):	17155.762	121°13'32.88868" W	00740822.DAT
			895.9442 m	

Closed

Precision (ppm):	1.0034			
Errors (m) N:	-0.0063	E:	-0.0048	U: -0.0153

\*\*\*\*\*  
 New Closure

From: 0027

To: 200		L1 fixed	3/22/94 18:27:30	00003600.SSF
	Slope (m):	8061.851	44°14'53.90838" N	02000811.DAT
	Total (m):	8061.851	121°02'58.12704" W	00270817.DAT
			915.5109 m	

To: 0028		L1 fixed	3/22/94 19:00:30	00003610.SSF
	Slope (m):	10159.987	44°19'12.05120" N	02000811.DAT
	Total (m):	18221.838	121°07'42.32396" W	00280818.DAT
			881.0934 m	

To: 0080		L1 fixed	3/15/94 19:38:15	00003280.SSF
	Slope (m):	1826.875	44°19'11.64958" N	00280743.DAT
	Total (m):	20048.713	121°09' 4.75293" W	0080A741.DAT
			877.5027 m	

To: 0021		L1 fixed	3/15/94 19:15:15	00003260.SSF
	Slope (m):	3740.291	44°21' 1.23085" N	0021B742.DAT
	Total (m):	23789.005	121°10'16.76352" W	00800749.DAT
			853.9966 m	

To: 0079		L1 fixed	3/15/94 18:54:30	00003265.SSF
	Slope (m):	3540.956	44°19' 6.72436" N	0021B742.DAT
	Total (m):	27329.961	121°10' 7.47566" W	00790748.DAT
			879.9445 m	

To: 0027		L1 fixed	3/22/94 19:58:15	00003620.SSF
	Slope (m):	6480.174	44°15'43.38617" N	00270812.DAT
	Total (m):	33810.135	121°08'54.90592" W	0079A811.DAT
			909.7611 m	

Closed

Precision (ppm):	0.1245			
Errors (m) N:	-0.0042	E:	-0.0001	U: 0.0006

850.7496 m

Closed

Precision (ppm): 0.9053  
Errors (m) N: -0.0158 E: 0.0107 U: -0.0130

\*\*\*\*\*

New Closure

From: 0091

To: 0087	L1 fixed	3/16/94 19:13:45	00003331.SSF
	Slope (m):	8466.095 44°25'51.31787" N	00870751.DAT
	Total (m):	8466.095 121°06' 4.46363" W	00910757.DAT
		1150.5015 m	
To: 0085	L1 fixed	3/16/94 16:30:00	00003326.SSF
	Slope (m):	6433.806 44°22'40.87685" N	00870751.DAT
	Total (m):	14899.901 121°04' 7.13271" W	00850752.DAT
		857.1206 m	
To: 0083	L1 fixed	3/17/94 19:19:30	00003401.SSF
	Slope (m):	3600.527 44°20'56.25165" N	00830763.DAT
	Total (m):	18500.428 121°05'18.98107" W	00850768.DAT
		845.2401 m	
To: 0084	L1 fixed	3/17/94 19:44:00	00003396.SSF
	Slope (m):	2938.428 44°21'21.82071" N	00830763.DAT
	Total (m):	21438.856 121°07'26.76147" W	00840769.DAT
		865.6693 m	
To: 0092	L1 fixed	3/15/94 15:30:15	00003250.SSF
	Slope (m):	4627.289 44°22'15.80058" N	00920741.DAT
	Total (m):	26066.145 121°10'41.68408" W	00840741.DAT
		840.6554 m	
To: 0091	L1 fixed	3/15/94 16:23:15	00003245.SSF
	Slope (m):	1544.433 44°23' 2.73135" N	00920741.DAT
	Total (m):	27610.577 121°11' 5.83511" W	00910743.DAT
		821.0818 m	

Closed

Precision (ppm): 0.9321  
Errors (m) N: -0.0170 E: -0.0163 U: -0.0103

\*\*\*\*\*

©New Closure

From: 0075

To: 0076	L1 fixed	3/23/94 15:17:45	00003630.SSF
	Slope (m):	2270.408 44°16' 8.88996" N	00750821.DAT
	Total (m):	2270.408 121°11'50.76128" W	00760821.DAT
		896.0881 m	
To: 0023	L1 fixed	3/14/94 19:18:15	00003235.SSF
	Slope (m):	6201.841 44°13' 6.65461" N	00230732.DAT
	Total (m):	8472.249 121°13'48.38744" W	00760737.DAT
		932.7831 m	
To: 0074	L1 fixed	3/14/94 19:52:45	00003230.SSF
	Slope (m):	6377.020 44°16'23.38229" N	00230732.DAT
	Total (m):	14849.269 121°15'16.01191" W	00740738.DAT

869.8450 m

To: 0075		L1 fixed	3/23/94 15:43:00	00003625.SSF
	Slope (m):	2306.493	44°16'13.80939" N	00750821.DAT
	Total (m):	17155.762	121°13'32.88868" W	00740822.DAT
			895.9442 m	

Closed

Precision (ppm):	1.0034			
Errors (m) N:	-0.0063	E:	-0.0048	U: -0.0153

\*\*\*\*\*  
 New Closure

From: 0027

To: 200		L1 fixed	3/22/94 18:27:30	00003600.SSF
	Slope (m):	8061.851	44°14'53.90838" N	02000811.DAT
	Total (m):	8061.851	121°02'58.12704" W	00270817.DAT
			915.5109 m	

To: 0028		L1 fixed	3/22/94 19:00:30	00003610.SSF
	Slope (m):	10159.987	44°19'12.05120" N	02000811.DAT
	Total (m):	18221.838	121°07'42.32396" W	00280818.DAT
			881.0934 m	

To: 0080		L1 fixed	3/15/94 19:38:15	00003280.SSF
	Slope (m):	1826.875	44°19'11.64958" N	00280743.DAT
	Total (m):	20048.713	121°09' 4.75293" W	0080A741.DAT
			877.5027 m	

To: 0021		L1 fixed	3/15/94 19:15:15	00003260.SSF
	Slope (m):	3740.291	44°21' 1.23085" N	0021B742.DAT
	Total (m):	23789.005	121°10'16.76352" W	00800749.DAT
			853.9966 m	

To: 0079		L1 fixed	3/15/94 18:54:30	00003265.SSF
	Slope (m):	3540.956	44°19' 6.72436" N	0021B742.DAT
	Total (m):	27329.961	121°10' 7.47566" W	00790748.DAT
			879.9445 m	

To: 0027		L1 fixed	3/22/94 19:58:15	00003620.SSF
	Slope (m):	6480.174	44°15'43.38617" N	00270812.DAT
	Total (m):	33810.135	121°08'54.90592" W	0079A811.DAT
			909.7611 m	

Closed

Precision (ppm):	0.1245			
Errors (m) N:	-0.0042	E:	-0.0001	U: 0.0006

\*\*\*\*\*  
 New Closure

From: 0018

To: 0073		L1 fixed	3/23/94 16:29:45	00003640.SSF
	Slope (m):	6024.571	44°16'41.81012" N	00180826.DAT
	Total (m):	6024.571	121°15'30.54161" W	00730822.DAT
			869.7624 m	

To: 0095		L1 fixed	3/17/94 16:18:30	00003371.SSF
	Slope (m):	9529.343	44°21'36.02493" N	00950761.DAT
	Total (m):	15553.914	121°17'40.56189" W	00730762.DAT

752.3950 m

To: 0019

Slope (m):	L1 fixed	3/17/94 15:40:15	00003356.SSF
	4286.389	44°22'42.08233" N	00190763.DAT
Total (m):	19840.303	121°20'30.79495" W	00950761.DAT
		823.3737 m	

Closed

Closure on Linear Traverse to Station 0019

Precision (ppm):	1.1655				
Errors (m) N:	-0.0093	E:	-0.0156	U:	0.0143

**CONTROL**

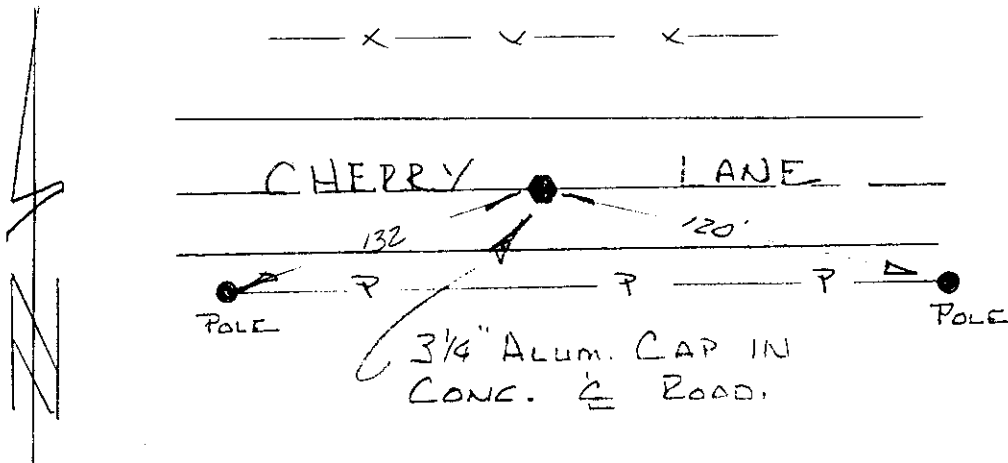
**MARK DATA**

**SHEETS**

## CONTROL MARK DATA

NAME OF MARK: 10132500 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1990 COUNTRY: U.S.A.  
 LOCATION: SECTION 25 TOWNSHIP 10 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 900166

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

GEODETTIC AND MAPPING COORDINATES

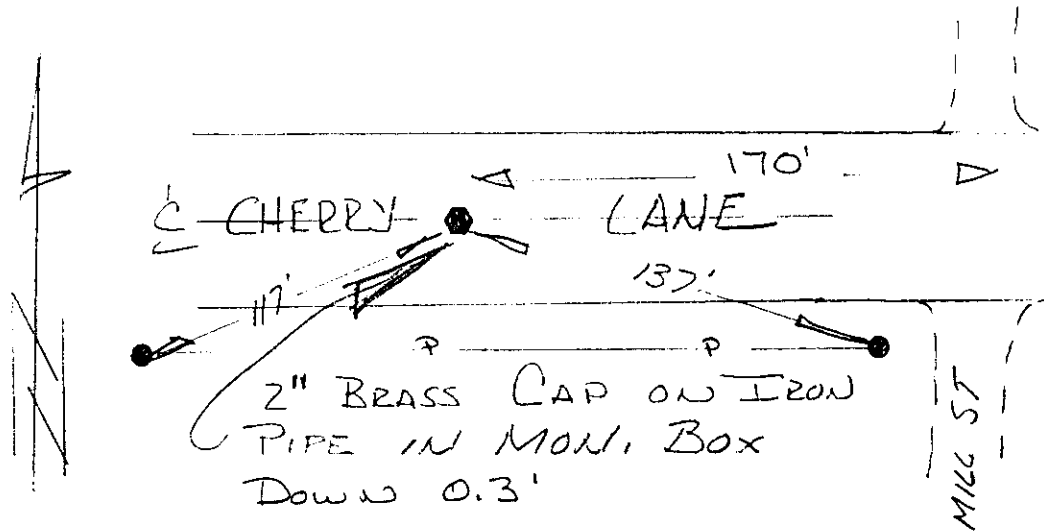
MARK: 10132500 HORIZONTAL ORDER: FIRST

		ONE SIGMA ERROR
Latitude:	44°39'52.644522"	
Longitude:	121°07'59.753958"	
Northing:	606939.4833	0.023
Easting:	3339052.3016	0.023
Convergence:	+ 0°06'19.7695"	
Scale Factor:	1.000161741308	
Ellipsoid Height:	2403.5417	0.033
Orthometric Height:	2469.9532	0.049
Geoid Height:	-66.4115	

## CONTROL MARK DATA

NAME OF MARK: 10132604 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1991 COUNTRY: U.S.A.  
 LOCATION: SECTION 26 TOWNSHIP 10 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 911162

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

MARK: 10132604 HORIZONTAL ORDER: FIRST

Latitude:	44°39'52.540834"	ONE
Longitude:	121°08'36.333219"	SIGMA
Northing:	606924.2772	ERROR
Easting:	3336408.1459	0.013
Convergence:	+ 0°05'54.0556"	0.013
Scale Factor:	1.000161513489	
Ellipsoid Height:	2377.3272	0.019
Orthometric Height:	2443.8255	FIXED
Geoid Height:	-66.4983	

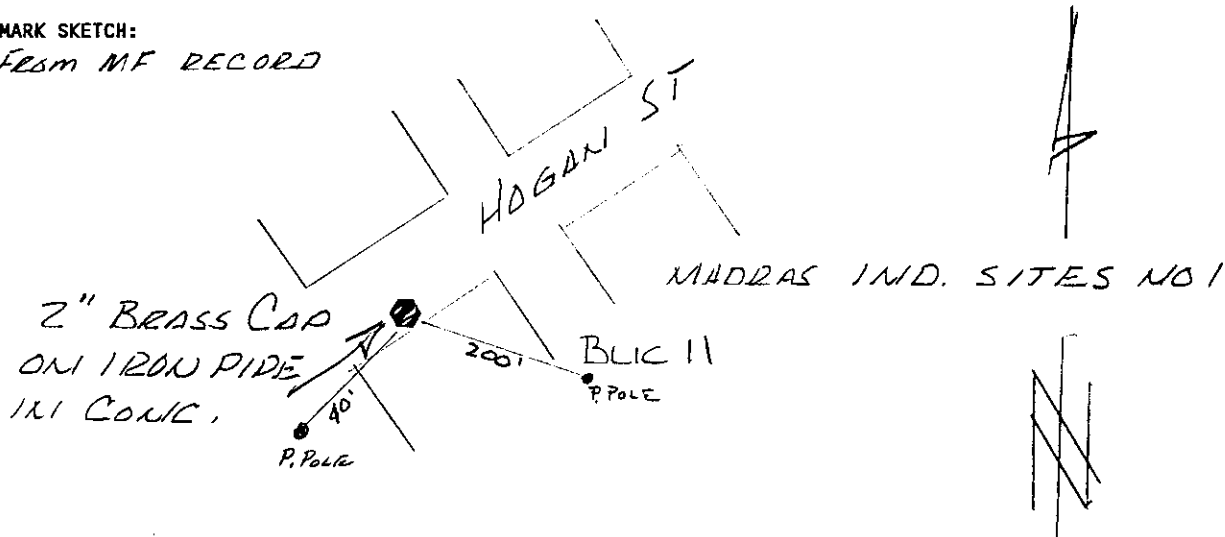


## CONTROL MARK DATA

NAME OF MARK: 10133640 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1991 COUNTRY: U.S.A.  
 LOCATION: SECTION 36 TOWNSHIP 10 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 911161

MARK SKETCH:

*From MF RECORD*



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

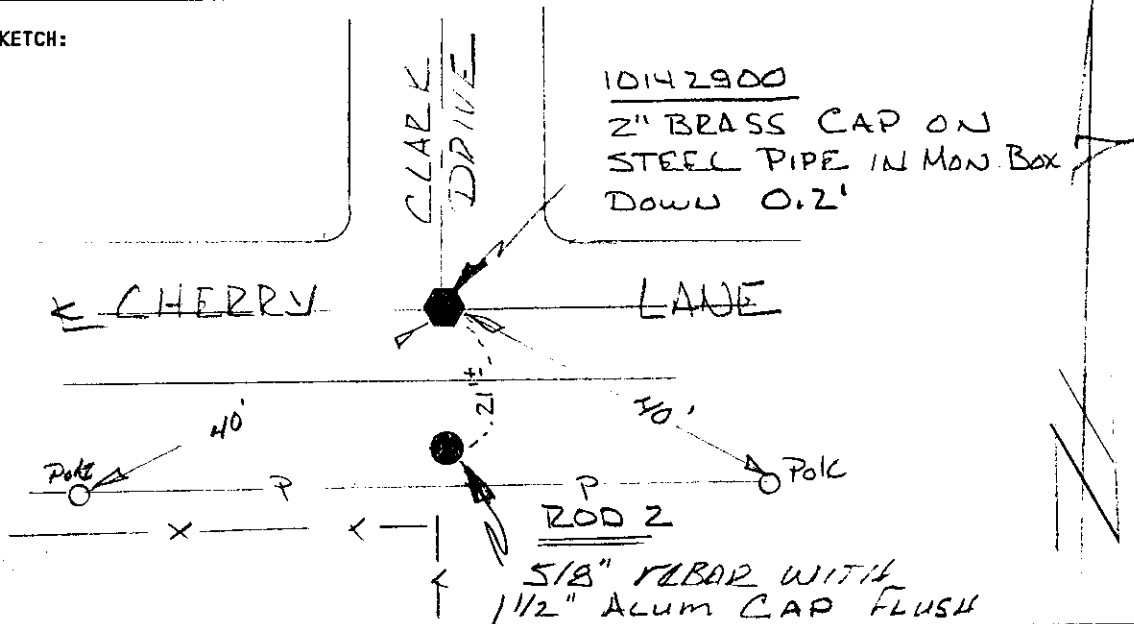
MARK: 10133640 HORIZONTAL ORDER: FIRST

		ONE
Latitude:	44°39'26.338497"	SIGMA
Longitude:	121°07'59.665384"	ERROR
Northing:	604274.9711	0.021
Easting:	3339063.6106	0.021
Convergence:	+ 0°06'19.7827"	
Scale Factor:	1.000161742320	
Ellipsoid Height:	2404.0565	0.030
Orthometric Height:	2470.4063	0.047
Geoid Height:	-66.3499	

## CONTROL MARK DATA

NAME OF MARK: 10142900 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: N/A COUNTRY: U.S.A.  
 LOCATION: SECTION 29 TOWNSHIP 10 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MP# 152091

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

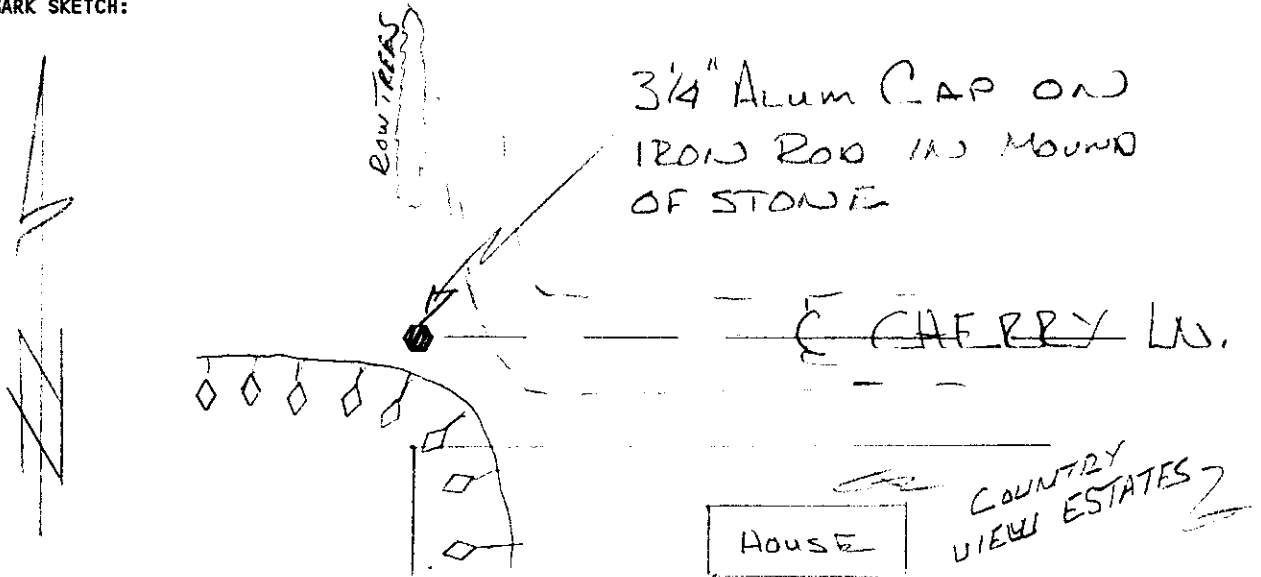
MARK: 10142900 HORIZONTAL ORDER: SECOND

Latitude:	44°39'51.814183"	ONE SIGMA ERROR
Longitude:	121°05'33.403374"	
Northing:	606877.4949	0.028
Easting:	3349631.6178	0.022
Convergence:	+ 0°08'02.6460"	
Scale Factor:	1.000162812545	
Ellipsoid Height:	2326.8779	0.245
Orthometric Height:	2392.93	0.257
Geoid Height:	-66.0521	

## CONTROL MARK DATA

NAME OF MARK: 10143000 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1990 COUNTRY: U.S.A.  
 LOCATION: SECTION 30 TOWNSHIP 10 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 900648

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

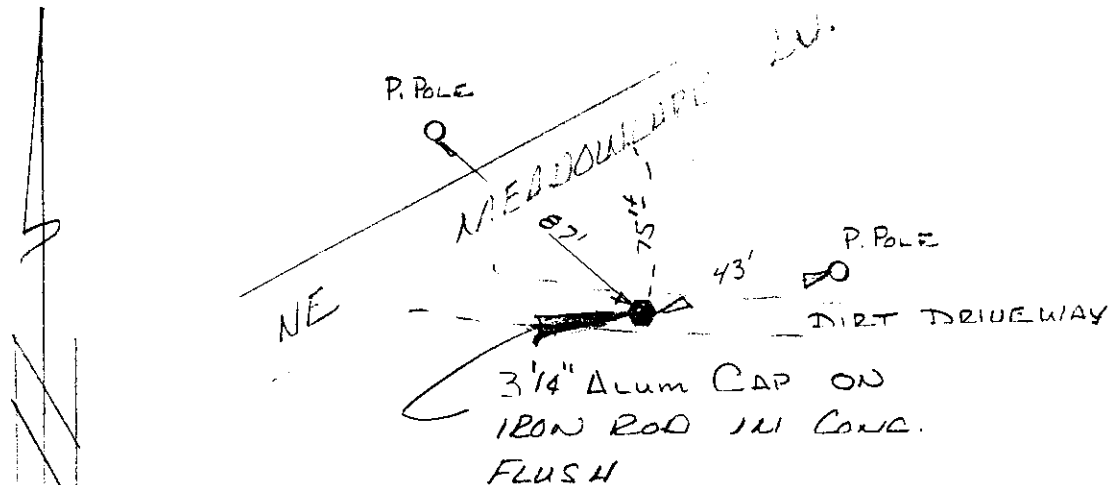
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: 10143000</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°39'52.111644"	ONE SIGMA ERROR
Longitude:	121°06'46.401619"	
Northing:	606895.9337	0.022
Easting:	3344354.7722	0.021
Convergence:	+ 0°07'11.3320"	
Scale Factor:	1.000162246276	
Ellipsoid Height:	2503.283	0.031
Orthometric Height:	2569.5235	0.068
Geoid Height:	-66.2405	

## CONTROL MARK DATA

NAME OF MARK: 10143140 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1990 COUNTRY: U.S.A.  
 LOCATION: SECTION 31 TOWNSHIP 10 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 910252

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

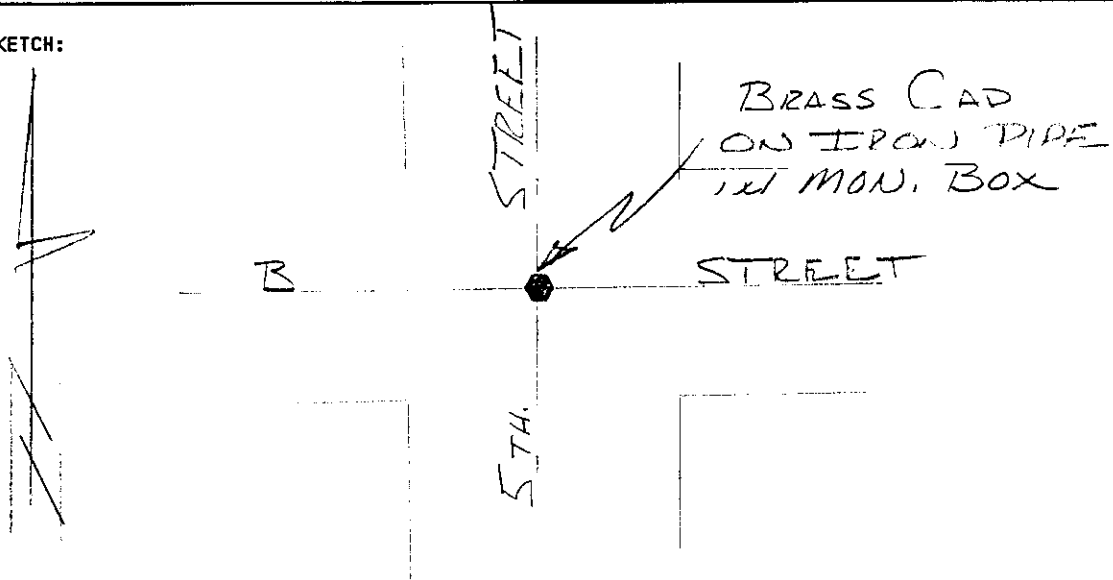
### GEODETIC AND MAPPING COORDINATES

MARK: <u>10143140</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°39'26.065861"	ONE SIGMA ERROR
Longitude:	121°06'46.510630"	
Northing:	604257.753	0.023
Easting:	3344352.4077	0.022
Convergence:	+ 0°07'11.2003"	
Scale Factor:	1.000162246041	
Ellipsoid Height:	2293.0947	0.032
Orthometric Height:	2359.2754	0.065
Geoid Height:	-66.1807	

## CONTROL MARK DATA

NAME OF MARK: 11130100 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1992 COUNTRY: U.S.A.  
 LOCATION: SECTION 1 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 920783

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

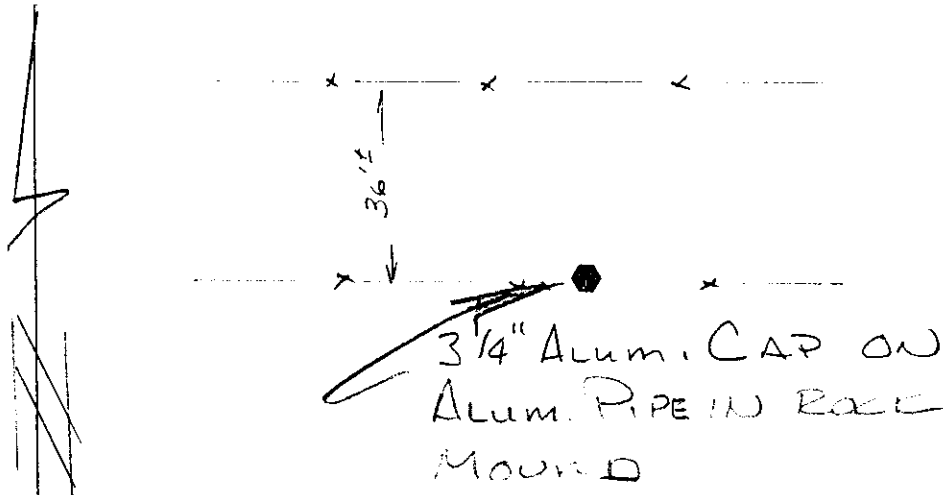
MARK: 11130100 HORIZONTAL ORDER: SECOND

Latitude:	44°38'09.425618"	ONE SIGMA ERROR
Longitude:	121°07'46.425262"	
Northing:	596486.308	0.018
Easting:	3340035.501	0.024
Convergence:	+ 0°06'28.9419"	
Scale Factor:	1.000161830104	
Ellipsoid Height:	2175.0739	0.022
Orthometric Height:	2241.1942	0.011
Geoid Height:	-66.1203	

**CONTROL MARK DATA**

NAME OF MARK: 11130200 COUNTY: JEFFERSON  
MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
DATE OF MARK: 1985 COUNTRY: U.S.A.  
LOCATION: SECTION 2 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: MF# 883303

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

**GEODETTIC AND MAPPING COORDINATES**

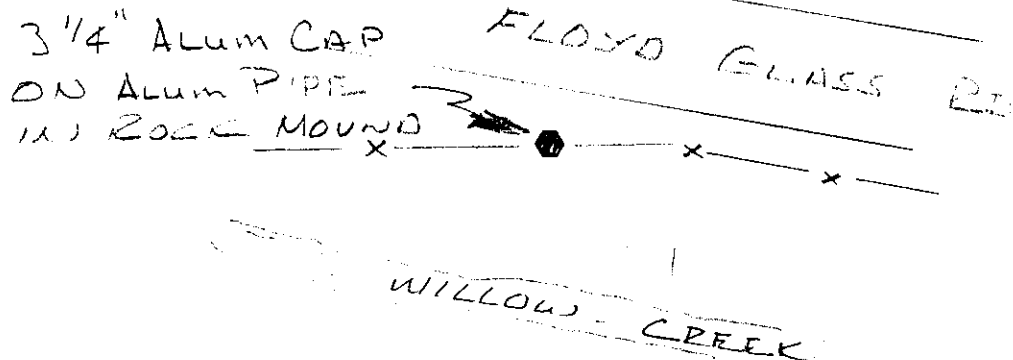
MARK: 11130200 HORIZONTAL ORDER: FIRST

Latitude:	44°38'09.617302"	ONE SIGMA ERROR
Longitude:	121°08'59.316483"	
Northing:	596496.4375	0.018
Easting:	3334763.8475	0.018
Convergence:	+ 0°05'37.7287"	
Scale Factor:	1.000161379878	
Ellipsoid Height:	2397.2534	0.025
Orthometric Height:	2463.5575	0.053
Geoid Height:	-66.3042	

## CONTROL MARK DATA

NAME OF MARK: 11130204 COUNTY: CROOK  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1985 COUNTRY: U.S.A.  
 LOCATION: SECTION 2 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883304

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

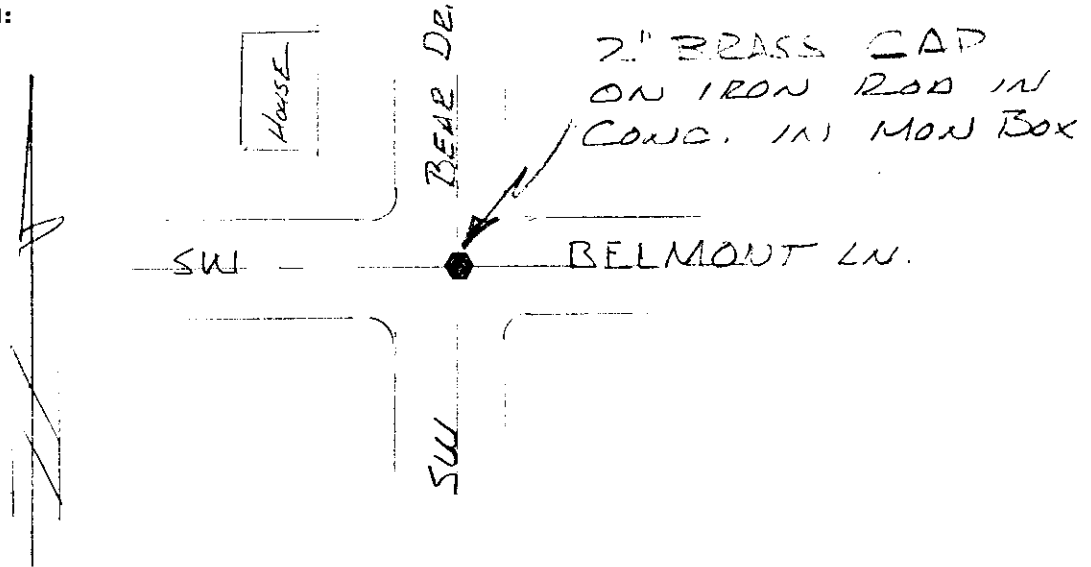
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>11130204</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°38'09.459477"	ONE
Longitude:	121°08'22.872388"	SIGMA
Northing:	596484.9308	ERROR
Easting:	3337399.5745	0.015
Convergence:	+ 0°06'03.3342"	0.015
Scale Factor:	1.000161597050	
Ellipsoid Height:	2183.0879	0.020
Orthometric Height:	2249.307	0.041
Geoid Height:	-66.2192	

## CONTROL MARK DATA

NAME OF MARK: 11131004 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1985 COUNTRY: U.S.A.  
 LOCATION: SECTION 10 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883296

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

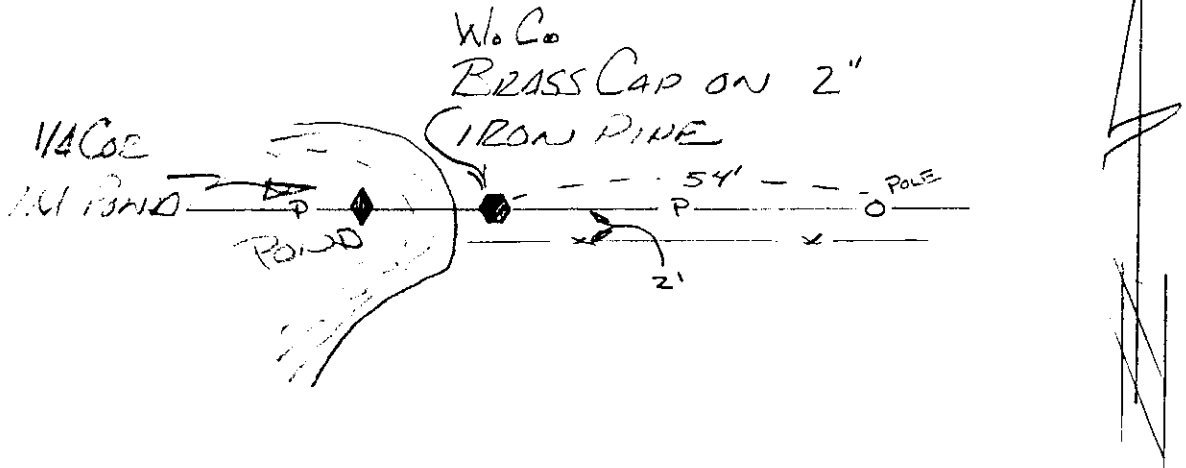
<u>MARK: 11131004</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°37'17.697734"</u>	ONE SIGMA ERROR
Longitude:	<u>121°09'35.573364"</u>	
Northing:	<u>591233.429</u>	<u>0.010</u>
Easting:	<u>3332149.6484</u>	<u>0.010</u>
Convergence:	<u>+ 0°05'12.1749"</u>	
Scale Factor:	<u>1.000161180155</u>	
Ellipsoid Height:	<u>2420.938</u>	<u>0.017</u>
Orthometric Height:	<u>2487.2089</u>	<u>0.052</u>
Geoid Height:	<u>-66.2709</u>	



## CONTROL MARK DATA

NAME OF MARK: 11131104-W.C. COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1991 COUNTRY: U.S.A.  
 LOCATION: SECTION 11 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 912698

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

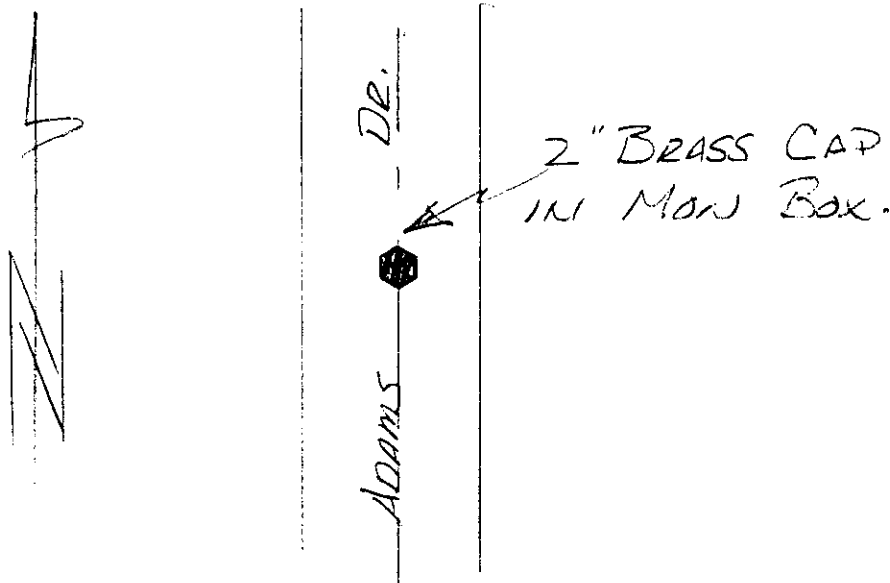
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>11131104-W.C.</u>	<u>HORIZONTAL ORDER:</u> <u>FIRST</u>	
Latitude:	44°37'17.412628"	ONE SIGMA ERROR
Longitude:	121°08'22.853993"	
Northing:	591213.1639	0.017
Easting:	3337410.1902	0.017
Convergence:	+ 0°06'03.2542"	
Scale Factor:	1.000161597962	
Ellipsoid Height:	2247.7302	0.024
Orthometric Height:	2313.8741	0.041
Geoid Height:	-66.1439	

## CONTROL MARK DATA

NAME OF MARK: 11131200 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: N/A COUNTRY: U.S.A.  
 LOCATION: SECTION 12 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 920255

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

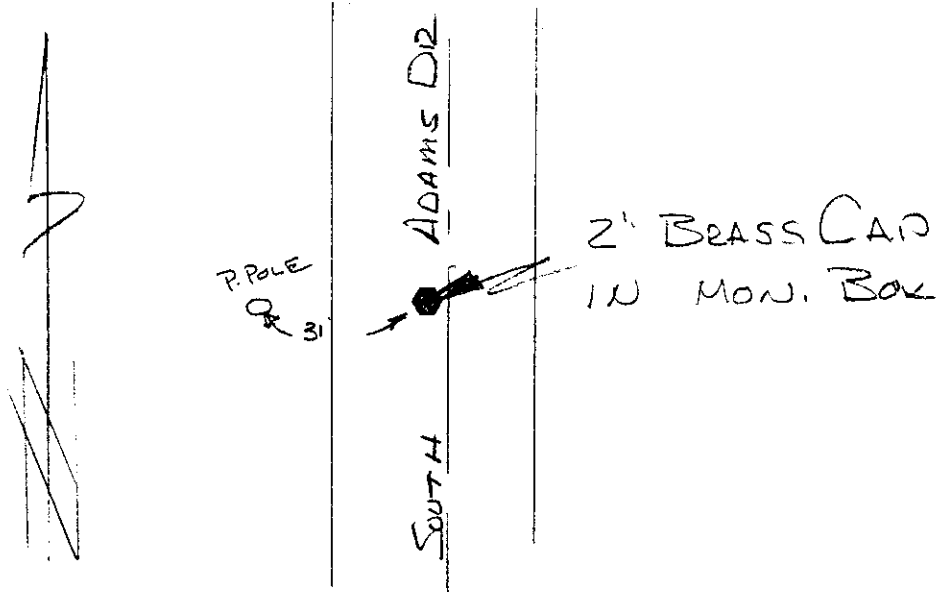
### GEODETTIC AND MAPPING COORDINATES

<u>MARK:</u> <u>11131200</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°37'17.317580"	ONE SIGMA ERROR
Longitude:	121°07'46.590877"	
Northing:	591208.3184	0.016
Easting:	3340033.4715	0.016
Convergence:	+ 0°06'28.7261"	
Scale Factor:	1.000161829925	
Ellipsoid Height:	2296.5904	0.020
Orthometric Height:	2362.6837	FIXED
Geoid Height:	-66.0933	

## CONTROL MARK DATA

NAME OF MARK: 11131300 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: N/A COUNTRY: U.S.A.  
 LOCATION: SECTION 13 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 900646

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

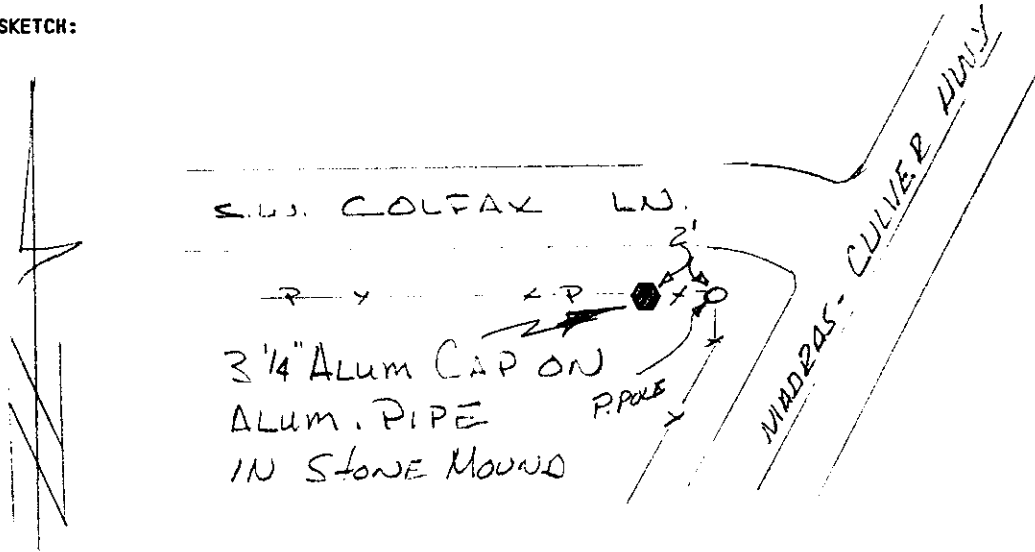
### GEODETTIC AND MAPPING COORDINATES

<u>MARK:</u> <u>11131300</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°36'25.355241"	ONE SIGMA ERROR
Longitude:	121°07'46.877060"	
Northing:	585945.0835	0.022
Easting:	3340022.6818	0.022
Convergence:	+ 0°06'28.4258"	
Scale Factor:	1.000161828945	
Ellipsoid Height:	2388.6369	0.031
Orthometric Height:	2454.554	0.049
Geoid Height:	-65.9171	

## CONTROL MARK DATA

NAME OF MARK: 11131400 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1985 COUNTRY: U.S.A.  
 LOCATION: SECTION 14 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883302

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

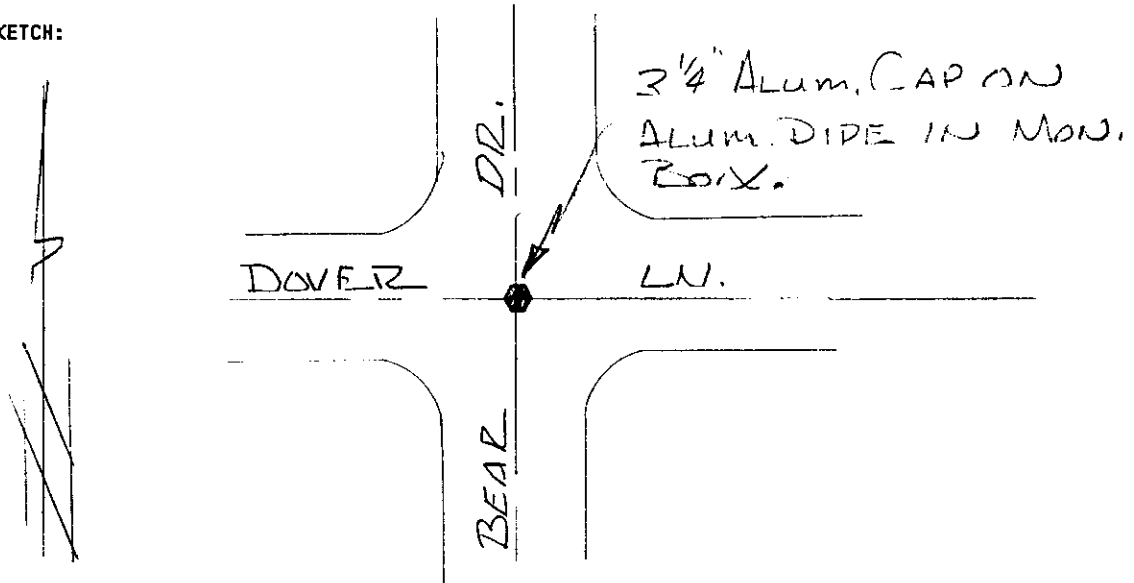
MARK: 11131400 HORIZONTAL ORDER: FIRST

Latitude:	44°36'25.452121"	ONE SIGMA ERROR
Longitude:	121°08'59.556332"	
Northing:	585945.6437	0.017
Easting:	3334763.7635	0.017
Convergence:	+ 0°05'37.3875"	
Scale Factor:	1.000161379881	
Ellipsoid Height:	2316.4755	0.023
Orthometric Height:	2382.5262	FIXED
Geoid Height:	-66.0507	

## CONTROL MARK DATA

NAME OF MARK: 11132204 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1986 COUNTRY: U.S.A.  
 LOCATION: SECTION 22 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883307

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

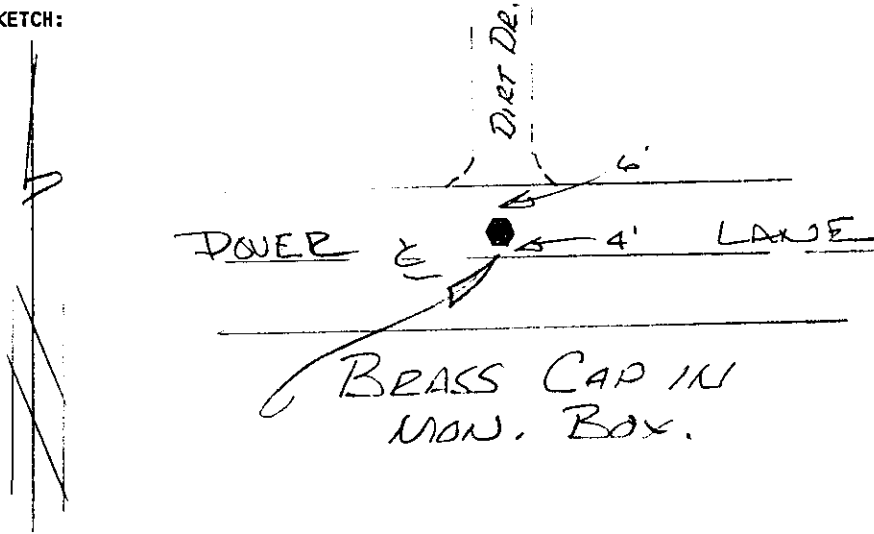
MARK: 11132204 HORIZONTAL ORDER: SECOND

Latitude:	44°35'33.516478"	ONE SIGMA ERROR
Longitude:	121°09'35.981447"	
Northing:	580681.0176	0.029
Easting:	3332136.0798	0.032
Convergence:	+ 0°05'11.7286"	
Scale Factor:	1.000161179167	
Ellipsoid Height:	2440.2888	0.055
Orthometric Height:	2506.1838	0.055
Geoid Height:	-65.895	

## CONTROL MARK DATA

NAME OF MARK: 11132304 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1985 COUNTRY: U.S.A.  
 LOCATION: SECTION 23 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883295

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

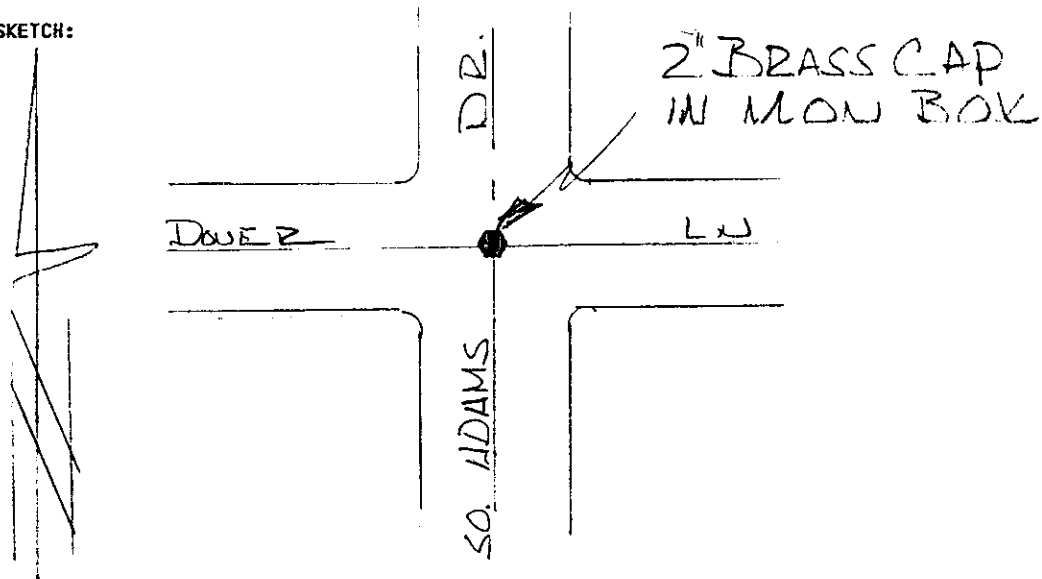
MARK: 11132304 HORIZONTAL ORDER: SECOND

		ONE SIGMA ERROR
Latitude:	44°35'33.166845"	
Longitude:	121°08'23.374527"	
Northing:	580654.1949	0.024
Easting:	3337391.1068	0.029
Convergence:	+ 0°06'02.7027"	
Scale Factor:	1.000161596343	
Ellipsoid Height:	2415.8027	0.045
Orthometric Height:	2481.6963	0.055
Geoid Height:	-65.8936	

## CONTROL MARK DATA

NAME OF MARK: 11132400 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: N/A COUNTRY: U.S.A.  
 LOCATION: SECTION 24 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

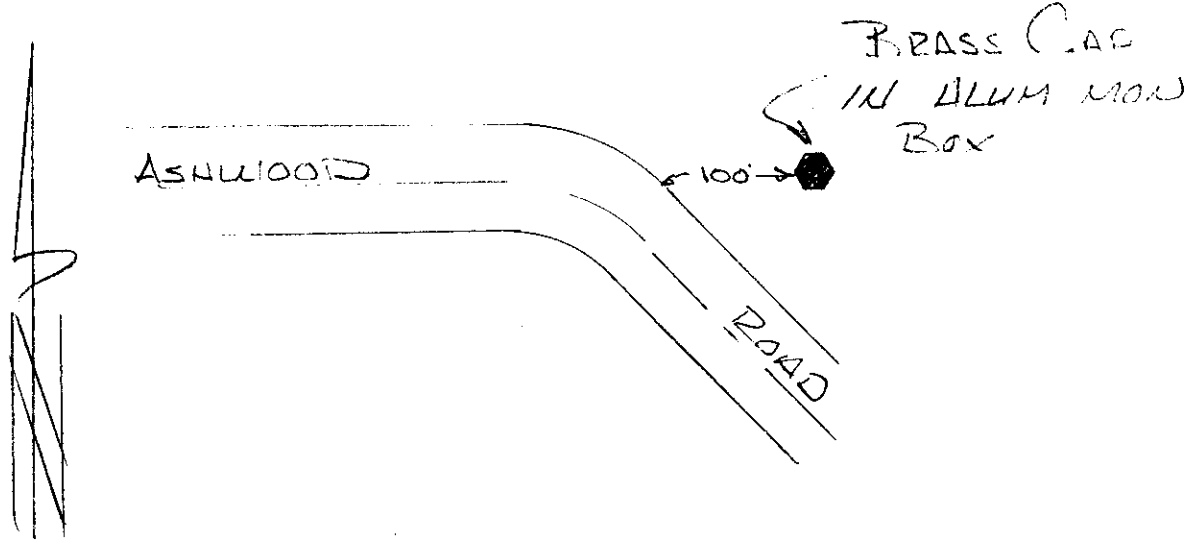
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>11132400</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°35'33.165571"	ONE
Longitude:	121°07'46.891977"	SIGMA
Northing:	580658.8729	ERROR
Easting:	3340031.5555	0.024
Convergence:	+ 0°06'28.3157"	0.023
Scale Factor:	1.000161829762	
Ellipsoid Height:	2391.9616	0.034
Orthometric Height:	2457.7167	0.061
Geoid Height:	-65.7551	

**CONTROL MARK DATA**

NAME OF MARK: 11140500 COUNTY: JEFFERSON  
MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
DATE OF MARK: 1985 COUNTRY: U.S.A.  
LOCATION: SECTION 5 TOWNSHIP 11 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: MF# 883293

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

**GEODETIC AND MAPPING COORDINATES**

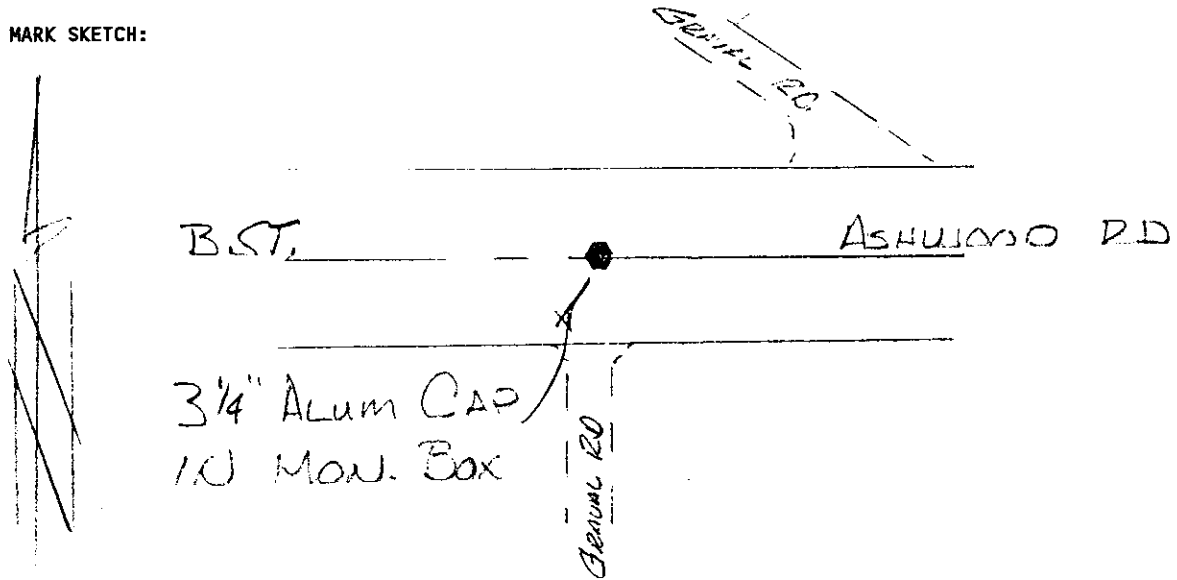
<u>MARK: 11140500</u>	<u>HORIZONTAL ORDER: FIRST</u>	
Latitude:	44°38'08.715842"	ONE SIGMA ERROR
Longitude:	121°05'23.868664"	
Northing:	596436.3596	0.019
Easting:	3350345.6165	0.018
Convergence:	+ 0°08'09.1009"	
Scale Factor:	1.000162894069	
Ellipsoid Height:	2422.0828	0.027
Orthometric Height:	2487.8644	0.064
Geoid Height:	-65.7816	



**CONTROL MARK DATA**

NAME OF MARK: 11140600 COUNTY: JEFFERSON  
MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
DATE OF MARK: 1989 COUNTRY: U.S.A.  
LOCATION: SECTION 6 TOWNSHIP 11 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: MF# 892746

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

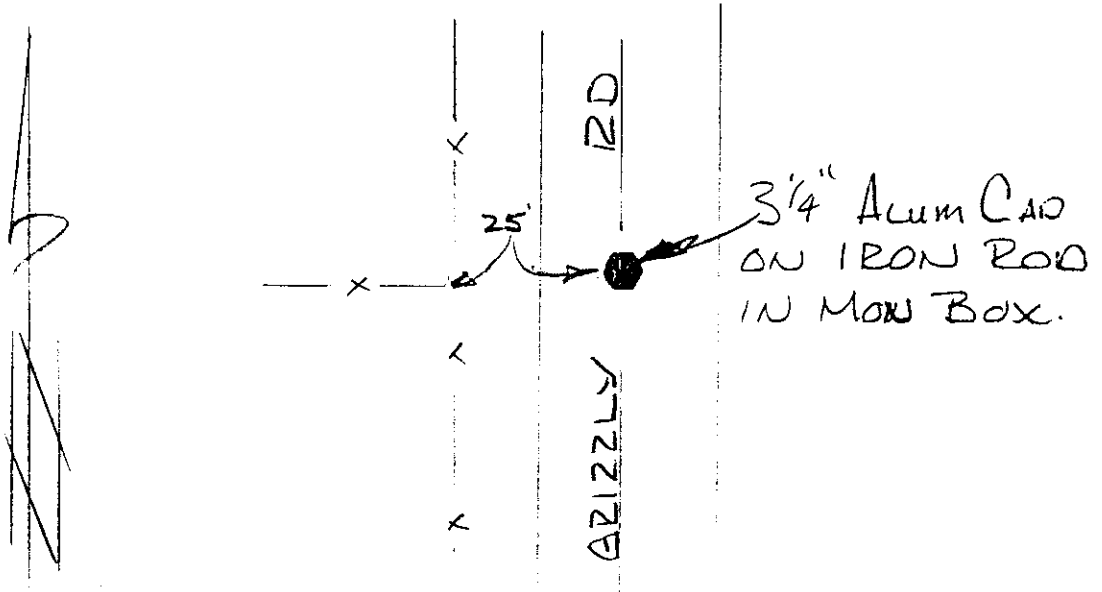
**GEODETTIC AND MAPPING COORDINATES**

<u>MARK: 11140600</u>	<u>HORIZONTAL ORDER: FIRST</u>	
Latitude:	44°38'09.121737"	ONE SIGMA ERROR
Longitude:	121°06'33.023771"	
Northing:	596466.2018	0.018
Easting:	3345344.0922	0.017
Convergence:	+ 0°07'20.5133"	
Scale Factor:	1.000162347615	
Ellipsoid Height:	2323.0117	0.025
Orthometric Height:	2388.9797	0.049
Geoid Height:	-65.968	

## CONTROL MARK DATA

NAME OF MARK: 11140700 COUNTY: JEFFERSON  
 MARK SET BY: LS 1081 JEFFERY KERN STATE: OREGON  
 DATE OF MARK: 1985 COUNTRY: U.S.A.  
 LOCATION: SECTION 7 TOWNSHIP 11 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883305

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

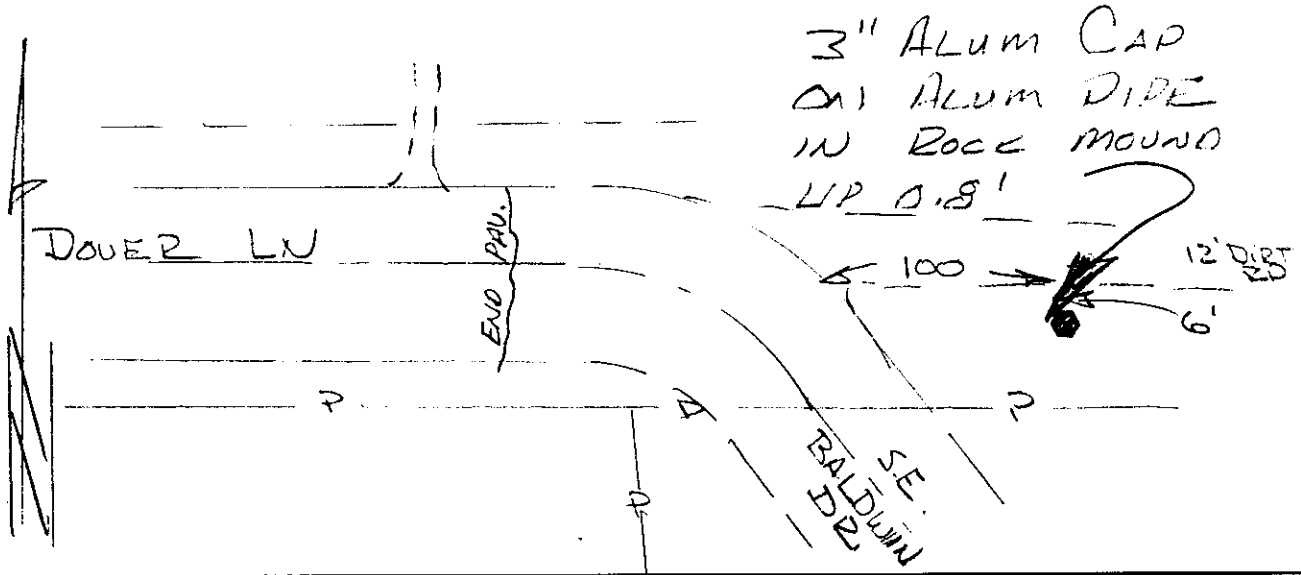
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: 11140700</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°37'17.101158"	ONE SIGMA ERROR
Longitude:	121°06'33.150420"	
Northing:	591197.0739	0.017
Easting:	3345346.1821	0.016
Convergence:	+ 0°07'20.3118"	
Scale Factor:	1.000162347839	
Ellipsoid Height:	2217.7411	0.022
Orthometric Height:	2283.6056	FIXED
Geoid Height:	-65.8645	

### CONTROL MARK DATA

NAME OF MARK: 11141900 COUNTY: JEFFERSON  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1984 COUNTRY: U.S.A.  
 LOCATION: SECTION 19 TOWNSHIP 11 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 151334

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

GEODETIC AND MAPPING COORDINATES

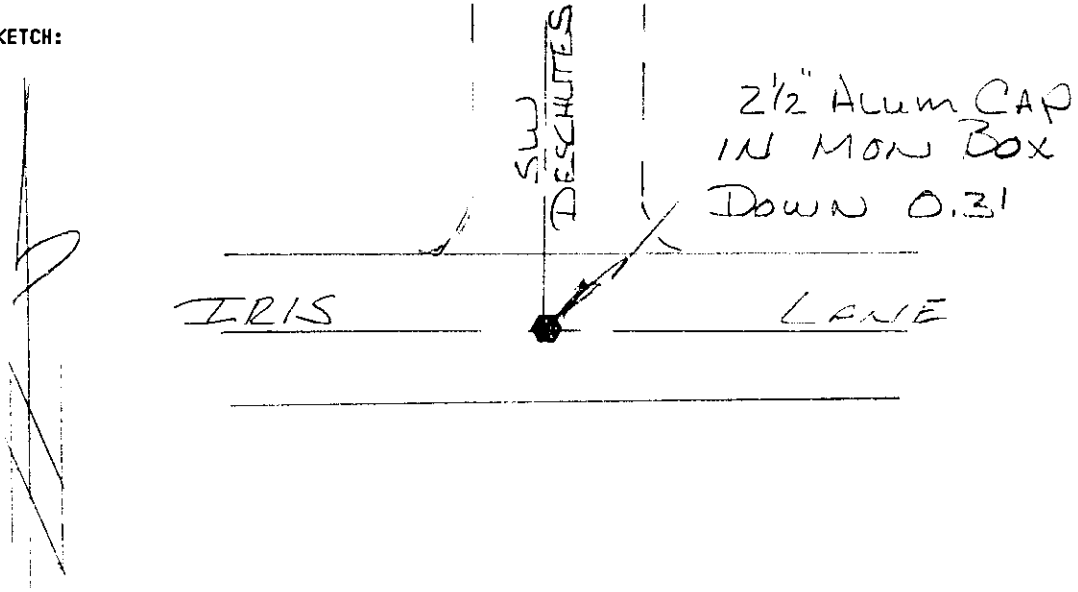
MARK: 11141900 HORIZONTAL ORDER: FIRST

Latitude:	44°35'33.205739"	ONE
Longitude:	121°06'33.342116"	SIGMA
Northing:	580673.6294	ERROR
Easting:	3345354.7665	0.012
Convergence:	+ 0°07'19.9525"	
Scale Factor:	1.000162348744	
Ellipsoid Height:	2414.6393	0.020
Orthometric Height:	2480.2048	0.063
Geoid Height:	-65.5655	

## CONTROL MARK DATA

NAME OF MARK: 12131600 COUNTY: JEFFERSON  
 MARK SET BY: JEFFERSON CO. SURVEYOR STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 16 TOWNSHIP 12 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883336

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

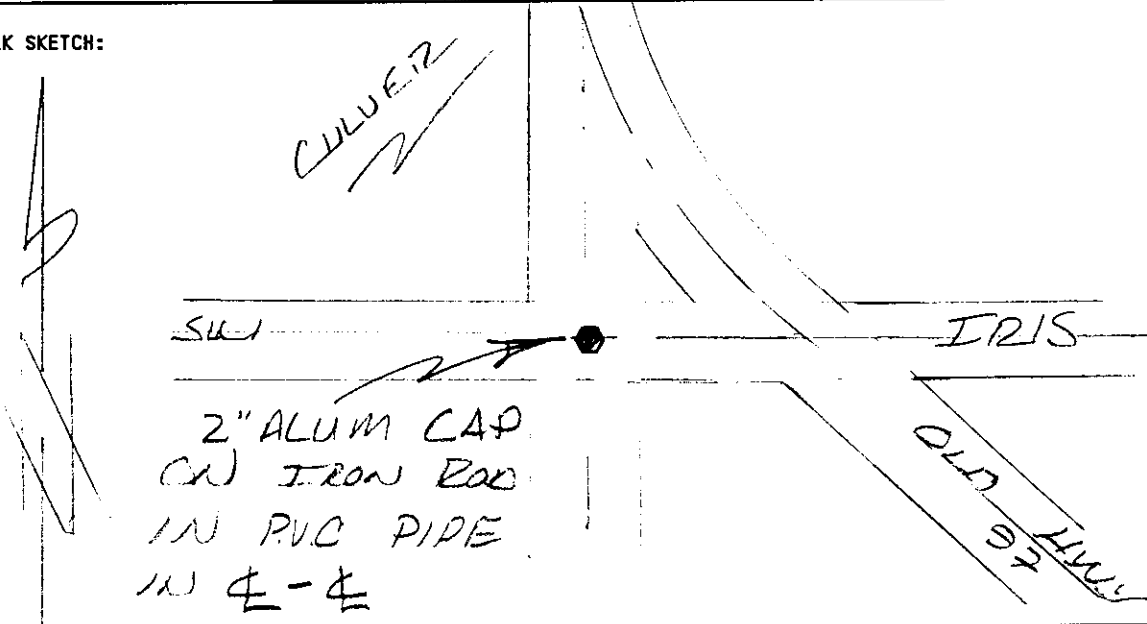
### GEODETTIC AND MAPPING COORDINATES

<u>MARK:</u> <u>12131600</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°31'13.584714"	ONE SIGMA ERROR
Longitude:	121°11'23.453894"	
Northing:	554342.8115	0.010
Easting:	3324387.8432	0.009
Convergence:	+ 0°03'55.9740"	
Scale Factor:	1.000160679115	
Ellipsoid Height:	2623.22	0.018
Orthometric Height:	2688.7162	0.075
Geoid Height:	-65.4961	

## CONTROL MARK DATA

NAME OF MARK: 12131700 COUNTY: JEFFERSON  
 MARK SET BY: N/A STATE: OREGON  
 DATE OF MARK: N/A COUNTRY: U.S.A.  
 LOCATION: SECTION 17 TOWNSHIP 12 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 941724

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

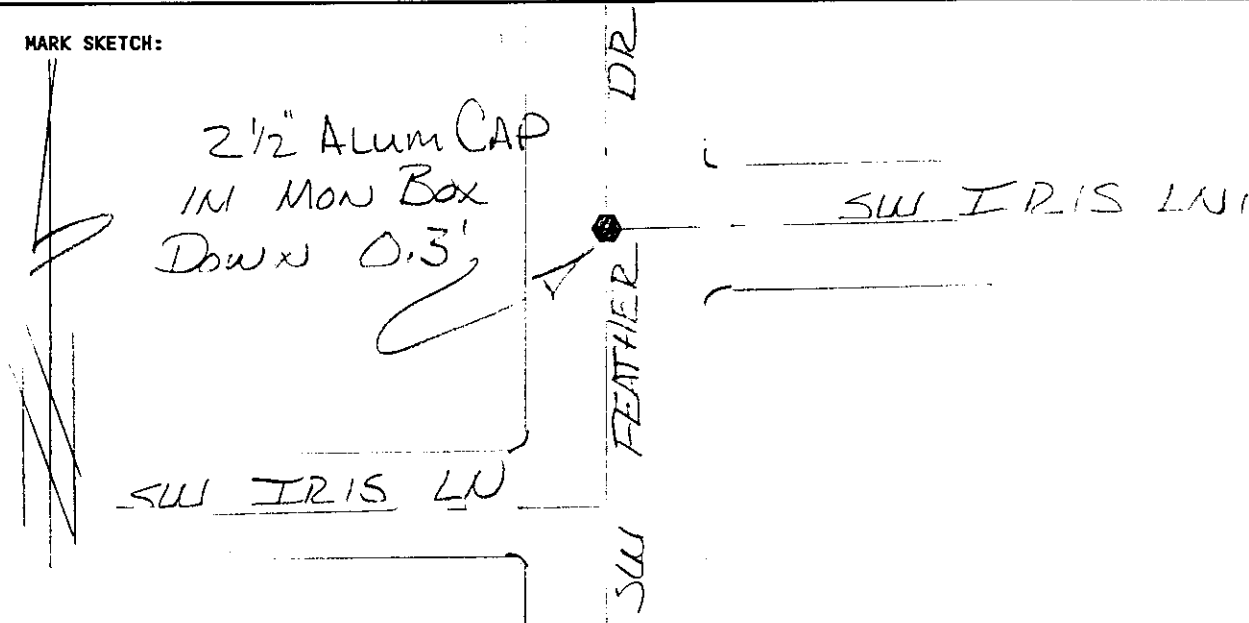
MARK: 12131700 HORIZONTAL ORDER: FIRST

Latitude:	44°31'13.732954"	ONE
Longitude:	121°12'36.042688"	SIGMA
Northing:	554352.4575	ERROR
Easting:	3319127.6764	0.017
Convergence:	+ 0°03'05.0775"	0.017
Scale Factor:	1.000160417754	
Ellipsoid Height:	2575.4859	0.026
Orthometric Height:	2641.1594	0.085
Geoid Height:	-65.6735	

## CONTROL MARK DATA

NAME OF MARK: 12131800 COUNTY: JEFFERSON  
 MARK SET BY: JEFFERSON CO. SURVEYOR STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 18 TOWNSHIP 12 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# 883326

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

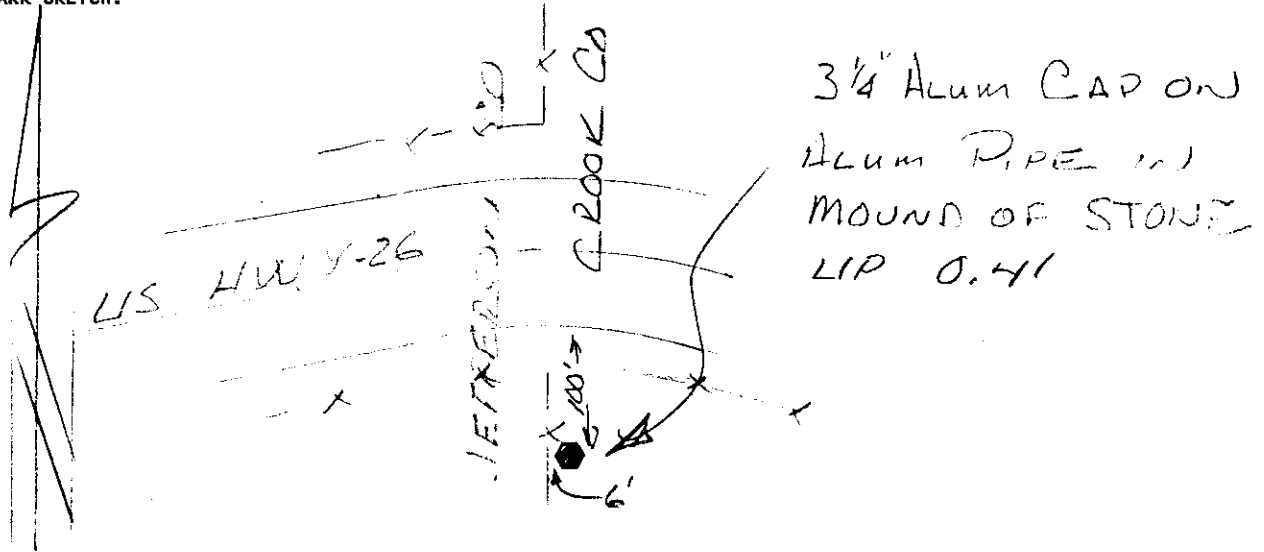
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: 12131800</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°31'13.786135"	ONE SIGMA ERROR
Longitude:	121°13'45.497029"	
Northing:	554353.9221	0.011
Easting:	3314094.6614	0.011
Convergence:	+ 0°02'16.3786"	
Scale Factor:	1.000160226833	
Ellipsoid Height:	2549.8054	0.019
Orthometric Height:	2615.6559	0.091
Geoid Height:	-65.8505	

**CONTROL MARK DATA**

NAME OF MARK: 13153040 COUNTY: CROOK  
MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
DATE OF MARK: 1983 COUNTRY: U.S.A.  
LOCATION: SECTION 30 TOWNSHIP 13 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: OLCM T-1

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

**GEODETIC AND MAPPING COORDINATES**

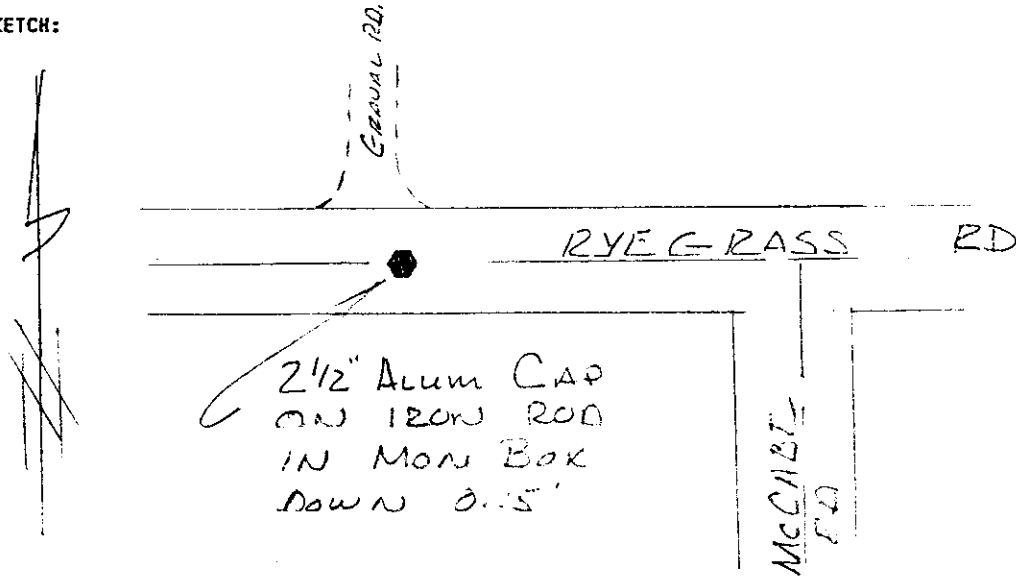
MARK: 13153040 HORIZONTAL ORDER: FIRST

Latitude:	44°24'42.348633"	ONE
Longitude:	120°59'18.614891"	SIGMA
Northing:	514840.8574	ERROR
Easting:	3377056.2079	0.014
Convergence:	+ 0°12'22.7713"	0.014
Scale Factor:	1.000166779924	
Ellipsoid Height:	3314.4125	0.021
Orthometric Height:	3378.1201	FIXED
Geoid Height:	-63.7076	

## CONTROL MARK DATA

NAME OF MARK: 13153300 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1989 COUNTRY: U.S.A.  
 LOCATION: SECTION 33 TOWNSHIP 13 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM Z-9

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

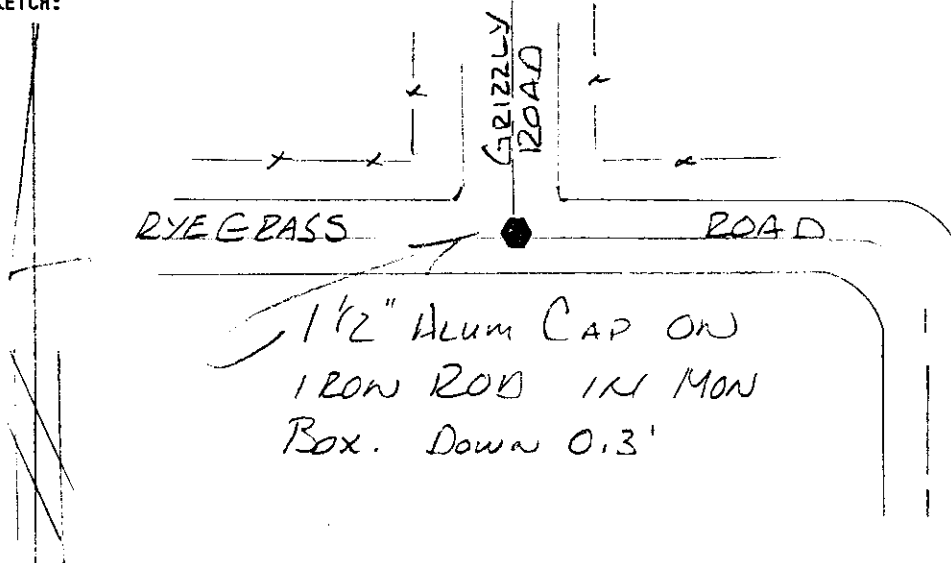
<u>MARK:</u> <u>13153300</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°23'24.919678"	ONE SIGMA ERROR
Longitude:	120°56'52.490750"	
Northing:	507039.3052	0.015
Easting:	3387696.8977	0.015
Convergence:	+ 0°14'04.7082"	
Scale Factor:	1.000168781745	
Ellipsoid Height:	2960.685	0.022
Orthometric Height:	3024.3952	0.068
Geoid Height:	-63.7101	



### CONTROL MARK DATA

NAME OF MARK: 13153500 COUNTY: CROOK  
MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
DATE OF MARK: 1987 COUNTRY: U.S.A.  
LOCATION: SECTION 35 TOWNSHIP 13 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: OLCM Z-17

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

#### GEODETIC AND MAPPING COORDINATES

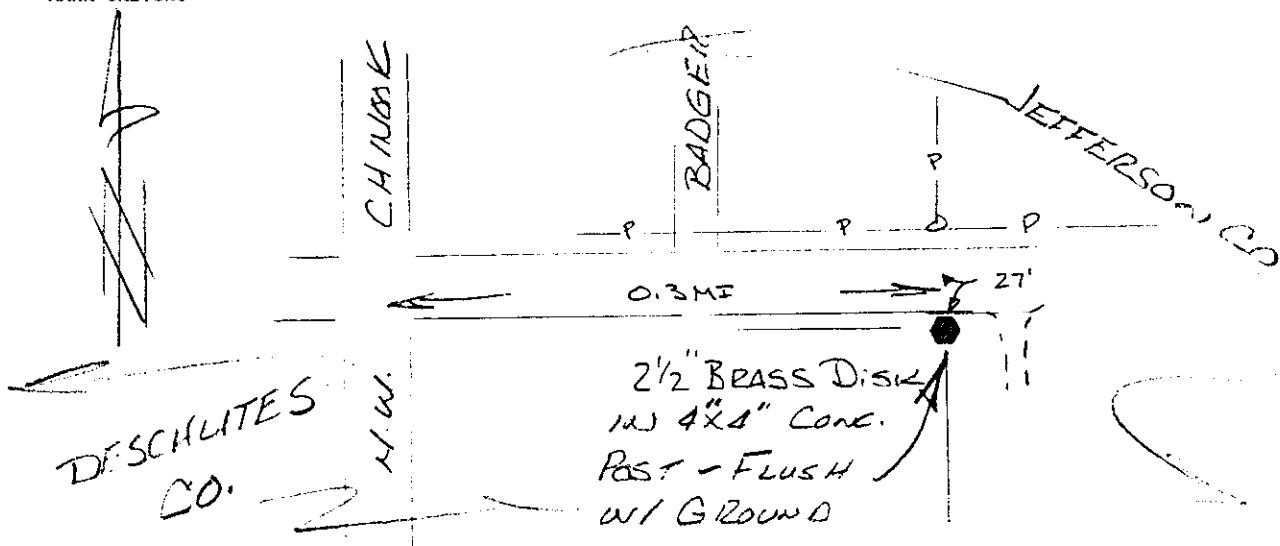
MARK: 13153500 HORIZONTAL ORDER: FIRST

Latitude:	44°23'25.312202"	ONE
Longitude:	120°54'26.743795"	SIGMA
Northing:	507125.027	ERROR
Easting:	3398281.7768	0.019
Convergence:	+ 0°15'46.6682"	0.019
Scale Factor:	1.000171029581	
Ellipsoid Height:	2956.6276	0.027
Orthometric Height:	3020.0893	0.086
Geoid Height:	-63.4616	

**CONTROL MARK DATA**

NAME OF MARK: 14120188 COUNTY: DESCHUTES  
 MARK SET BY: PE 5792 ARNOLD KEGEL STATE: OREGON  
 DATE OF MARK: 1973 COUNTRY: U.S.A.  
 LOCATION: SECTION 1 TOWNSHIP 14 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: CS 06487

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

**GEODETIC AND MAPPING COORDINATES**

**MARK:** 14120188 HORIZONTAL ORDER: FIRST

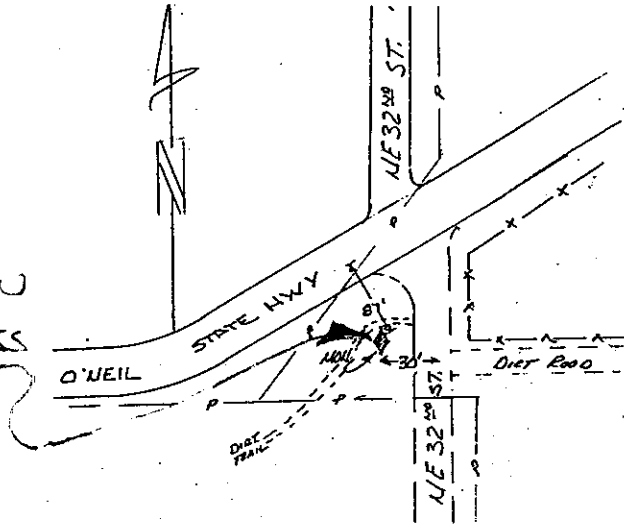
Latitude:	44°23'34.795290"	ONE
Longitude:	121°13'45.481150"	SIGMA
Northing:	507864.6427	ERROR
Easting:	3314126.5176	FIXED
Convergence:	+ 0°02'16.0807"	FIXED
Scale Factor:	1.000160227866	
Ellipsoid Height:	2699.918	FIXED
Orthometric Height:	2765.4308	0.059
Geoid Height:	-65.5128	

## CONTROL MARK DATA

NAME OF MARK: 14132500 COUNTY: DESCHUTES  
 MARK SET BY: LS 0804 C. H. KETCHAM STATE: OREGON  
 DATE OF MARK: 1987 COUNTRY: U.S.A.  
 LOCATION: SECTION 25 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OCRR 0030

MARK SKETCH:

3 1/2" Alum Cap on  
 Iron Rod in a Mass  
 of Concr. up 0.3'



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

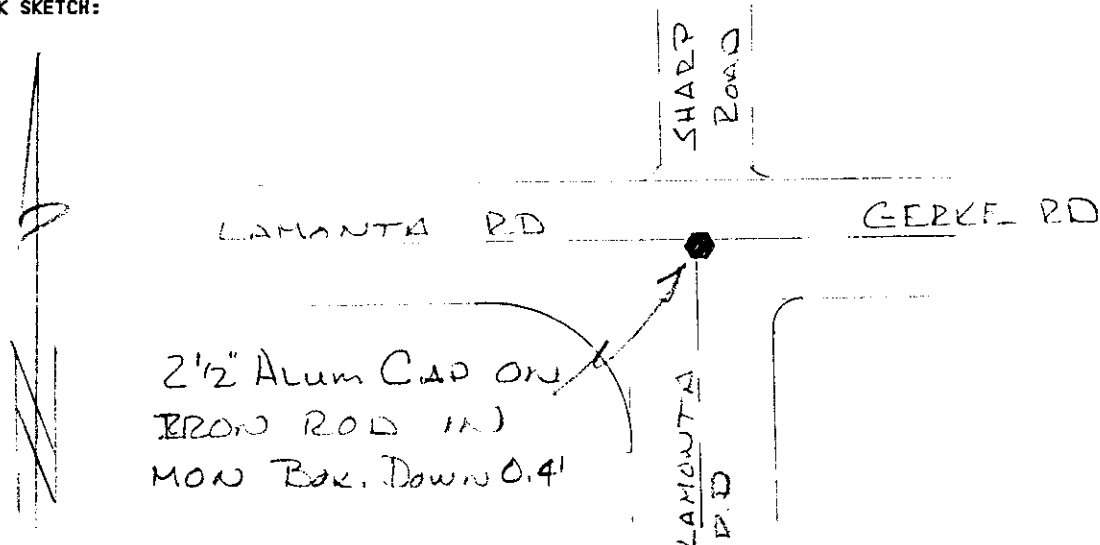
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>14132500</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°19'12.052420"	ONE SIGMA ERROR
Longitude:	121°07'42.323900"	
Northing:	481286.6151	FIXED
Easting:	3340550.3429	FIXED
Convergence:	+ 0°06'29.6294"	
Scale Factor:	1.000161877615	
Ellipsoid Height:	2890.8465	FIXED
Orthometric Height:	2955.8104	FIXED
Geoid Height:	-64.9639	

## CONTROL MARK DATA

NAME OF MARK: 14150100 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1993 COUNTRY: U.S.A.  
 LOCATION: SECTION 1 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM E-21

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

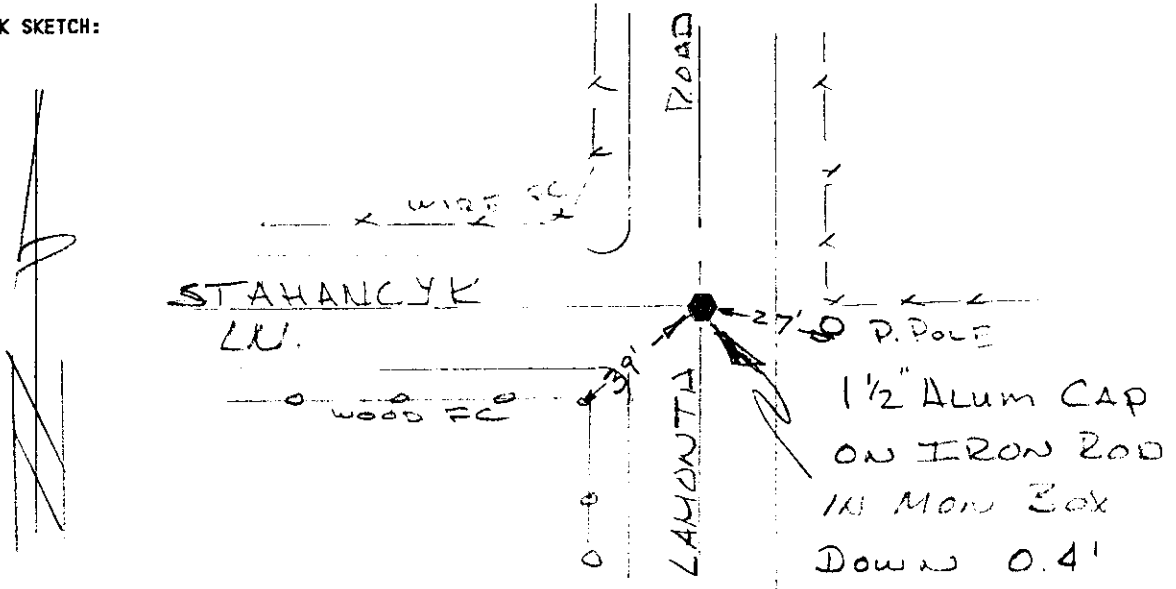
### GEODETIC AND MAPPING COORDINATES

<u>MARK: 14150100</u>	<u>HORIZONTAL ORDER: FIRST</u>	
Latitude:	44°22'38.538655"	ONE SIGMA ERROR
Longitude:	120°53'11.379817"	
Northing:	502413.4066	0.019
Easting:	3403778.125	0.019
Convergence:	+ 0°16'39.1582"	
Scale Factor:	1.000172297769	
Ellipsoid Height:	2915.2972	0.027
Orthometric Height:	2978.7109	0.090
Geoid Height:	-63.4137	

# CONTROL MARK DATA

NAME OF MARK: 14151300 COUNTY: CROOK  
MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
DATE OF MARK: 1987 COUNTRY: U.S.A.  
LOCATION: SECTION 13 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: OLCM N-21

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

## GEODETTIC AND MAPPING COORDINATES

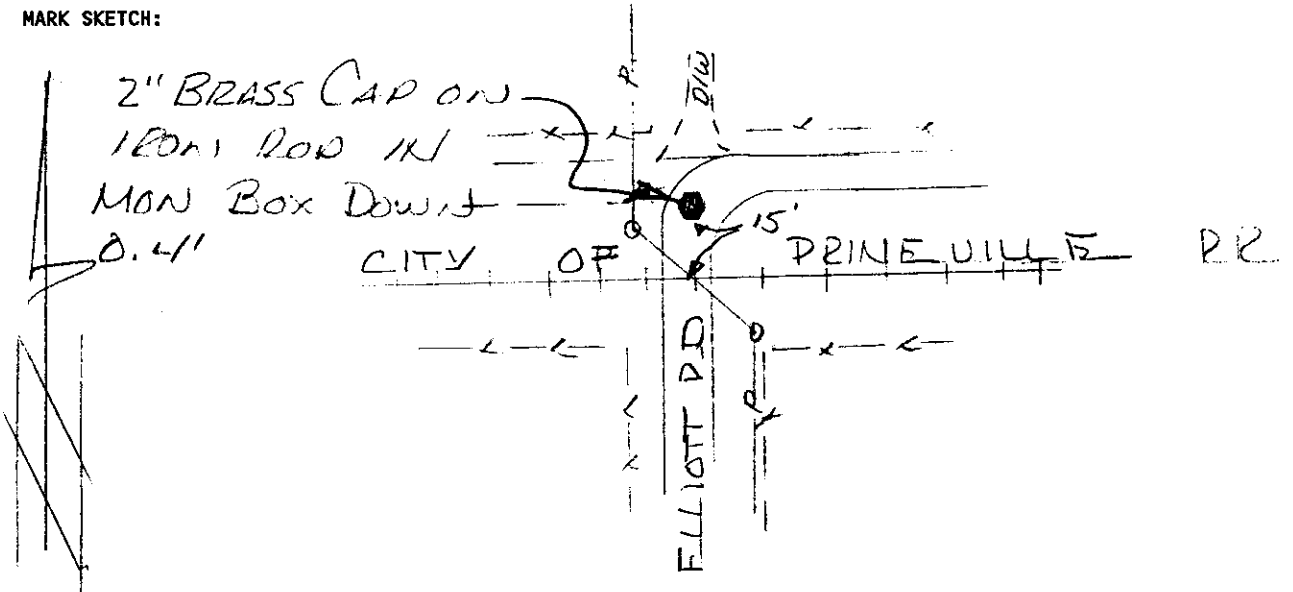
MARK: 14151300 HORIZONTAL ORDER: FIRST

Latitude:	44°20'54.162696"	ONE SIGMA ERROR
Longitude:	120°53'11.556126"	0.014
Northing:	491841.7048	0.014
Easting:	3403816.508	0.014
Convergence:	+ 0°16'38.5181"	
Scale Factor:	1.000172306952	
Ellipsoid Height:	2862.8009	0.020
Orthometric Height:	2926.3796	0.076
Geoid Height:	-63.5787	

## CONTROL MARK DATA

NAME OF MARK: 14151500 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1987 COUNTRY: U.S.A.  
 LOCATION: SECTION 15 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM N-13

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

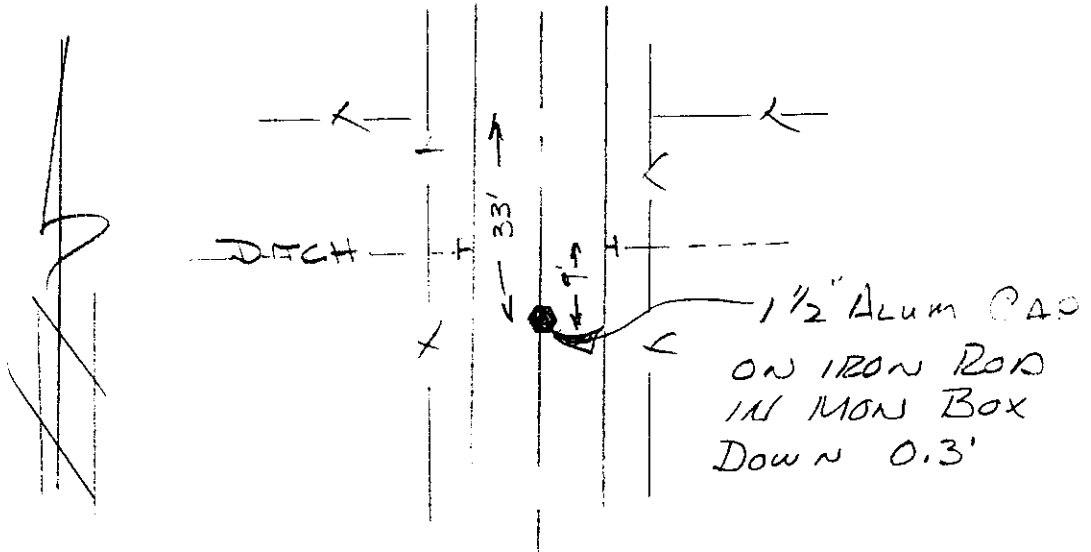
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: 14151500</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°20'54.986233"	ONE SIGMA ERROR
Longitude:	120°55'36.588644"	
Northing:	491876.6791	0.015
Easting:	3393275.4618	0.015
Convergence:	+ 0°14'57.1390"	
Scale Factor:	1.000169934631	
Ellipsoid Height:	2763.4919	0.021
Orthometric Height:	2827.3885	FIXED
Geoid Height:	-63.8966	

### CONTROL MARK DATA

NAME OF MARK: 14152200 COUNTY: CROOK  
MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
DATE OF MARK: 1987 COUNTRY: U.S.A.  
LOCATION: SECTION 22 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: OLCM R-13

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

#### GEODETIC AND MAPPING COORDINATES

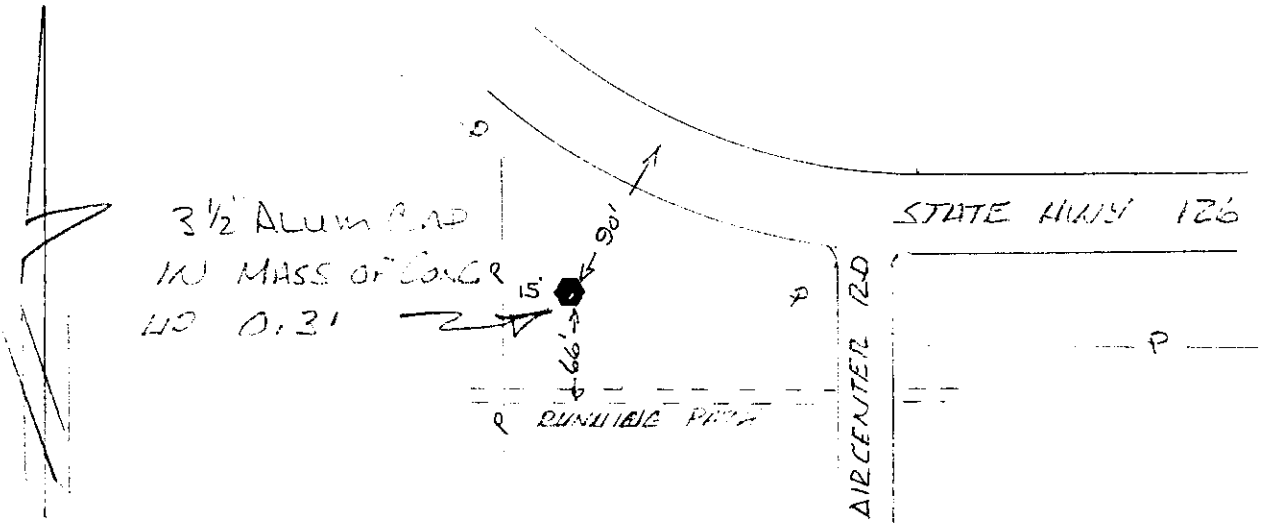
MARK: 14152200 HORIZONTAL ORDER: FIRST

Latitude:	<u>44°20'02.909778"</u>	ONE
Longitude:	<u>120°55'36.990944"</u>	SIGMA
Northing:	<u>486602.0483</u>	ERROR
Easting:	<u>3393269.1547</u>	0.015
Convergence:	<u>+ 0°14'56.6261"</u>	0.014
Scale Factor:	<u>1.000169933322</u>	
Ellipsoid Height:	<u>2757.6385</u>	0.021
Orthometric Height:	<u>2821.5223</u>	0.047
Geoid Height:	<u>-63.8837</u>	

## CONTROL MARK DATA

NAME OF MARK: 15131400 COUNTY: DESCHUTES  
 MARK SET BY: LS 1031 W. C. KAUFFMAN STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 14 TOWNSHIP 15 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OCRR 1032

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

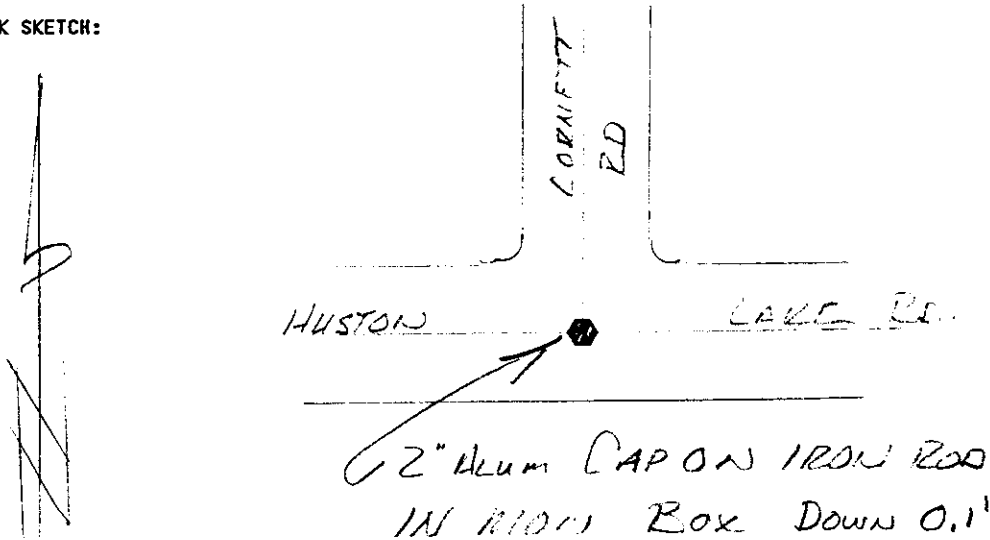
<u>MARK: 15131400</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°15'43.386380"	ONE SIGMA ERROR
Longitude:	121°08'54.906150"	
Northing:	460142.9905	FIXED
Easting:	3335307.3725	FIXED
Convergence:	+ 0°05'38.5673"	
Scale Factor:	1.000161423489	
Ellipsoid Height:	2984.8917	FIXED
Orthometric Height:	3049.9081	FIXED
Geoid Height:	-65.0164	



## CONTROL MARK DATA

NAME OF MARK: 15140100 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 1 TOWNSHIP 15 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM E-21

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

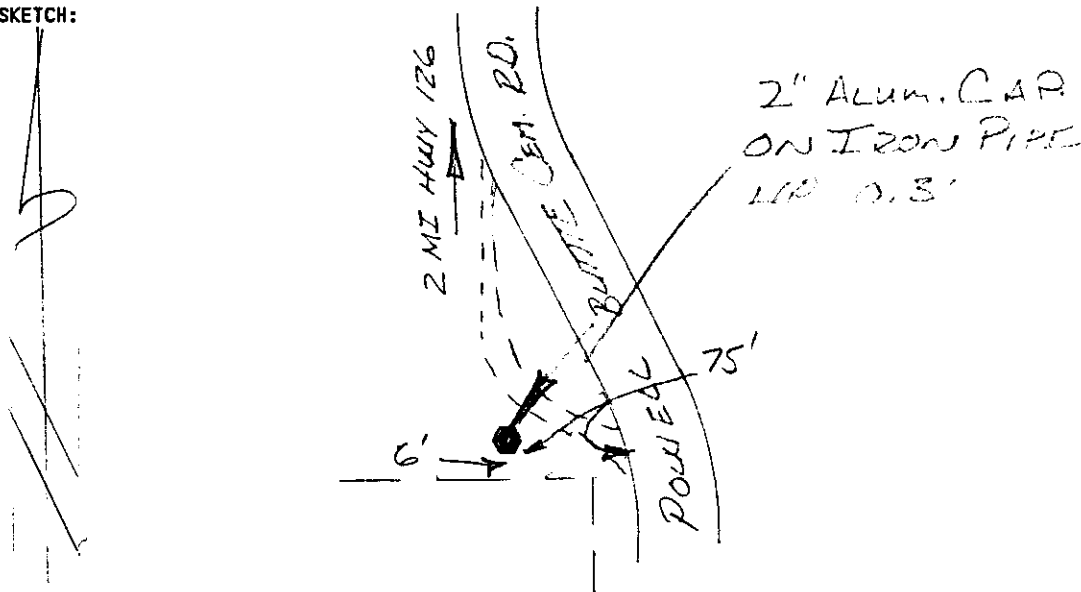
### GEODETIC AND MAPPING COORDINATES

<u>MARK: 15140100</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°17'27.799907"	ONE SIGMA ERROR
Longitude:	121°00'28.810271"	
Northing:	470810.2763	0.013
Easting:	3372107.8976	0.012
Convergence:	+ 0°11'32.1541"	
Scale Factor:	1.000165937277	
Ellipsoid Height:	2960.2487	0.018
Orthometric Height:	3024.5601	0.067
Geoid Height:	-64.3114	

## CONTROL MARK DATA

NAME OF MARK: 15143500 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1994 COUNTRY: U.S.A.  
 LOCATION: SECTION 35 TOWNSHIP 15 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM Z-17

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

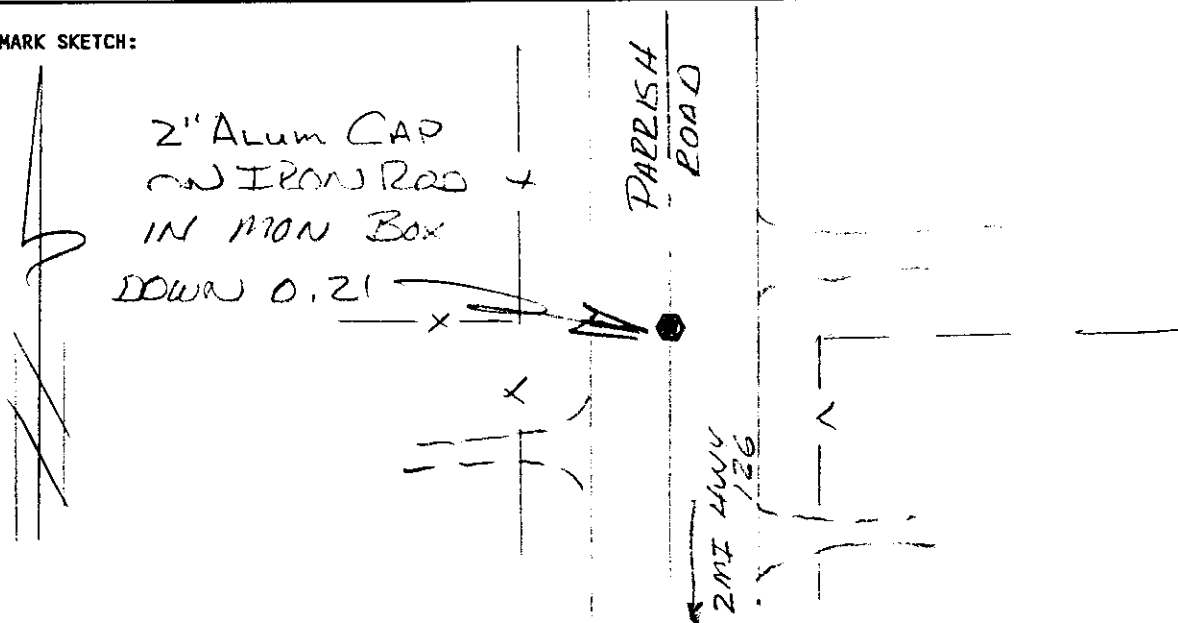
MARK: 15143500 HORIZONTAL ORDER: FIRST

Latitude:	44°13'07.211401"	ONE SIGMA ERROR
Longitude:	121°01'39.849891"	
Northing:	444400.5556	0.017
Easting:	3367022.0123	0.016
Convergence:	+ 0°10'41.7137"	
Scale Factor:	1.000165129366	
Ellipsoid Height:	3233.3619	0.025
Orthometric Height:	3297.3369	0.072
Geoid Height:	-63.975	

## CONTROL MARK DATA

NAME OF MARK: 15150800 COUNTY: CROOK  
 MARK SET BY: LS 1026 DAVID ARMSTRONG STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 8 TOWNSHIP 15 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OLCM J-5

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

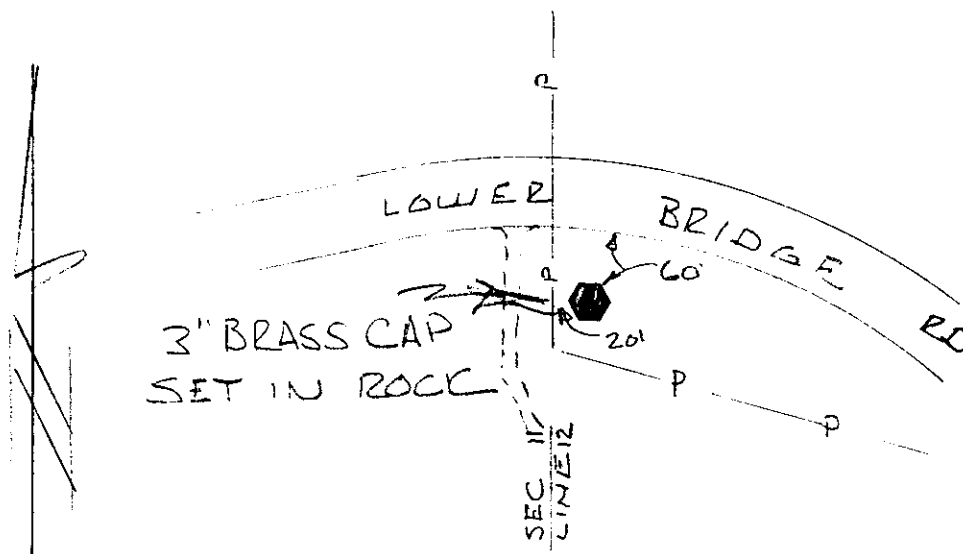
<u>MARK: 15150800</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°16'35.203702"</u>	ONE
Longitude:	<u>120°58'03.604773"</u>	SIGMA
Northing:	<u>465521.2289</u>	ERROR
Easting:	<u>3382691.923</u>	<u>0.012</u>
Convergence:	<u>+ 0°13'13.3455"</u>	<u>0.011</u>
Scale Factor:	<u>1.000167808181</u>	
Ellipsoid Height:	<u>3066.5046</u>	<u>0.017</u>
Orthometric Height:	<u>3130.4511</u>	<u>0.062</u>
Geoid Height:	<u>-63.9465</u>	



## CONTROL MARK DATA

NAME OF MARK: 2711 PP&L COUNTY: DESCHUTES  
 MARK SET BY: P. P. & L. STATE: OREGON  
 DATE OF MARK: 1929 COUNTRY: U.S.A.  
 LOCATION: SECTION 12 TOWNSHIP 14 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

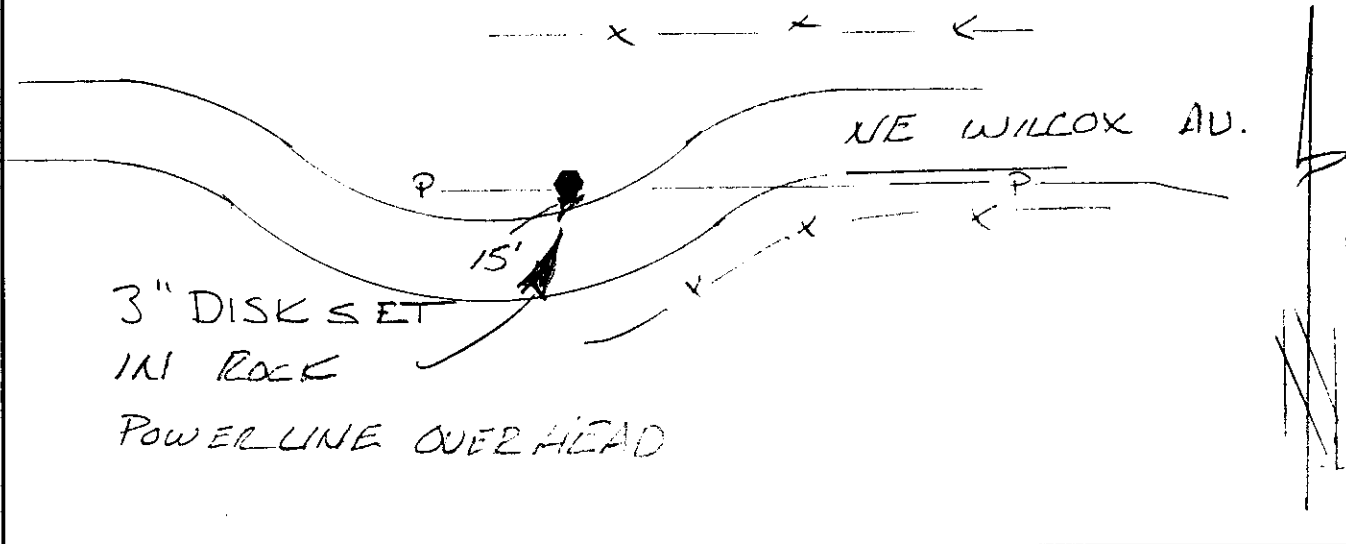
MARK: 2711 PP&L HORIZONTAL ORDER: FIRST

Latitude:	44°21'54.055874"	ONE
Longitude:	121°15'02.780596"	SIGMA
		ERROR
Northing:	497658.3367	0.008
Easting:	3308516.8653	0.008
Convergence:	+ 0°01'21.9630"	
Scale Factor:	1.000160082827	
Ellipsoid Height:	2644.3894	0.012
Orthometric Height:	2710.105	FIXED
Geoid Height:	-65.7156	

### CONTROL MARK DATA

NAME OF MARK: 2906 ORE COUNTY: DESCHUTES  
 MARK SET BY: GEOLOGICAL SURVEY STATE: OREGON  
 DATE OF MARK: 19?? COUNTRY: U.S.A.  
 LOCATION: SECTION 18 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

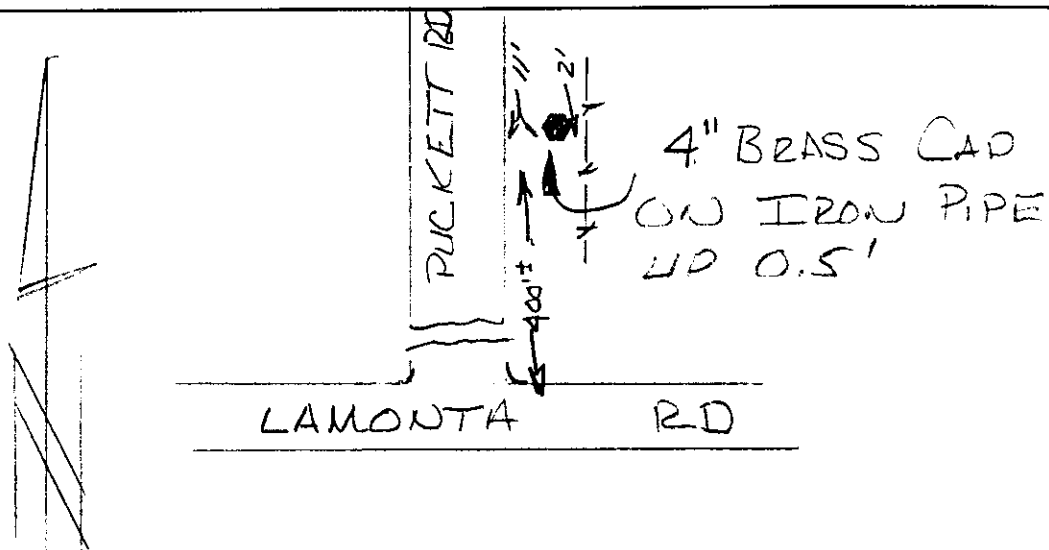
#### GEODETIC AND MAPPING COORDINATES

<u>MARK: 2906 ORE</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°21'21.820622"	ONE SIGMA ERROR
Longitude:	121°07'26.761093"	
Northing:	494432.1927	0.014
Easting:	3341656.4337	0.013
Convergence:	+ 0°06'40.7606"	
Scale Factor:	1.000161981427	
Ellipsoid Height:	2840.371	0.021
Orthometric Height:	2905.2596	0.060
Geoid Height:	-64.8886	

## CONTROL MARK DATA

NAME OF MARK: 2971 RESET COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1908 COUNTRY: U.S.A.  
 LOCATION: SECTION 2 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

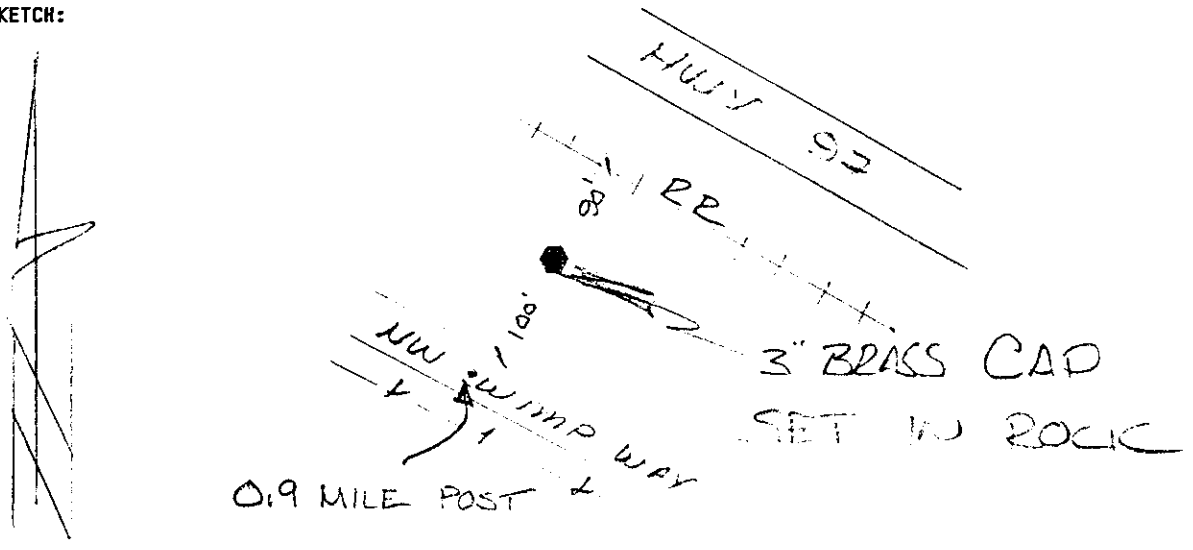
MARK: 2971 RESET HORIZONTAL ORDER: FIRST

Latitude:	44°22'43.406995"	ONE SIGMA ERROR
Longitude:	120°54'22.978224"	
Northing:	502881.931	0.017
Easting:	3398574.7879	0.016
Convergence:	+ 0°15'49.1054"	
Scale Factor:	1.000171095475	
Ellipsoid Height:	2904.634	0.024
Orthometric Height:	2968.1763	0.078
Geoid Height:	-63.5423	

## CONTROL MARK DATA

NAME OF MARK: B-366 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1942 COUNTRY: U.S.A.  
 LOCATION: SECTION 4 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

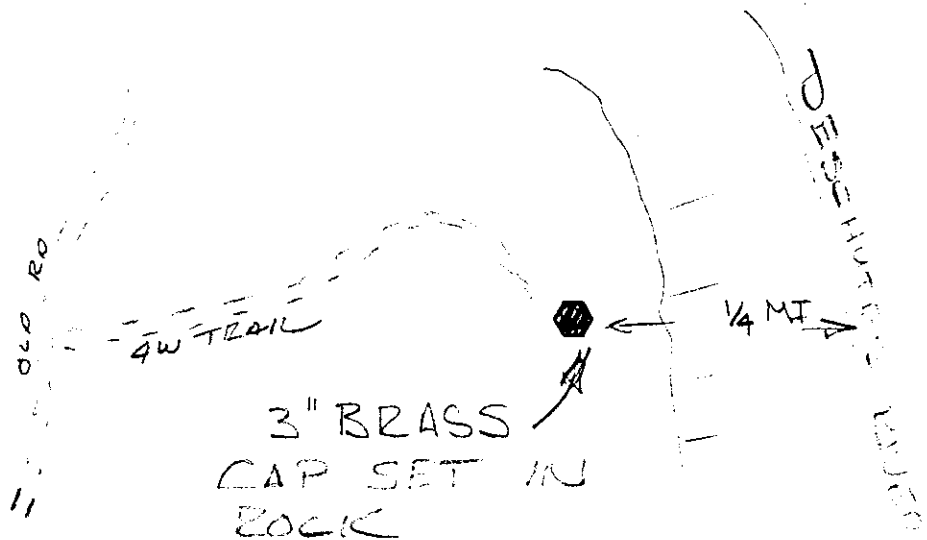
<u>MARK: B-366</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°23'02.731187"	ONE SIGMA ERROR
Longitude:	121°11'05.834702"	
Northing:	504627.8293	0.010
Easting:	3325724.4021	0.010
Convergence:	+ 0°04'07.7263"	
Scale Factor:	1.000160755616	
Ellipsoid Height:	2694.0661	0.014
Orthometric Height:	2759.229	FIXED
Geoid Height:	-65.1629	



## CONTROL MARK DATA

NAME OF MARK: BIG FALLS 1945 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1945 COUNTRY: U.S.A.  
 LOCATION: SECTION 4 TOWNSHIP 14 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 3

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

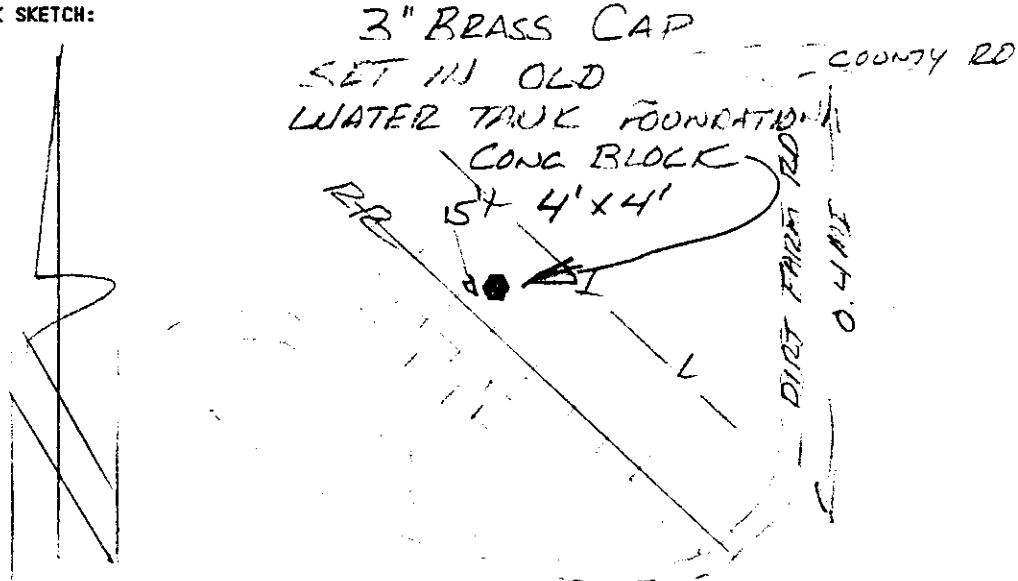
### GEODETIC AND MAPPING COORDINATES

<u>MARK: BIG FALLS 1945</u>	HORIZONTAL ORDER: <u>A</u>	
Latitude:	44°23'31.365800"	ONE SIGMA ERROR
Longitude:	121°17'46.935270"	
Northing:	507512.8992	FIXED
Easting:	3296591.3706	FIXED
Convergence:	- 0°00'32.8342"	
Scale Factor:	1.000160013267	
Ellipsoid Height:	2858.4843	FIXED
Orthometric Height:	2924.5034	0.072
Geoid Height:	-66.0191	

## CONTROL MARK DATA

NAME OF MARK: C-15 PP&L COUNTY: JEFFERSON  
 MARK SET BY: P. P. & L. STATE: OREGON  
 DATE OF MARK: 1926 COUNTRY: U.S.A.  
 LOCATION: SECTION 18 TOWNSHIP 13 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

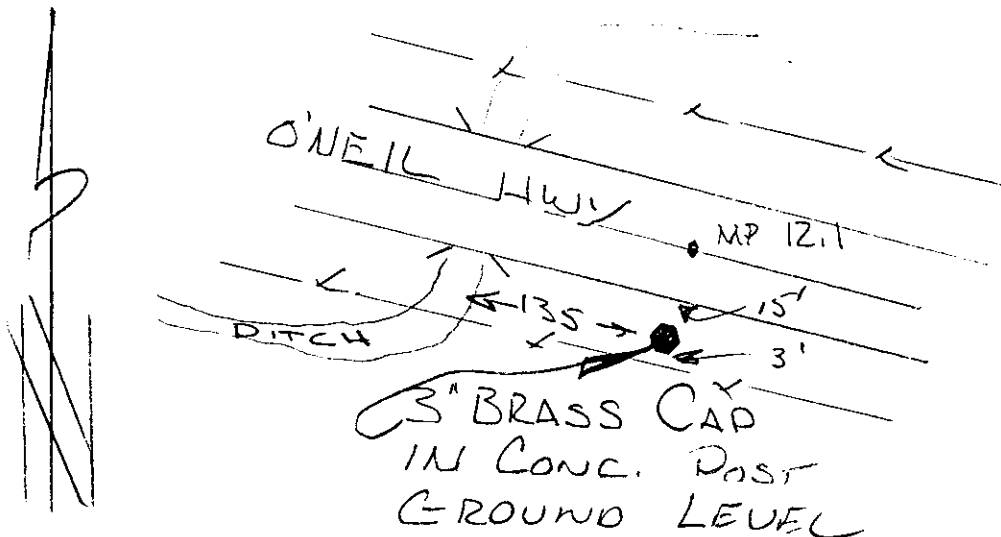
### GEODETIC AND MAPPING COORDINATES

<u>MARK: C-15 PP&amp;L</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°26'38.049066"	ONE
Longitude:	121°12'45.267020"	SIGMA
Northing:	526428.8648	ERROR
Easting:	3318483.3975	0.008
Convergence:	+ 0°02'58.3668"	0.008
Scale Factor:	1.000160390093	
Ellipsoid Height:	2791.3623	0.013
Orthometric Height:	2856.6601	FIXED
Geoid Height:	-65.2978	

## CONTROL MARK DATA

NAME OF MARK: C-457 COUNTY: CROOK  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1953 COUNTRY: U.S.A.  
 LOCATION: SECTION 20 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

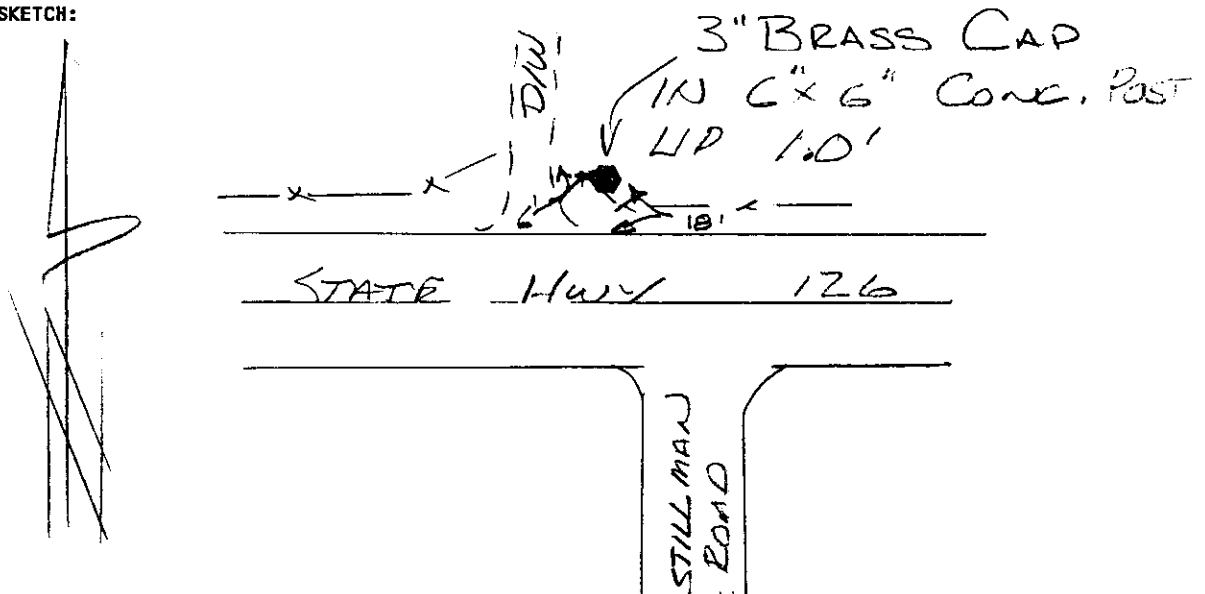
### GEODETIC AND MAPPING COORDINATES

<u>MARK: C-457</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°20'15.921997"</u>	ONE SIGMA ERROR
Longitude:	<u>120°57'03.633018"</u>	
Northing:	<u>487893.5195</u>	<u>0.013</u>
Easting:	<u>3386965.3103</u>	<u>0.012</u>
Convergence:	<u>+ 0°13'56.1299"</u>	
Scale Factor:	<u>1.000168635943</u>	
Ellipsoid Height:	<u>2751.0131</u>	<u>0.018</u>
Orthometric Height:	<u>2815.0361</u>	<u>FIXED</u>
Geoid Height:	<u>-64.023</u>	

## CONTROL MARK DATA

NAME OF MARK: C-463 COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1936 COUNTRY: U.S.A.  
 LOCATION: SECTION 20 TOWNSHIP 15 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

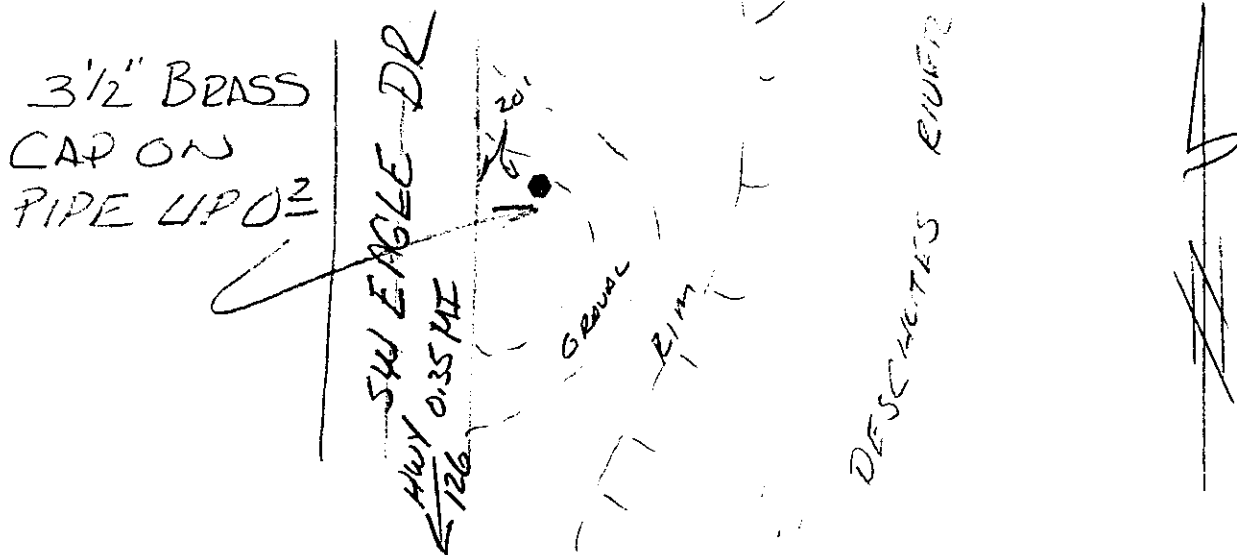
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: C-463</u>	HORIZONTAL ORDER: FIRST
Latitude:	44°14'51.087520" <span style="float: right;">ONE SIGMA ERROR</span>
Longitude:	120°57'45.313982" <span style="float: right;">0.015</span>
Northing:	454981.2495 <span style="float: right;">0.014</span>
Easting:	3384064.0886 <span style="float: right;">0.020</span>
Convergence:	+ 0°13'25.6975" <span style="float: right;">FIXED</span>
Scale Factor:	1.000168069520
Ellipsoid Height:	3169.2169
Orthometric Height:	3232.9757
Geoid Height:	-63.7588

### CONTROL MARK DATA

NAME OF MARK: CLINE FALLS COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1945 COUNTRY: U.S.A.  
 LOCATION: SECTION 11 TOWNSHIP 15 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

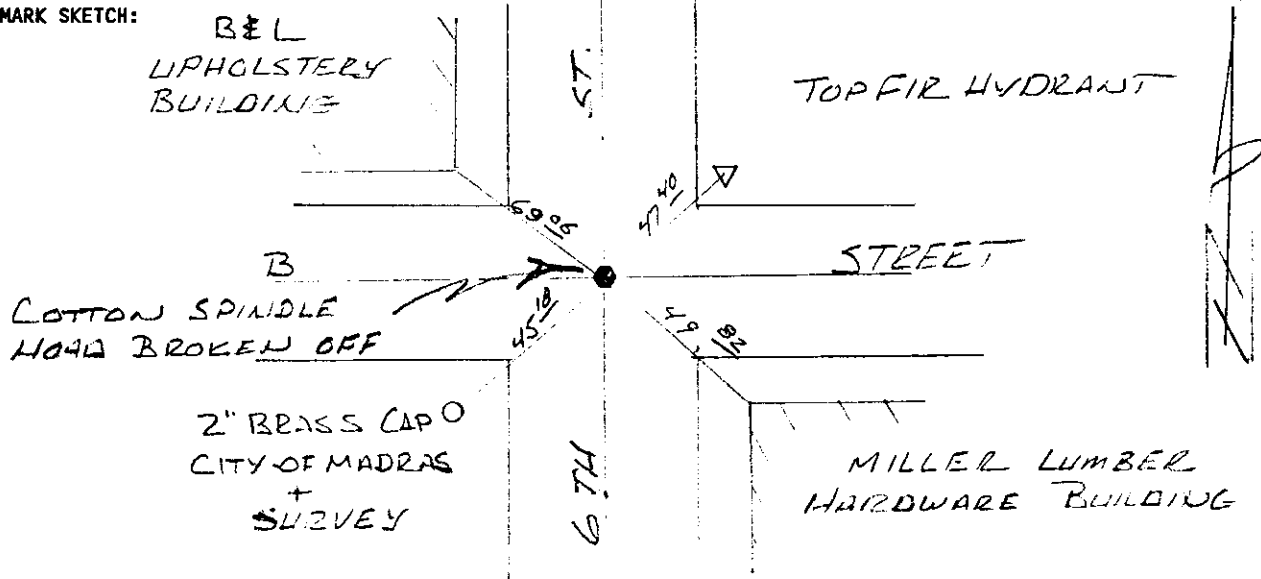
#### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>CLINE FALLS</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°16'41.810500"	ONE SIGMA ERROR
Longitude:	121°15'30.541500"	
Northing:	466032.3417	FIXED
Easting:	3306509.4115	FIXED
Convergence:	+ 0°01'02.4549"	
Scale Factor:	1.000160048384	
Ellipsoid Height:	2853.6048	0.016
Orthometric Height:	2919.147	FIXED
Geoid Height:	-65.5422	

## CONTROL MARK DATA

NAME OF MARK: COTTON 1 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1992 COUNTRY: U.S.A.  
 LOCATION: SECTION 1 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 14

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

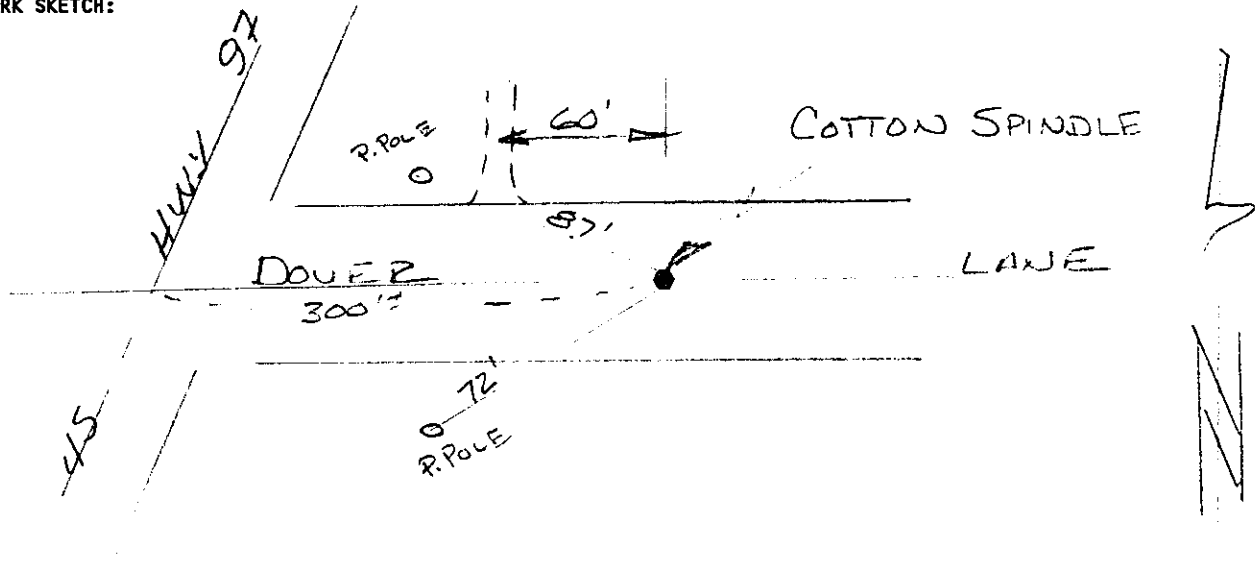
### GEODETIC AND MAPPING COORDINATES

<u>MARK: COTTON 1</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°38'09.416789"	ONE SIGMA ERROR
Longitude:	121°07'42.683555"	
Northing:	596485.9257	0.019
Easting:	3340306.1096	0.018
Convergence:	+ 0°06'31.5708"	
Scale Factor:	1.000161854928	
Ellipsoid Height:	2175.0841	0.016
Orthometric Height:	2241.1942	FIXED
Geoid Height:	-66.1101	

## CONTROL MARK DATA

NAME OF MARK: COTTON 2 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1992 COUNTRY: U.S.A.  
 LOCATION: SECTION 23 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 14

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

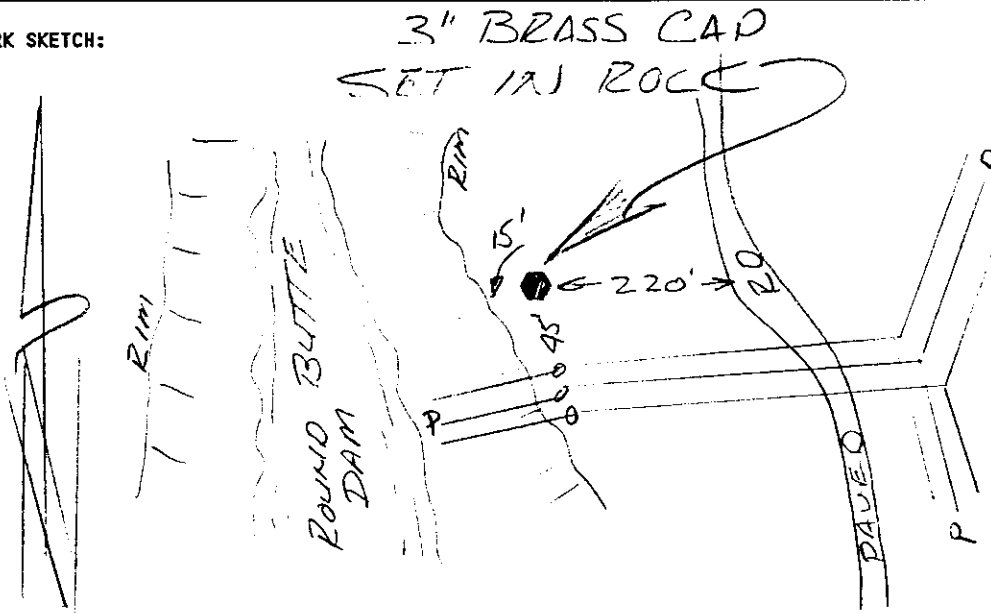
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>COTTON 2</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°35'33.177825"	ONE SIGMA ERROR
Longitude:	121°08'47.723884"	
Northing:	580652.2812	0.023
Easting:	3335628.8042	0.022
Convergence:	+ 0°05'45.6079"	
Scale Factor:	1.000161449413	
Ellipsoid Height:	2414.0808	0.032
Orthometric Height:	2479.9738	0.054
Geoid Height:	-65.8929	

## CONTROL MARK DATA

NAME OF MARK: CROOK COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1946 COUNTRY: U.S.A.  
 LOCATION: SECTION 2 TOWNSHIP 12 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

MARK: <u>CROOK</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°33'37.743659"</u>	ONE
Longitude:	<u>121°15'39.678247"</u>	SIGMA
Northing:	<u>568931.1326</u>	ERROR
Easting:	<u>3305816.5347</u>	<u>0.014</u>
Convergence:	<u>+ 0°00'56.3587"</u>	<u>0.013</u>
Scale Factor:	<u>1.000160038630</u>	
Ellipsoid Height:	<u>2532.3447</u>	<u>0.025</u>
Orthometric Height:	<u>2598.7702</u>	<u>0.111</u>
Geoid Height:	<u>-66.4255</u>	

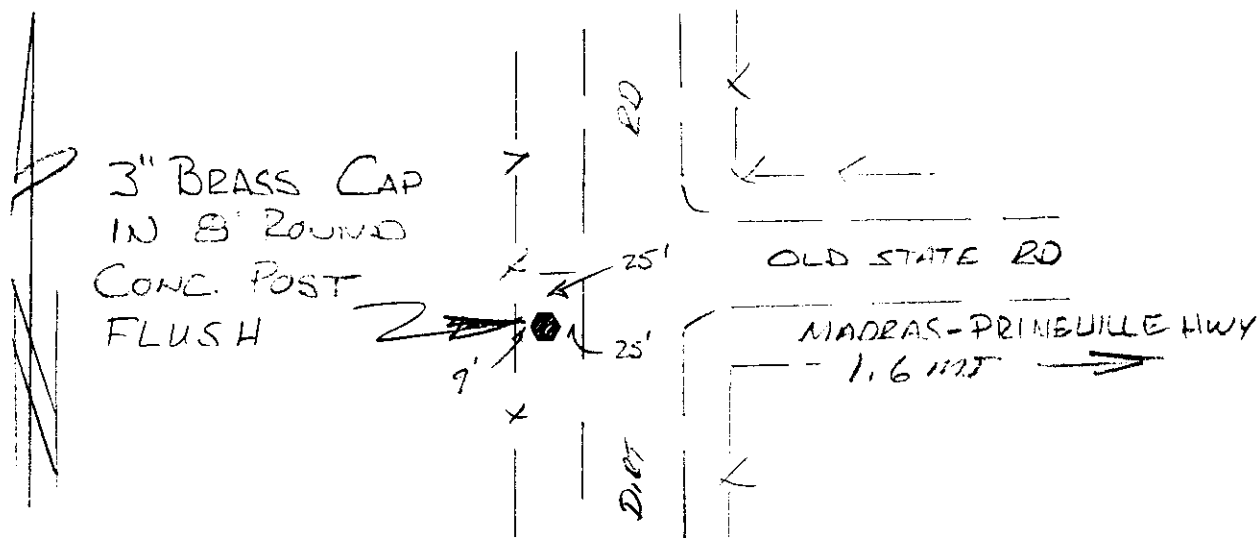




## CONTROL MARK DATA

NAME OF MARK: F-336 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1938 COUNTRY: U.S.A.  
 LOCATION: SECTION 32 TOWNSHIP 12 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994

FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

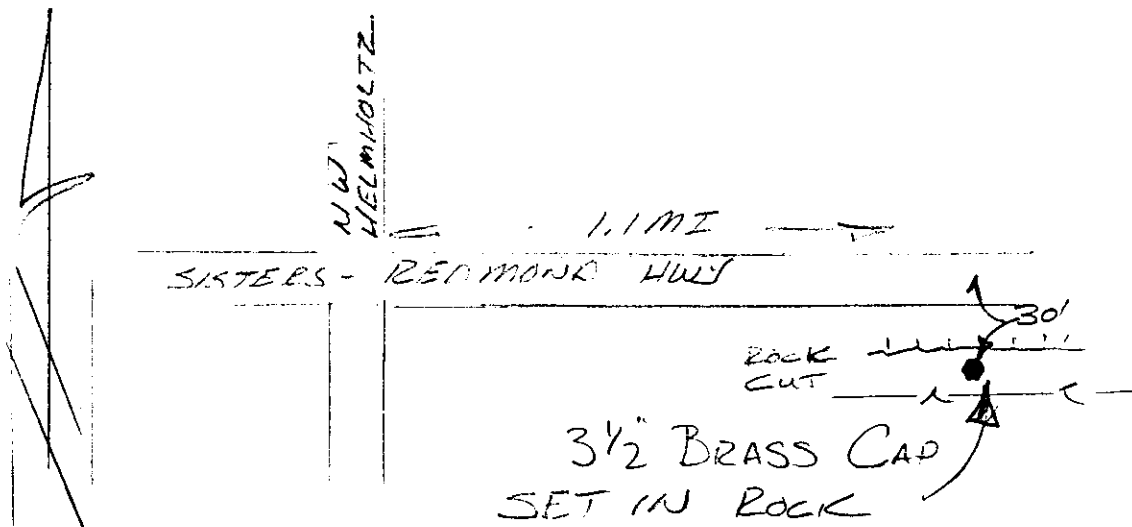
GEODETIC AND MAPPING COORDINATES

<u>MARK: F-336</u>	HORIZONTAL ORDER: <u>FIRST</u>
Latitude:	44°29'02.219737" <span style="float: right;">ONE SIGMA ERROR</span>
Longitude:	121°04'47.279400"
Northing:	541089.4652 <span style="float: right;">0.012</span>
Easting:	3353129.7947 <span style="float: right;">0.012</span>
Convergence:	+ 0°08'33.4253"
Scale Factor:	1.000163223127
Ellipsoid Height:	3053.1335 <span style="float: right;">0.021</span>
Orthometric Height:	3117.4016 <span style="float: right;">FIXED</span>
Geoid Height:	-64.2681

## CONTROL MARK DATA

NAME OF MARK: F-735 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1987 COUNTRY: U.S.A.  
 LOCATION: SECTION 17 TOWNSHIP 15 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

**MARK SKETCH:**



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

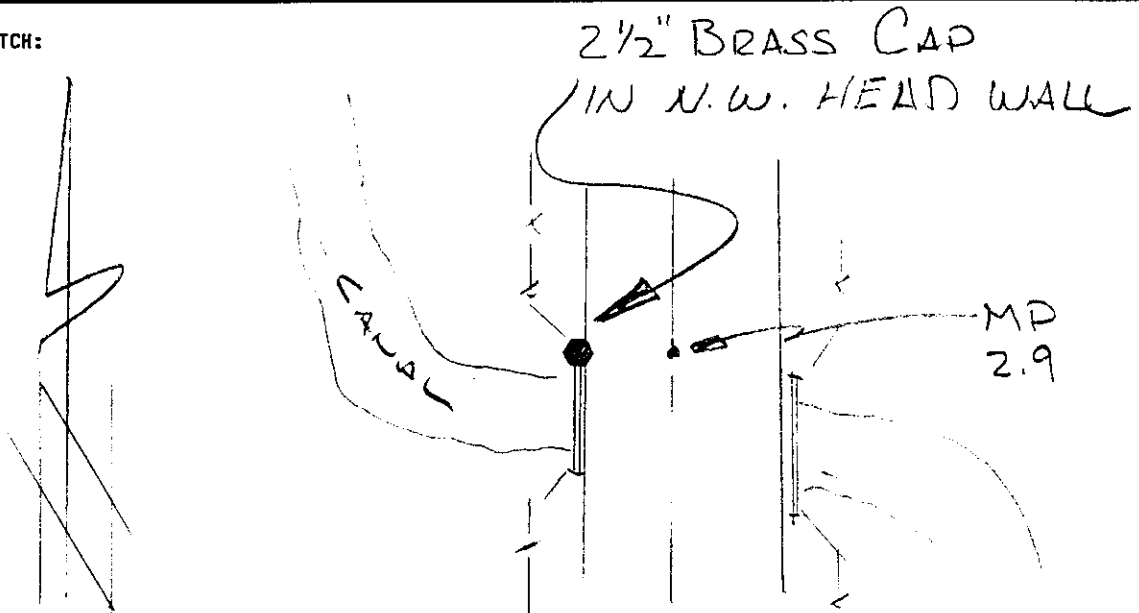
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: F-735</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°16'08.890129"	ONE SIGMA ERROR
Longitude:	121°11'50.760859"	
Northing:	462708.8715	0.011
Easting:	3322505.1506	0.011
Convergence:	+ 0°03'35.8582"	
Scale Factor:	1.000160578344	
Ellipsoid Height:	2939.91	0.015
Orthometric Height:	3005.1444	FIXED
Geoid Height:	-65.2344	

## CONTROL MARK DATA

NAME OF MARK: G-111 COUNTY: DESCHUTES  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1926 COUNTRY: U.S.A.  
 LOCATION: SECTION 33 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

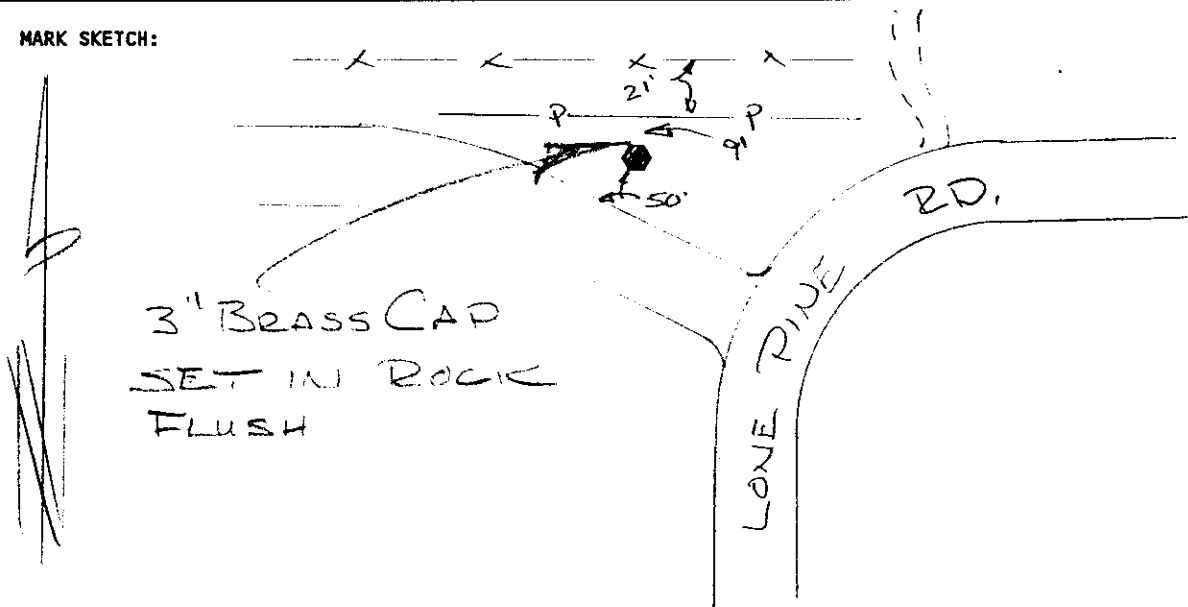
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: G-111</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°19'06.724701"	ONE SIGMA ERROR
Longitude:	121°10'07.475841"	
Northing:	480729.6631	0.010
Easting:	3329996.6528	0.010
Convergence:	+ 0°04'48.2089"	
Scale Factor:	1.000161027455	
Ellipsoid Height:	2887.0139	0.013
Orthometric Height:	2952.1522	FIXED
Geoid Height:	-65.1383	

## CONTROL MARK DATA

NAME OF MARK: G-455 COUNTY: CROOK  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1953 COUNTRY: U.S.A.  
 LOCATION: SECTION 19 TOWNSHIP 14 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

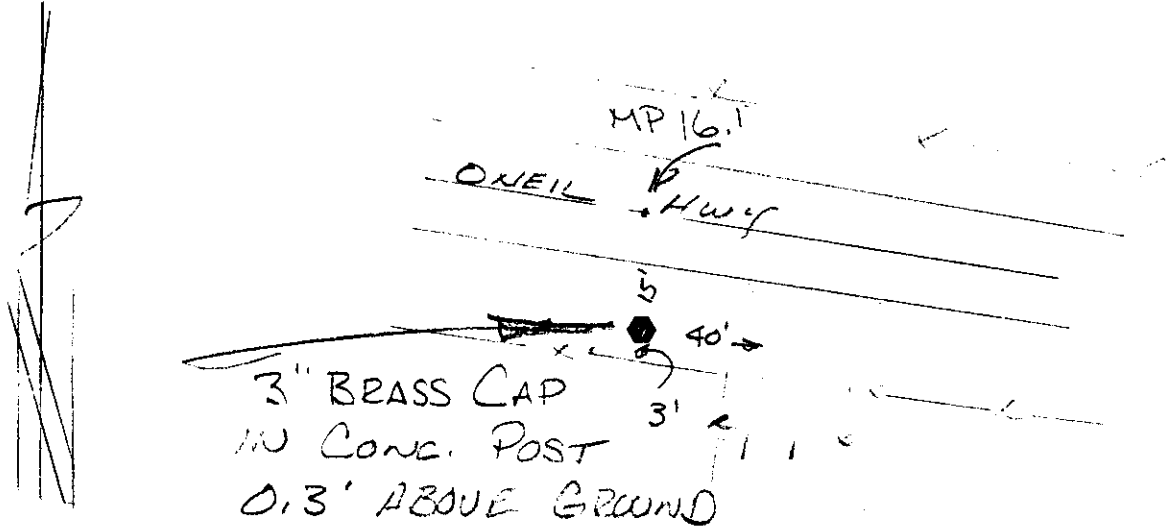
### GEODETIC AND MAPPING COORDINATES

<u>MARK: G-455</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°20'56.251613"	ONE SIGMA ERROR
Longitude:	121°05'18.980639"	
Northing:	491862.5131	0.015
Easting:	3350948.2064	0.014
Convergence:	+ 0°08'10.0321"	
Scale Factor:	1.000162963962	
Ellipsoid Height:	2773.312	0.021
Orthometric Height:	2838.0821	0.053
Geoid Height:	-64.7701	

## CONTROL MARK DATA

NAME OF MARK: G-457 COUNTY: CROOK  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1953 COUNTRY: U.S.A.  
 LOCATION: SECTION 35 TOWNSHIP 14 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

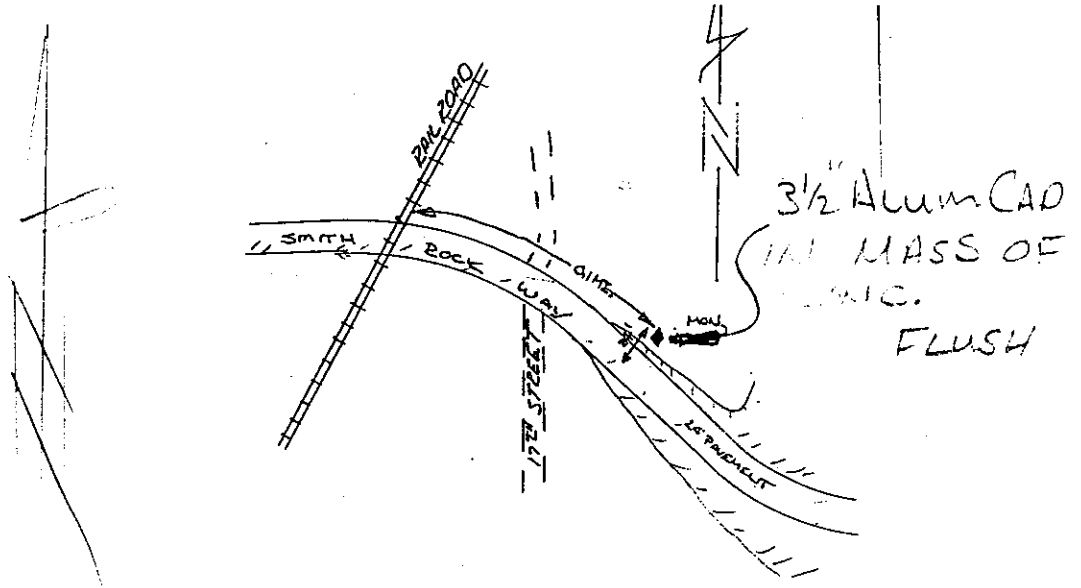
### GEODETIC AND MAPPING COORDINATES

<u>MARK: G-457</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°18'38.526205"	ONE SIGMA ERROR
Longitude:	120°53'25.134943"	
Northing:	478099.1913	0.013
Easting:	3402895.4757	0.013
Convergence:	+ 0°16'28.3605"	
Scale Factor:	1.000172089658	
Ellipsoid Height:	2778.7973	0.019
Orthometric Height:	2842.3647	0.071
Geoid Height:	-63.5674	

## CONTROL MARK DATA

NAME OF MARK: GIS 0021 COUNTY: DESCHUTES  
 MARK SET BY: DESCHUTES CO. PUBLIC WORKS STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 16 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 5

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

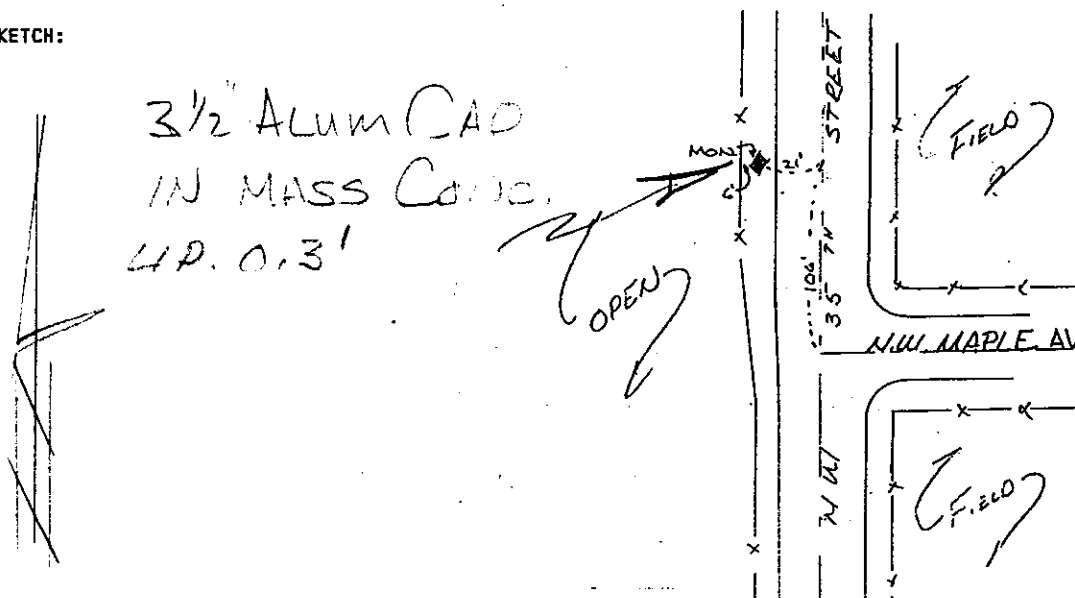
### GEODETIC AND MAPPING COORDINATES

<u>MARK: GIS 0021</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°21'01.231340"</u>	ONE SIGMA ERROR
Longitude:	<u>121°10'16.763540"</u>	
Northing:	<u>492326.3839</u>	FIXED
Easting:	<u>3329305.4539</u>	FIXED
Convergence:	<u>+ 0°04'41.8802"</u>	
Scale Factor:	<u>1.000160980643</u>	
Ellipsoid Height:	<u>2801.893</u>	FIXED
Orthometric Height:	<u>2866.9948</u>	FIXED
Geoid Height:	<u>-65.1018</u>	

## CONTROL MARK DATA

NAME OF MARK: GIS 0022 COUNTY: DESCHUTES  
 MARK SET BY: DESCHUTES CO. PUBLIC WORKS STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 6 TOWNSHIP 15 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 5

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

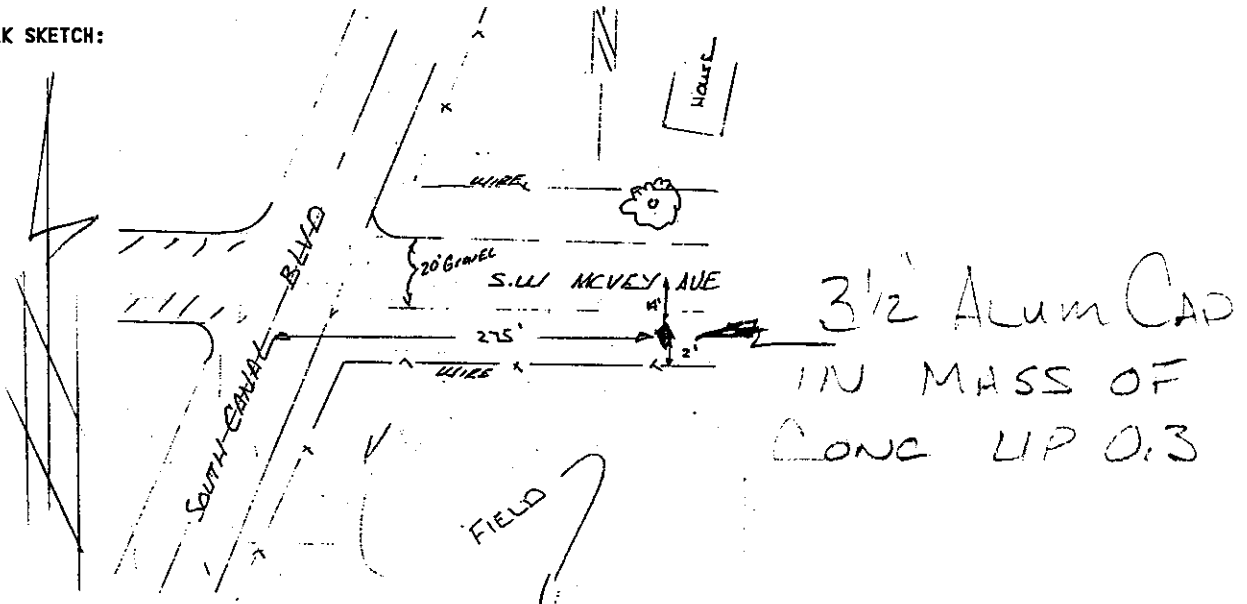
MARK: <u>GIS 0022</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°17'28.648220"</u>	ONE SIGMA ERROR
Longitude:	<u>121°12'33.565460"</u>	
Northing:	<u>470783.953</u>	FIXED
Easting:	<u>3319382.7229</u>	FIXED
Convergence:	<u>+ 0°03'06.0530"</u>	
Scale Factor:	<u>1.000160428992</u>	
Ellipsoid Height:	<u>2883.8517</u>	FIXED
Orthometric Height:	<u>2949.1783</u>	0.044
Geoid Height:	<u>-65.3266</u>	



## CONTROL MARK DATA

NAME OF MARK: GIS 0023 COUNTY: DESCHUTES  
 MARK SET BY: DESCHUTES CO. PUBLIC WORKS STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 36 TOWNSHIP 15 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 5

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

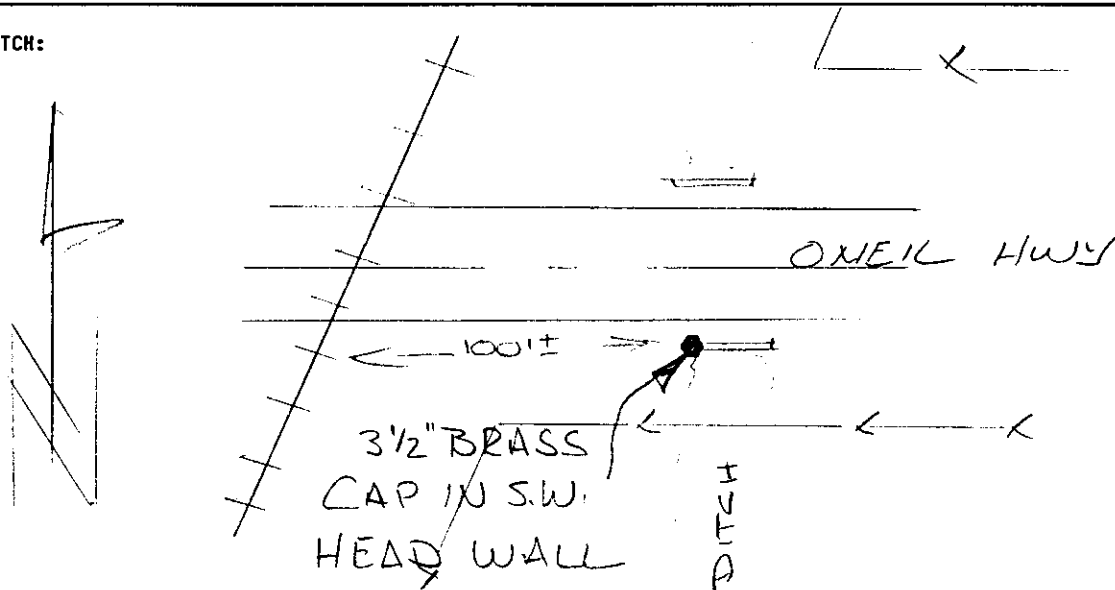
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: GIS 0023</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°13'06.655070"	ONE SIGMA ERROR
Longitude:	121°13'48.386980"	
Northing:	444244.4739	FIXED
Easting:	3313956.7691	FIXED
Convergence:	+ 0°02'13.6303"	
Scale Factor:	1.000160222432	
Ellipsoid Height:	3060.3018	FIXED
Orthometric Height:	3125.5971	FIXED
Geoid Height:	-65.2953	

### CONTROL MARK DATA

NAME OF MARK: H-478 COUNTY: DESCHUTES  
MARK SET BY: U.S. C. & G.S. STATE: OREGON  
DATE OF MARK: 1941 COUNTRY: U.S.A.  
LOCATION: SECTION 34 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

#### GEODETIC AND MAPPING COORDINATES

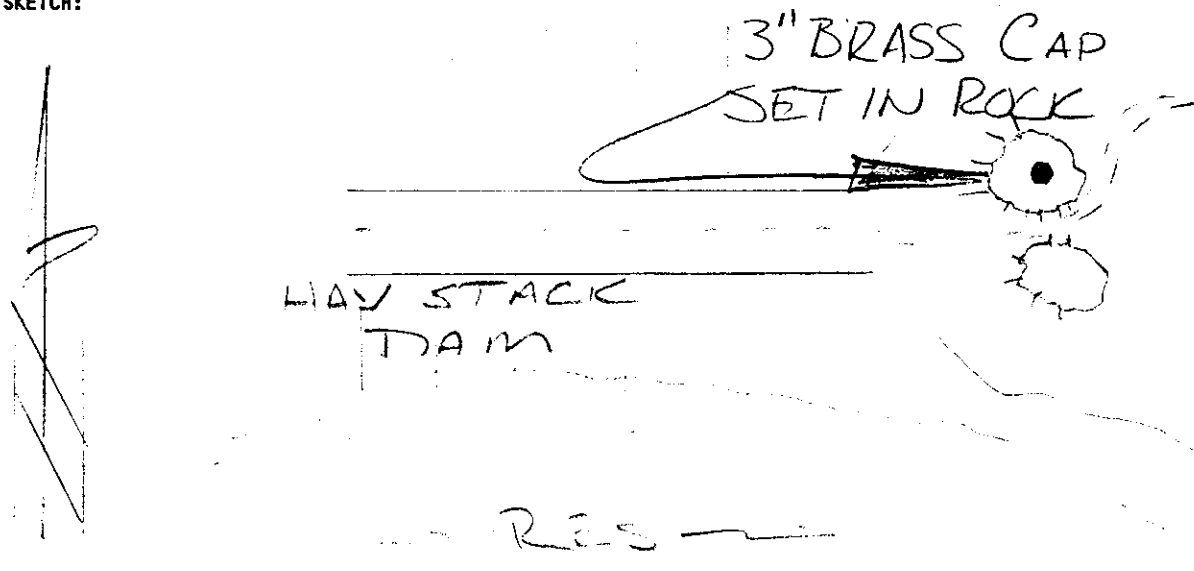
MARK: H-478 HORIZONTAL ORDER: FIRST

Latitude:	44°19'11.650410"	ONE SIGMA ERROR
Longitude:	121°09'04.752914"	
Northing:	481235.413	0.013
Easting:	3334556.7412	0.012
Convergence:	+ 0°05'32.0383"	
Scale Factor:	1.000161363587	
Ellipsoid Height:	2879.052	0.017
Orthometric Height:	2944.1109	FIXED
Geoid Height:	-65.0589	

**CONTROL MARK DATA**

NAME OF MARK: HAY COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1990 COUNTRY: U.S.A.  
 LOCATION: SECTION 27 TOWNSHIP 12 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 3

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

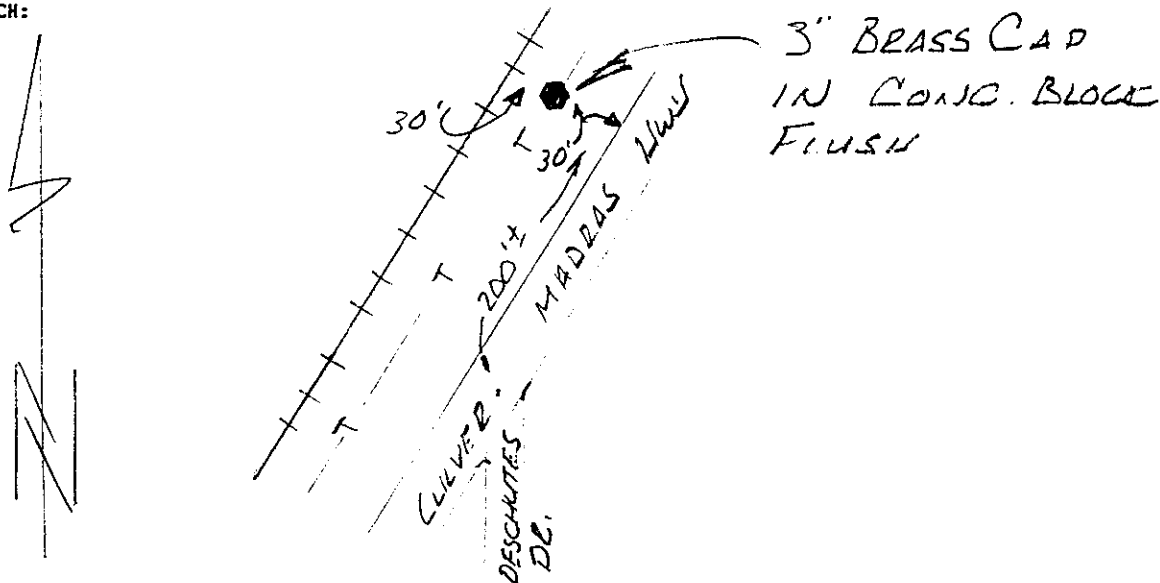
**GEODETTIC AND MAPPING COORDINATES**

<u>MARK:</u> <u>HAY</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°30'00.004910"</u>	ONE SIGMA ERROR
Longitude:	<u>121°09'13.886760"</u>	
Northing:	<u>546902.9569</u>	FIXED
Easting:	<u>3333788.7437</u>	FIXED
Convergence:	<u>+ 0°05'26.7034"</u>	
Scale Factor:	<u>1.000161303596</u>	
Ellipsoid Height:	<u>2804.3346</u>	<u>0.016</u>
Orthometric Height:	<u>2869.3396</u>	<u>0.068</u>
Geoid Height:	<u>-65.005</u>	

## CONTROL MARK DATA

NAME OF MARK: J-366 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1938 COUNTRY: U.S.A.  
 LOCATION: SECTION 33 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

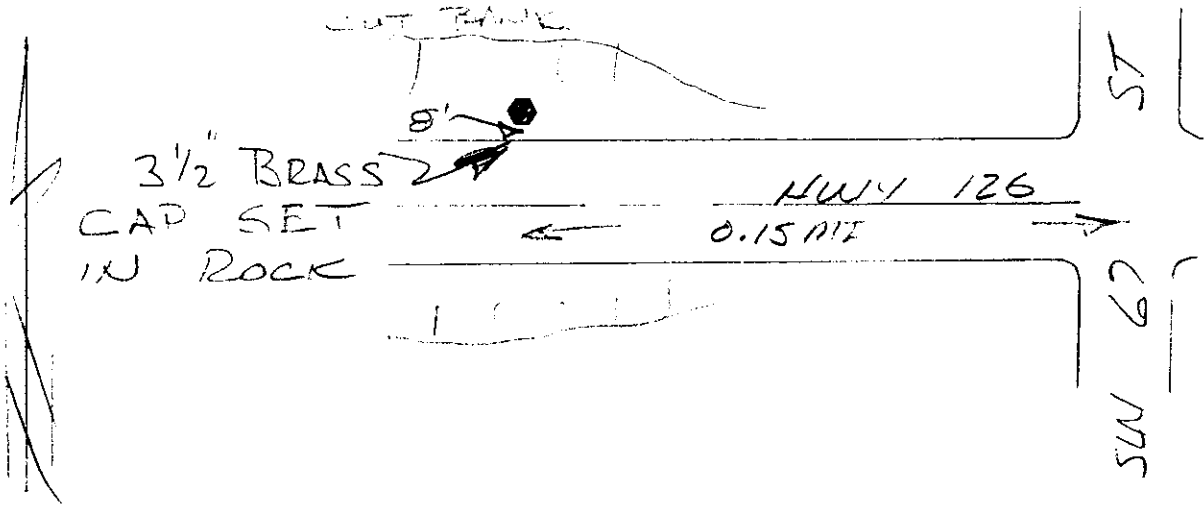
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: J-366</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°34'28.090493"	ONE SIGMA ERROR
Longitude:	121°11'23.516722"	
Northing:	574043.8049	0.010
Easting:	3324360.7451	0.009
Convergence:	+ 0°03'56.1561"	
Scale Factor:	1.000160677598	
Ellipsoid Height:	2480.3582	0.018
Orthometric Height:	2546.3896	0.070
Geoid Height:	-66.0314	

## CONTROL MARK DATA

NAME OF MARK: J-735 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 17 TOWNSHIP 15 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

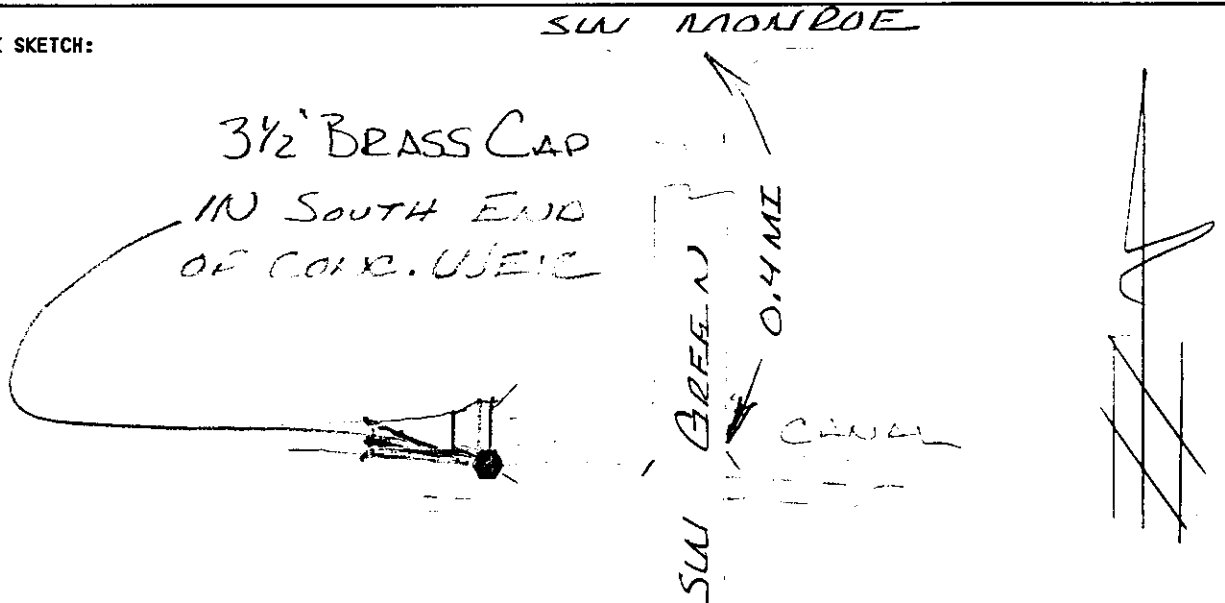
### GEODETIC AND MAPPING COORDINATES

<u>MARK: J-735</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°16'23.382607"	ONE SIGMA ERROR
Longitude:	121°15'16.011370"	
Northing:	464166.2624	0.011
Easting:	3307567.3474	0.011
Convergence:	+ 0°01'12.5924"	
Scale Factor:	1.000160065390	
Ellipsoid Height:	2853.8441	0.015
Orthometric Height:	2919.357	FIXED
Geoid Height:	-65.5129	

## CONTROL MARK DATA

NAME OF MARK: JUIN AZ NO.2 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1974 COUNTRY: U.S.A.  
 LOCATION: SECTION 11 TOWNSHIP 13 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

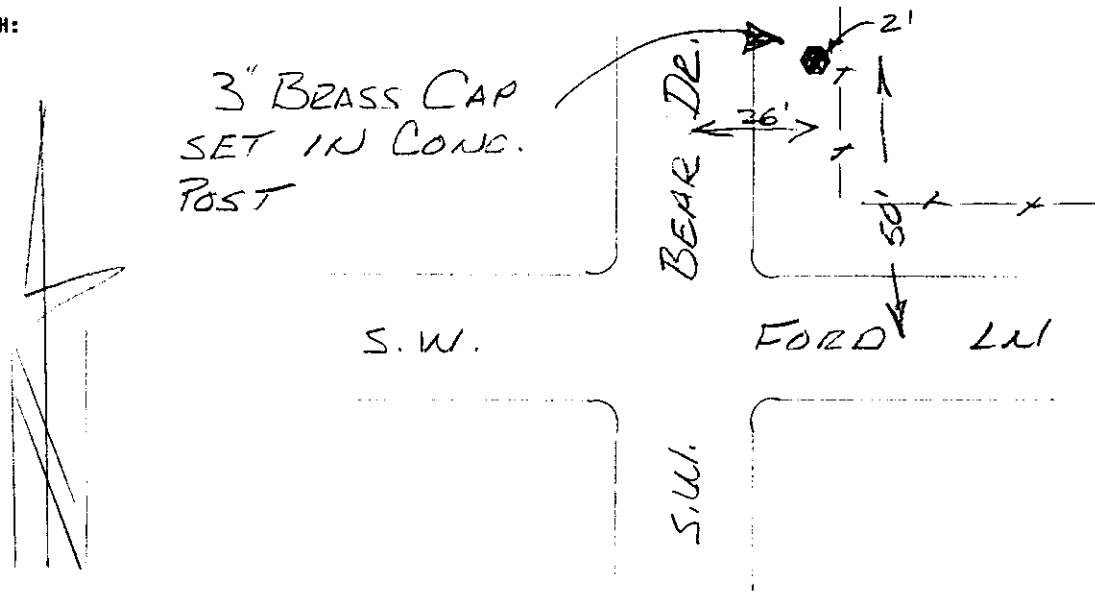
### GEODETIC AND MAPPING COORDINATES

<u>MARK:</u> <u>JUIN AZ NO.2</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°27'36.586625"	ONE
Longitude:	121°14'59.393960"	SIGMA
Northing:	532351.6863	ERROR
Easting:	3308748.7334	0.008
Convergence:	+ 0°01'24.4741"	0.008
Scale Factor:	1.000160087396	
Ellipsoid Height:	2800.306	0.014
Orthometric Height:	2866.0248	0.076
Geoid Height:	-65.7189	

## CONTROL MARK DATA

NAME OF MARK: K-336 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1938 COUNTRY: U.S.A.  
 LOCATION: SECTION 3 TOWNSHIP 12 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

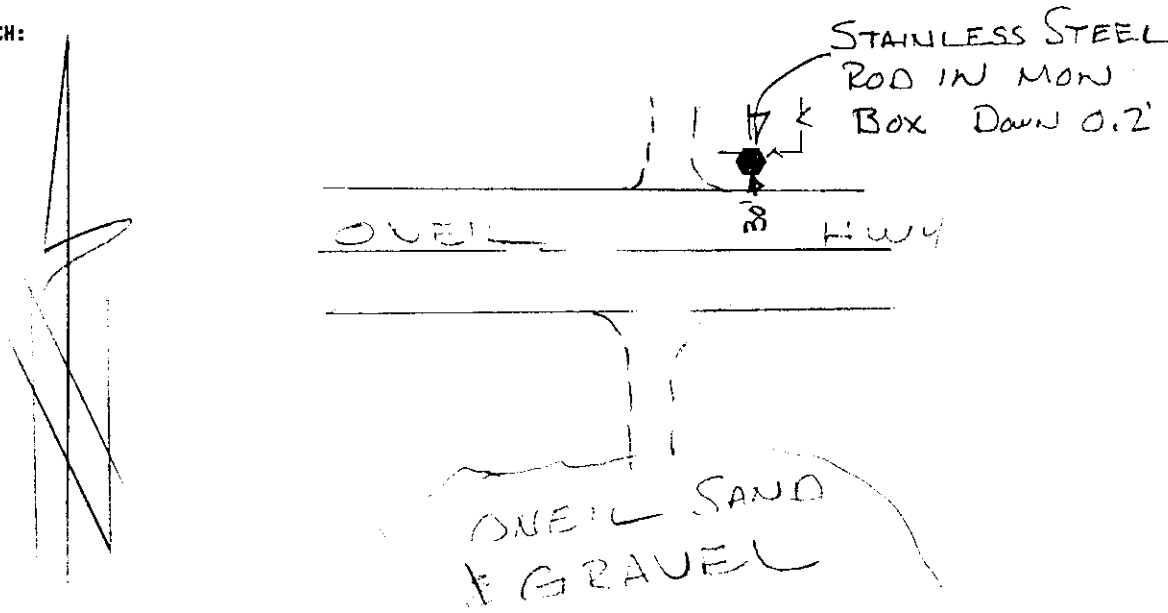
### GEODETIC AND MAPPING COORDINATES

<u>MARK: K-336</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°33'10.667842"	ONE SIGMA ERROR
Longitude:	121°09'34.387246"	
Northing:	566212.3504	0.011
Easting:	3332273.3985	0.011
Convergence:	+ 0°05'12.6280"	
Scale Factor:	1.000161189277	
Ellipsoid Height:	2541.6426	0.020
Orthometric Height:	2607.219	FIXED
Geoid Height:	-65.5764	

## CONTROL MARK DATA

NAME OF MARK: K-752 COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1958 COUNTRY: U.S.A.  
 LOCATION: SECTION 30 TOWNSHIP 14 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

MARK: K-752 HORIZONTAL ORDER: FIRST

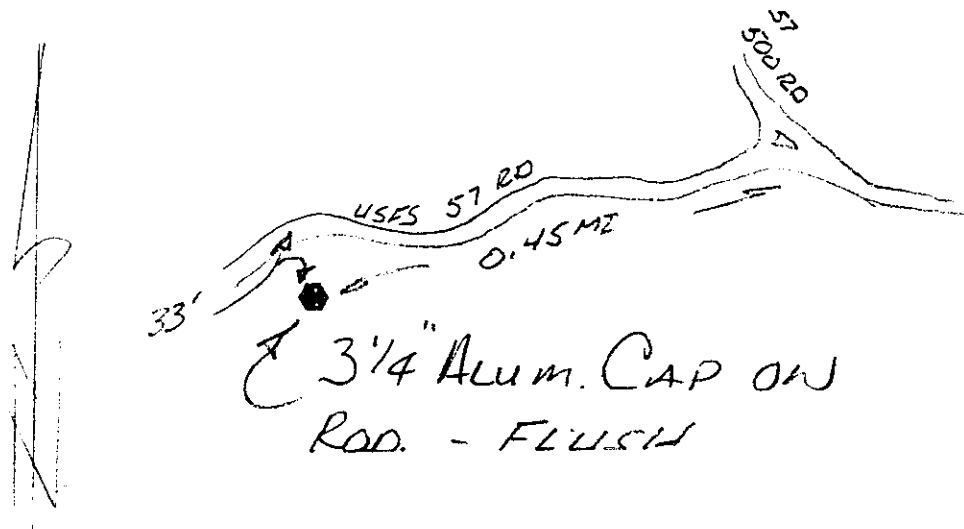
Latitude:	44°19'48.334073"	ONE SIGMA ERROR
Longitude:	121°05'27.688621"	
Northing:	484982.0737	0.012
Easting:	3350331.4704	0.012
Convergence:	+ 0°08'03.7820"	
Scale Factor:	1.000162892651	
Ellipsoid Height:	2737.5465	0.017
Orthometric Height:	2802.3753	FIXED
Geoid Height:	-64.8288	



## CONTROL MARK DATA

NAME OF MARK: KINGS GAP (USFS) COUNTY: JEFFERSON  
 MARK SET BY: U.S. GOVERNMENT (USFS) STATE: OREGON  
 DATE OF MARK: 1991 COUNTRY: U.S.A.  
 LOCATION: SECTION 19 TOWNSHIP 13 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

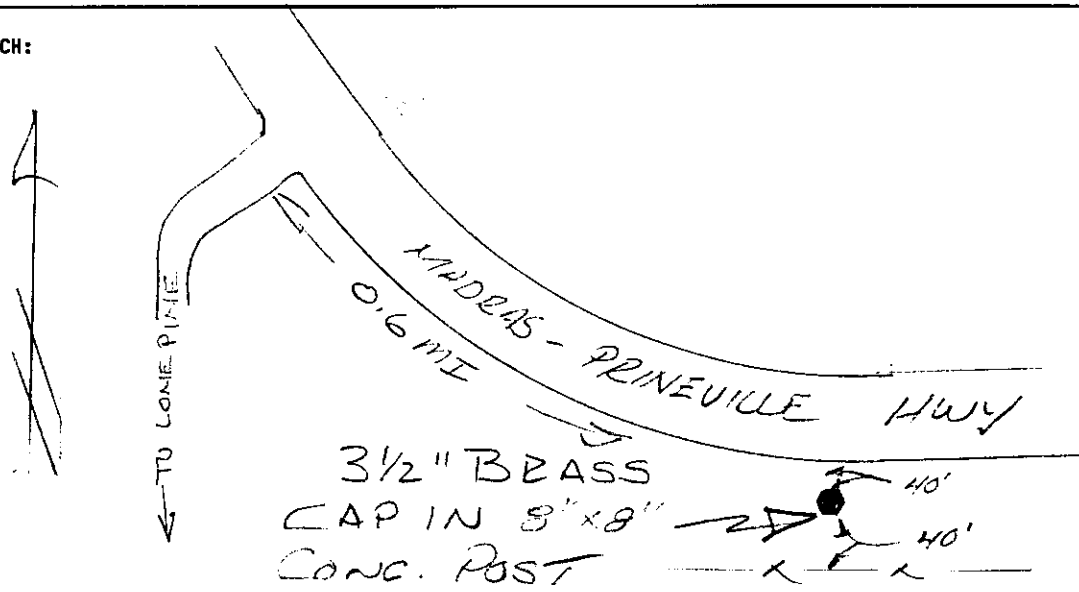
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: KINGS GAP (USFS)</u>	<u>HORIZONTAL ORDER: FIRST</u>	
Latitude:	44°25'51.317512"	ONE
Longitude:	121°06'04.463534"	SIGMA
Northing:	521740.5687	ERROR
Easting:	3347576.1886	0.011
Convergence:	+ 0°07'38.9083"	0.010
Scale Factor:	1.000162584554	
Ellipsoid Height:	3774.7673	0.017
Orthometric Height:	3839.0793	0.072
Geoid Height:	-64.312	

## CONTROL MARK DATA

NAME OF MARK: L-367 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1942 COUNTRY: U.S.A.  
 LOCATION: SECTION 23 TOWNSHIP 13 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

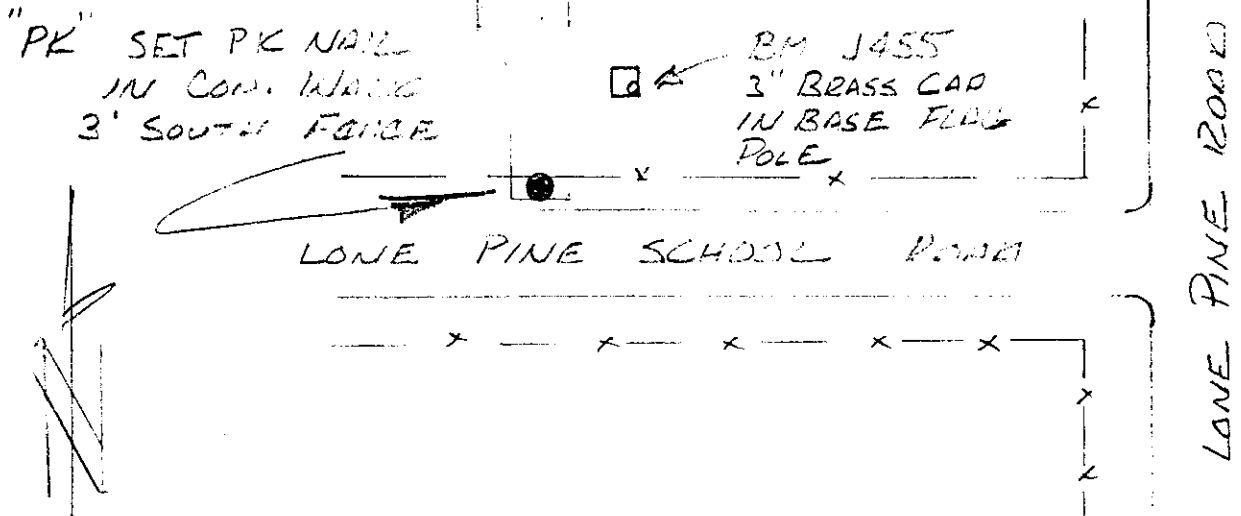
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: L-367</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°25'29.835877"	ONE
Longitude:	121°01'37.826961"	SIGMA
Northing:	519616.6037	ERROR
Easting:	3366934.4058	0.014
Convergence:	+ 0°10'45.4998"	0.014
Scale Factor:	1.000165115717	
Ellipsoid Height:	3090.9252	0.021
Orthometric Height:	3154.7999	FIXED
Geoid Height:	-63.8747	

## CONTROL MARK DATA

NAME OF MARK: LONE PINE SCHOOL PK COUNTY: CROOK  
 MARK SET BY: DESCHUTES CO. SURVEYOR STATE: OREGON  
 DATE OF MARK: 1994 COUNTRY: U.S.A.  
 LOCATION: SECTION 5 TOWNSHIP 14 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 14

MARK SKETCH: OLD LONE PINE SCHOOL



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

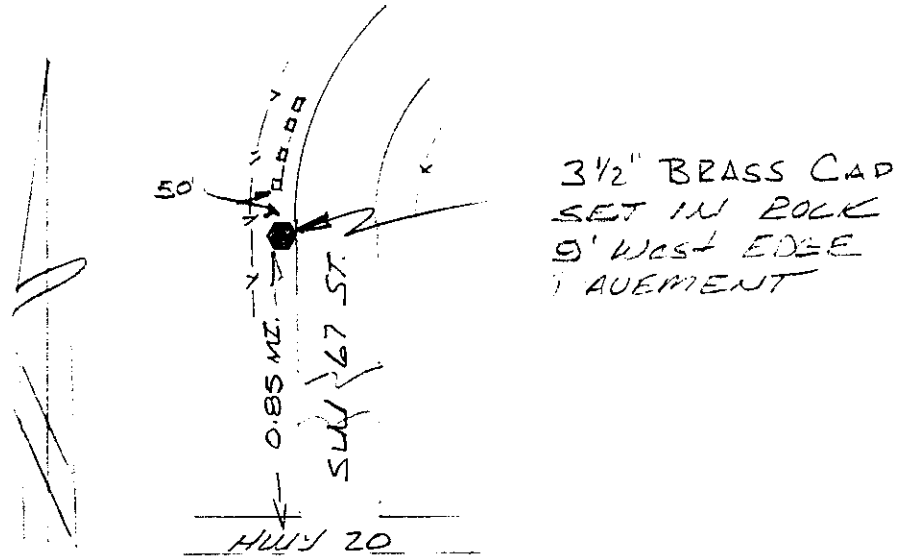
MARK: LONE PINE SCHOOL HORIZONTAL ORDER: FIRST

Latitude:	44°22'40.876596"	ONE
Longitude:	121°04'07.132269"	SIGMA
Northing:	502472.4133	ERROR
Easting:	3356142.1908	0.013
Convergence:	+ 0°09'00.5367"	0.013
Scale Factor:	1.000163599074	
Ellipsoid Height:	2812.2452	0.019
Orthometric Height:	2876.7454	FIXED
Geoid Height:	-64.5002	

## CONTROL MARK DATA

NAME OF MARK: M-419 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1946 COUNTRY: U.S.A.  
 LOCATION: SECTION 11 TOWNSHIP 15 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

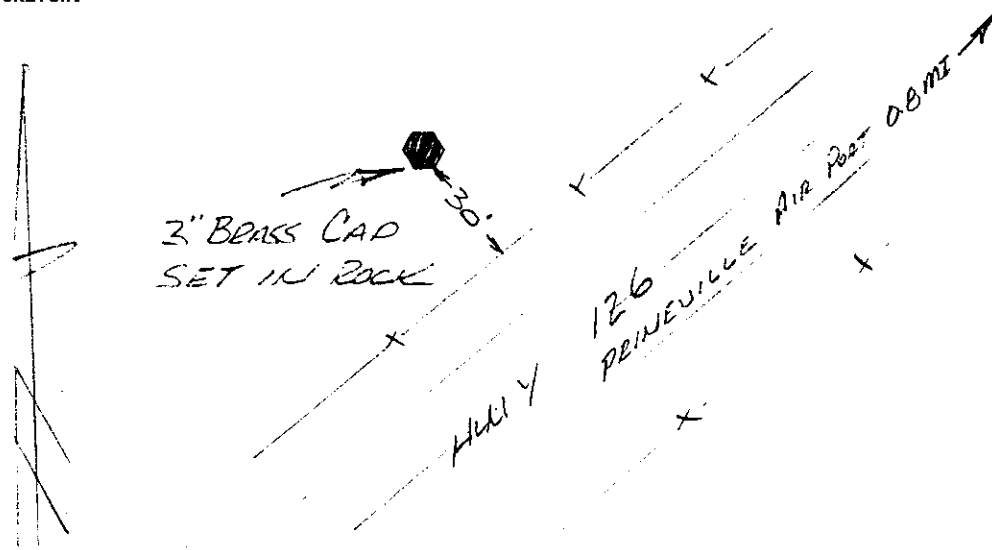
### GEODETIC AND MAPPING COORDINATES

<u>MARK: M-419</u>	<u>HORIZONTAL ORDER: FIRST</u>	
Latitude:	44°17'08.077392"	ONE
Longitude:	121°15'02.369311"	SIGMA
Northing:	468693.443	ERROR
Easting:	3308558.2901	0.016
Convergence:	+ 0°01'22.1339"	0.016
Scale Factor:	1.000160083636	
Ellipsoid Height:	2842.7424	0.023
Orthometric Height:	2908.2907	FIXED
Geoid Height:	-65.5483	

## CONTROL MARK DATA

NAME OF MARK: N-463 COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1936 COUNTRY: U.S.A.  
 LOCATION: SECTION 14 TOWNSHIP 15 S. RANGE 15 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

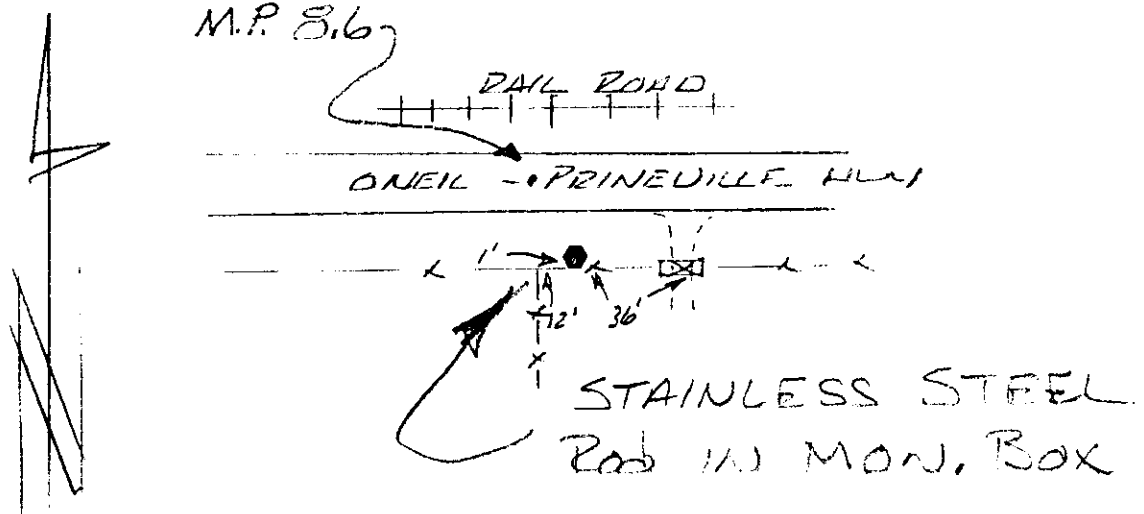
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: N-463</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°16'34.202321"	ONE SIGMA ERROR
Longitude:	120°54'19.927459"	
Northing:	465488.5706	0.013
Easting:	3398968.6937	0.012
Convergence:	+ 0°15'49.4976"	
Scale Factor:	1.000171184598	
Ellipsoid Height:	3201.7976	0.018
Orthometric Height:	3265.315	FIXED
Geoid Height:	-63.5174	

**CONTROL MARK DATA**

NAME OF MARK: N-752 COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1988 COUNTRY: U.S.A.  
 LOCATION: SECTION 26 TOWNSHIP 14 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

**GEODETIC AND MAPPING COORDINATES**

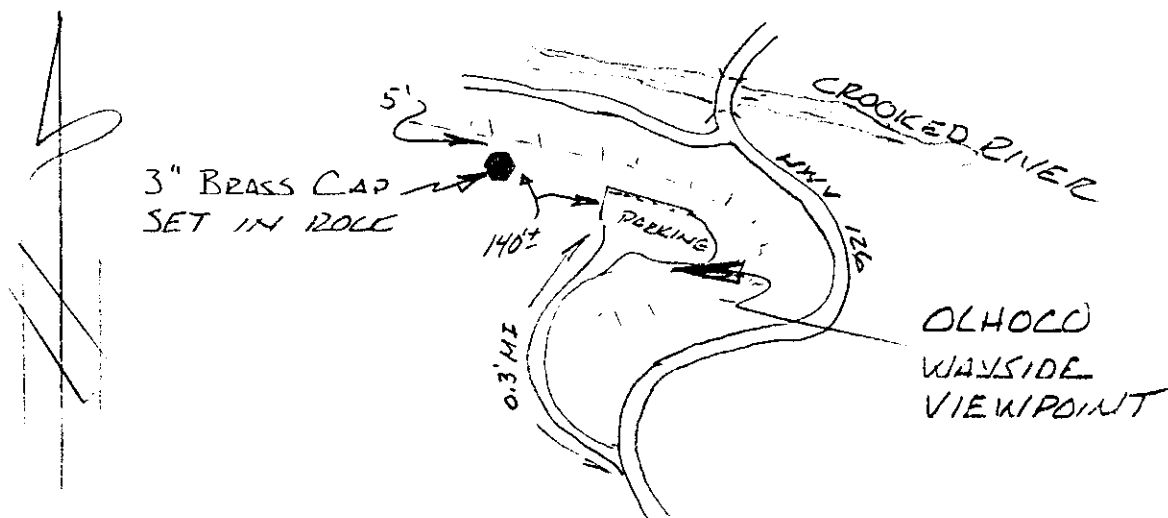
MARK: N-752 HORIZONTAL ORDER: FIRST

Latitude:	44°20'04.041374"	ONE SIGMA ERROR
Longitude:	121°01'08.353744"	
Northing:	486625.4697	0.013
Easting:	3369180.1519	0.012
Convergence:	+ 0°11'05.0562"	
Scale Factor:	1.000165464873	
Ellipsoid Height:	2728.2602	0.018
Orthometric Height:	2792.7034	FIXED
Geoid Height:	-64.4432	

## CONTROL MARK DATA

NAME OF MARK: PRINEVILLE COUNTY: CROOK  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1938 COUNTRY: U.S.A.  
 LOCATION: SECTION 26 TOWNSHIP 14 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: OCRR 3

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

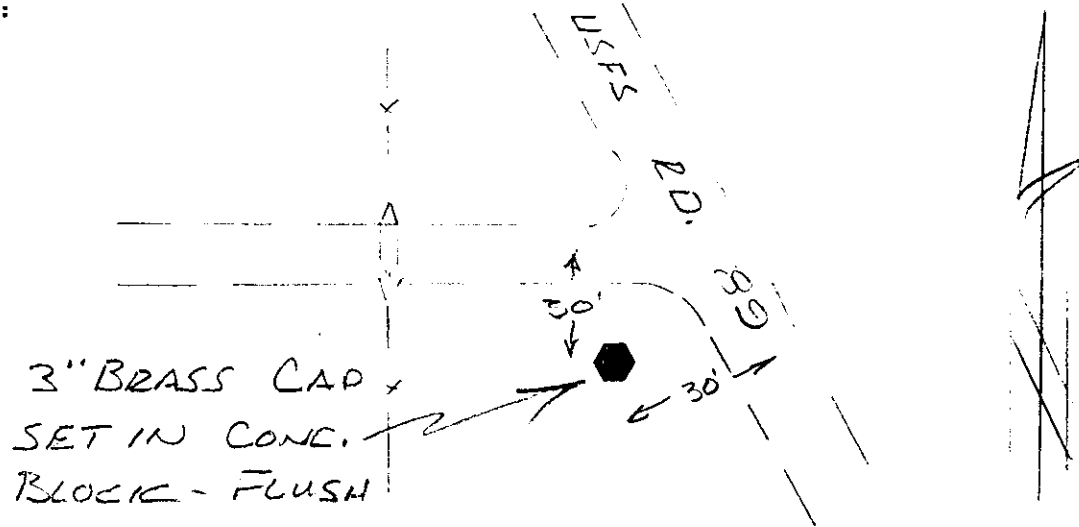
### GEODETIC AND MAPPING COORDINATES

<u>MARK: PRINEVILLE</u>	HORIZONTAL ORDER: <u>B</u>	
Latitude:	44°18'04.566910"	ONE SIGMA ERROR
Longitude:	120°51'54.057920"	
Northing:	474692.4438	FIXED
Easting:	3409536.5582	FIXED
Convergence:	+ 0°17'31.8065"	
Scale Factor:	1.000173700647	
Ellipsoid Height:	3125.1312	FIXED
Orthometric Height:	3188.5137	0.084
Geoid Height:	-63.3825	

## CONTROL MARK DATA

NAME OF MARK: Q-336 COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1938 COUNTRY: U.S.A.  
 LOCATION: SECTION 19 TOWNSHIP 12 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

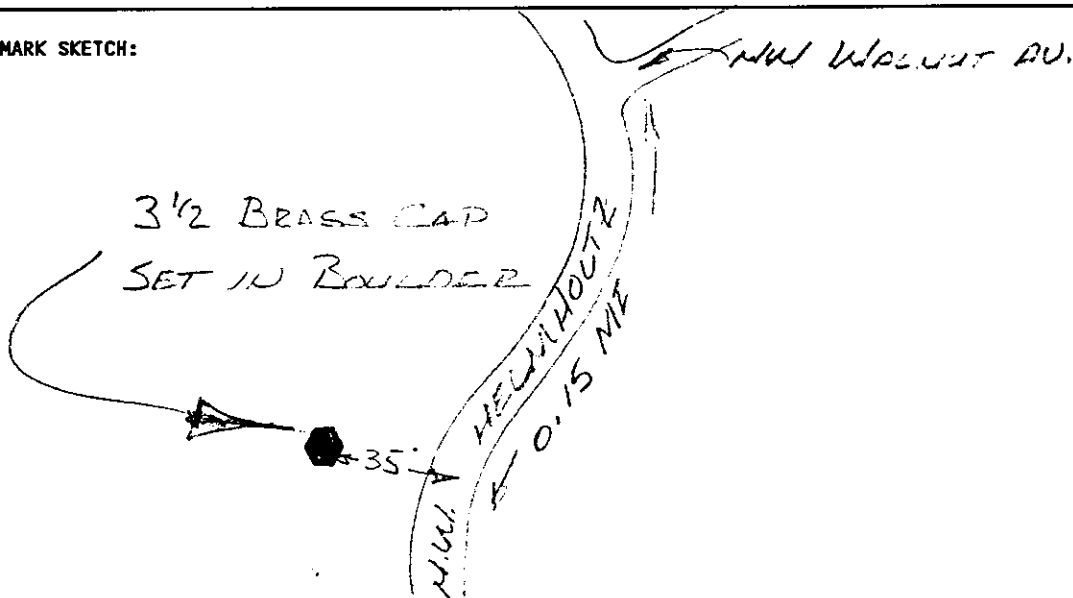
<u>MARK: Q-336</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°30'46.326826"	ONE SIGMA ERROR
Longitude:	121°06'22.129216"	
Northing:	551618.1074	0.012
Easting:	3346229.3496	0.012
Convergence:	+ 0°07'27.1924"	
Scale Factor:	1.000162440246	
Ellipsoid Height:	2869.904	0.021
Orthometric Height:	2934.5702	FIXED
Geoid Height:	-64.6662	



## CONTROL MARK DATA

NAME OF MARK: Q-419 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1946 COUNTRY: U.S.A.  
 LOCATION: SECTION 31 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

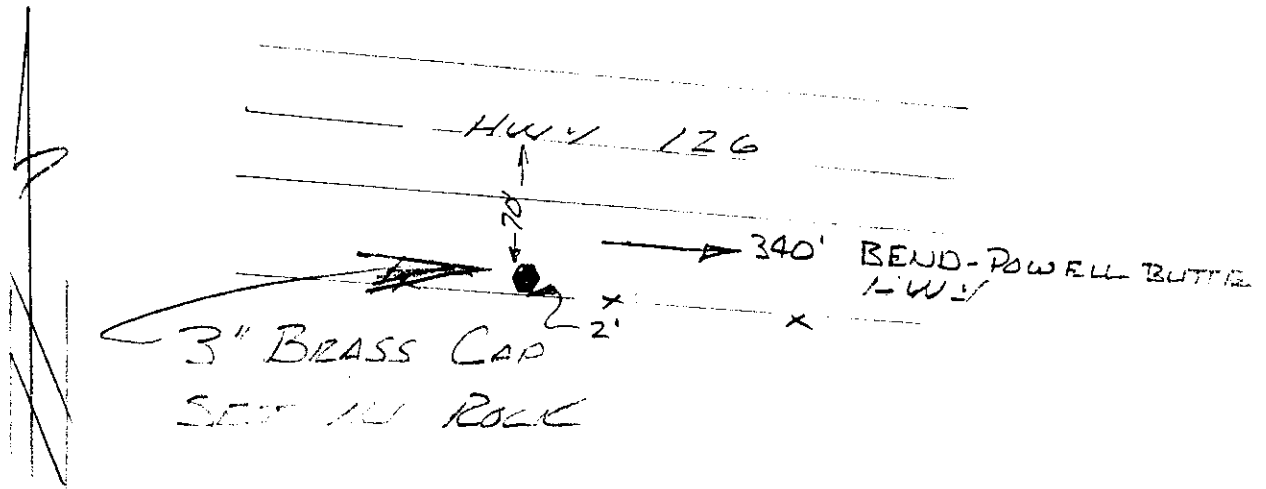
MARK: Q-419 HORIZONTAL ORDER: FIRST

Latitude:	44°18'24.818991"	ONE SIGMA ERROR
Longitude:	121°13'07.666356"	
Northing:	476471.0055	0.011
Easting:	3316897.4571	0.010
Convergence:	+ 0°02'42.2854"	
Scale Factor:	1.000160326033	
Ellipsoid Height:	2756.1253	0.014
Orthometric Height:	2821.5223	FIXED
Geoid Height:	-65.397	

## CONTROL MARK DATA

NAME OF MARK: Q-463 COUNTY: CROOK  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1936 COUNTRY: U.S.A.  
 LOCATION: SECTION 21 TOWNSHIP 15 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

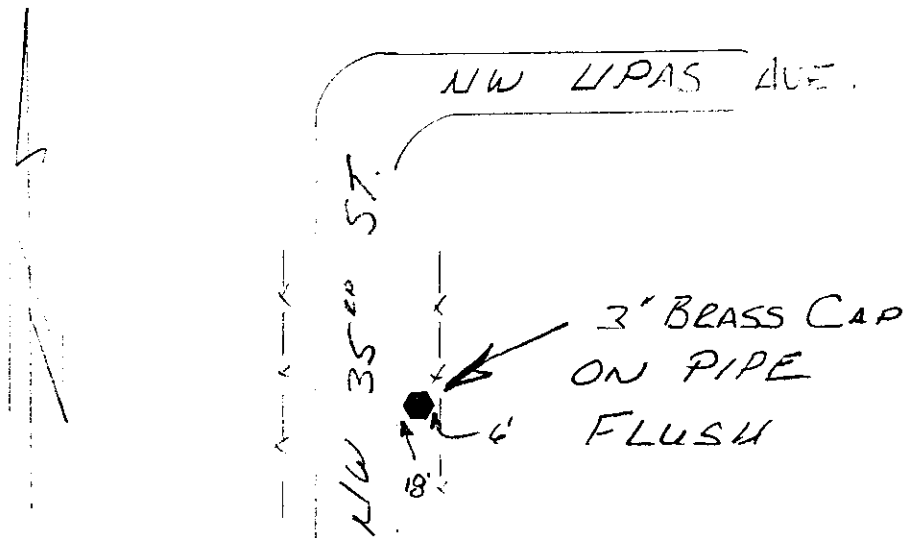
### GEODETTIC AND MAPPING COORDINATES

<u>MARK: Q-463</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°14'53.908563"	ONE SIGMA ERROR
Longitude:	121°02'58.126861"	
Northing:	455190.0634	0.010
Easting:	3361289.6948	0.009
Convergence:	+ 0°09'47.4349"	
Scale Factor:	1.000164289438	
Ellipsoid Height:	3003.7224	0.014
Orthometric Height:	3068.0906	FIXED
Geoid Height:	-64.3682	

### CONTROL MARK DATA

NAME OF MARK: RED 13 (DEA) COUNTY: DESCHUTES  
 MARK SET BY: D. E. A. STATE: OREGON  
 DATE OF MARK: 1993 COUNTRY: U.S.A.  
 LOCATION: SECTION 5 TOWNSHIP 15 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 12

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

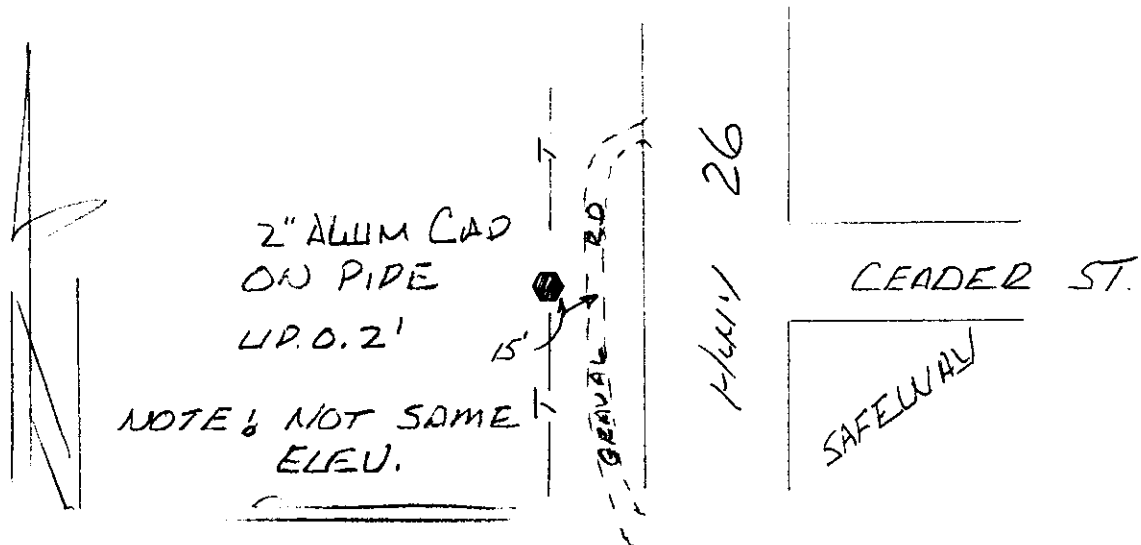
#### GEODETIC AND MAPPING COORDINATES

<u>MARK: RED 13 (DEA)</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°18'18.081553"	ONE SIGMA ERROR
Longitude:	121°12'32.608699"	
Northing:	475790.7738	0.012
Easting:	3319447.7929	0.012
Convergence:	+ 0°03'06.7670"	
Scale Factor:	1.000160431876	
Ellipsoid Height:	2827.7381	0.018
Orthometric Height:	2893.0792	0.041
Geoid Height:	-65.3411	

## CONTROL MARK DATA

NAME OF MARK: ROD 1 COUNTY: JEFFERSON  
 MARK SET BY: ~~N/A~~ LS 2208 STATE: OREGON  
 DATE OF MARK: ~~N/A~~ 1994 COUNTRY: U.S.A.  
 LOCATION: SECTION 2 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# ~~NONE~~ 941915

**MARK SKETCH:**



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

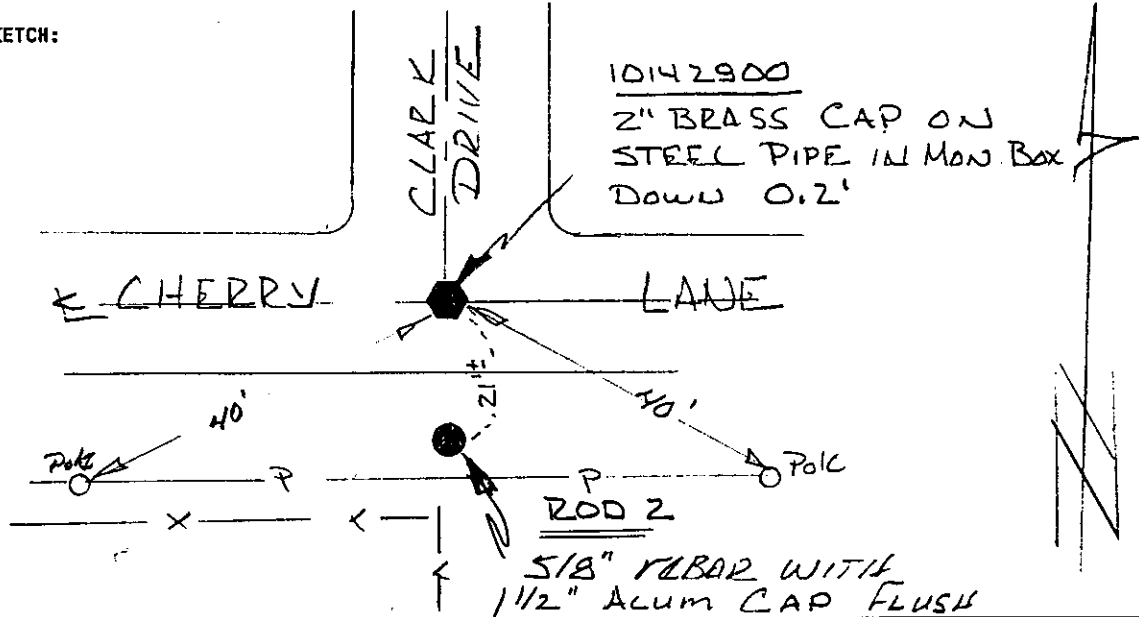
**GEODETIC AND MAPPING COORDINATES**

<u>MARK: ROD 1</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°38'35.577089"	ONE SIGMA ERROR
Longitude:	121°07'47.417855"	
Northing:	599135.0321	0.018
Easting:	3339958.7287	0.018
Convergence:	+ 0°06'28.2944"	
Scale Factor:	1.000161823089	
Ellipsoid Height:	2234.3084	0.025
Orthometric Height:	2300.4991	0.045
Geoid Height:	-66.1907	

## CONTROL MARK DATA

NAME OF MARK: ROD 2 COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1992 COUNTRY: U.S.A.  
 LOCATION: SECTION 31 TOWNSHIP 10 S. RANGE 14 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: MF# NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

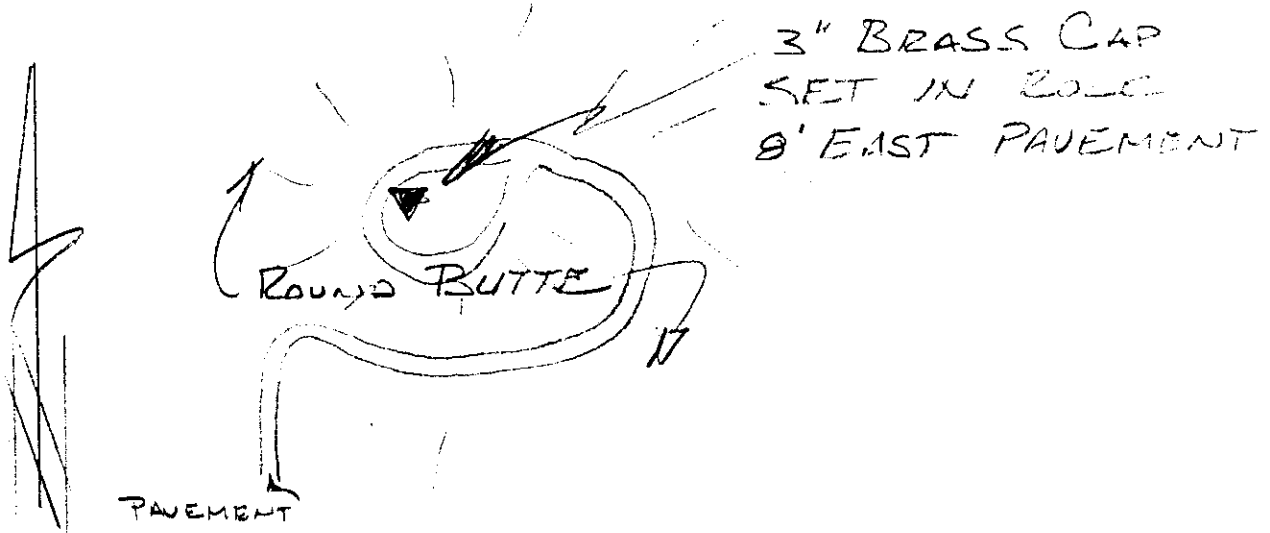
### GEODETTIC AND MAPPING COORDINATES

<u>MARK:</u> <u>ROD 2</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°39'51.606021"	ONE SIGMA ERROR
Longitude:	121°05'33.408077"	
Northing:	606856.4095	0.023
Easting:	3349631.3272	0.022
Convergence:	+ 0°08'02.6422"	
Scale Factor:	1.000162812512	
Ellipsoid Height:	2326.8783	0.034
Orthometric Height:	2392.93	0.083
Geoid Height:	-66.0516	

## CONTROL MARK DATA

NAME OF MARK: ROUND COUNTY: JEFFERSON  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1946 COUNTRY: U.S.A.  
 LOCATION: SECTION 24 TOWNSHIP 11 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

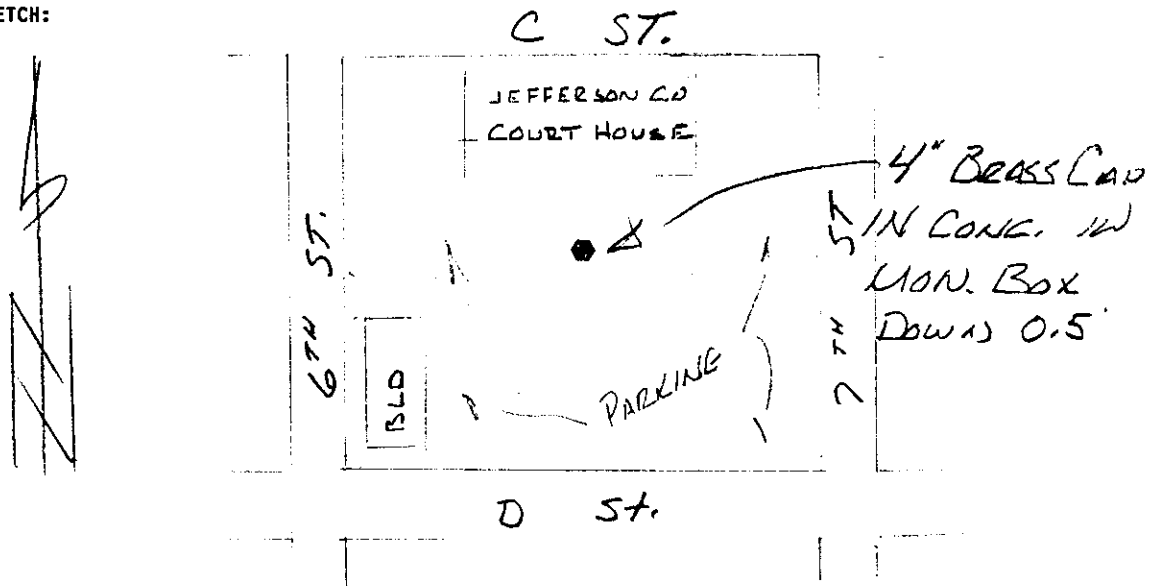
### GEODETIC AND MAPPING COORDINATES

<u>MARK: ROUND</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	44°36'38.000270"	ONE SIGMA ERROR
Longitude:	121°14'19.414910"	
Northing:	587191.3724	FIXED
Easting:	3311618.8609	FIXED
Convergence:	+ 0°01'52.7764"	
Scale Factor:	1.000160154140	
Ellipsoid Height:	3205.3855	0.021
Orthometric Height:	3272.0385	0.105
Geoid Height:	-66.653	

## CONTROL MARK DATA

NAME OF MARK: SKY COUNTY: JEFFERSON  
 MARK SET BY: LS 2208 GARY DEJARNATT STATE: OREGON  
 DATE OF MARK: 1989 COUNTRY: U.S.A.  
 LOCATION: SECTION 12 TOWNSHIP 11 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 3

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETTIC AND MAPPING COORDINATES

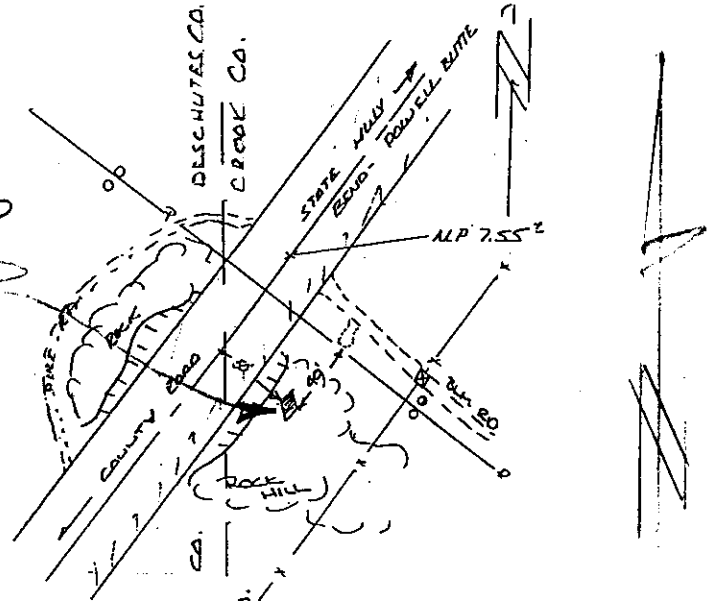
<u>MARK:</u> <u>SKY</u>	HORIZONTAL ORDER: <u>B</u>	
Latitude:	44°38'02.205020"	ONE SIGMA ERROR
Longitude:	121°07'40.236110"	
Northing:	595755.7894	FIXED
Easting:	3340484.5059	FIXED
Convergence:	+ 0°06'33.2765"	
Scale Factor:	1.000161871385	
Ellipsoid Height:	2176.5256	FIXED
Orthometric Height:	2242.6148	FIXED
Geoid Height:	-66.0892	

## CONTROL MARK DATA

NAME OF MARK: T 463 1936 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1936 COUNTRY: U.S.A.  
 LOCATION: SECTION 24 TOWNSHIP 16 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: DGMC 5

MARK SKETCH:

3 1/2" BRASS CAP  
SET IN ROCK



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

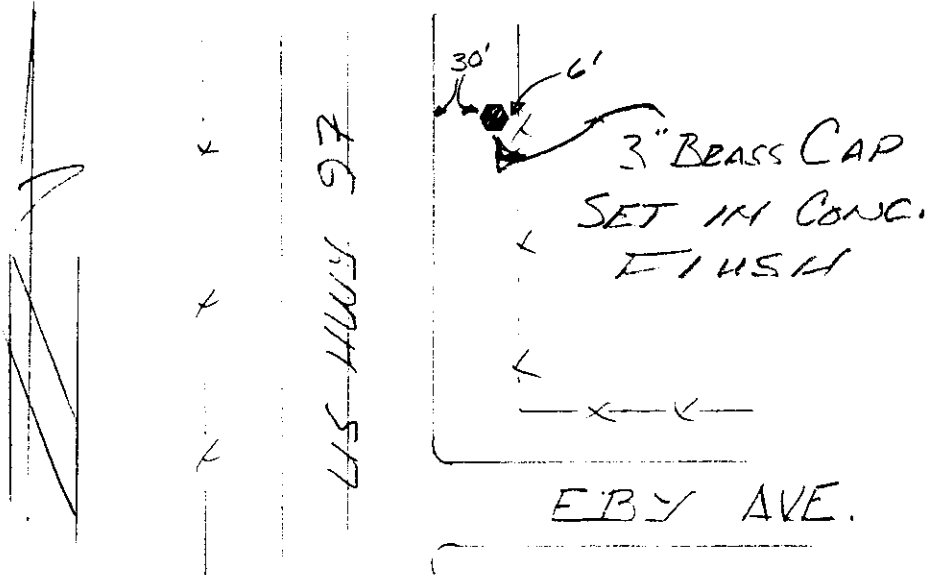
<u>MARK:</u> <u>T 463 1936</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°10'17.524830"</u>	ONE
Longitude:	<u>121°06'08.355789"</u>	SIGMA
Northing:	<u>427162.5262</u>	ERROR
Easting:	<u>3347502.3923</u>	FIXED
Convergence:	<u>+ 0°07'34.0722"</u>	FIXED
Scale Factor:	<u>1.000162576699</u>	
Ellipsoid Height:	<u>3177.9265</u>	FIXED
Orthometric Height:	<u>3242.2277</u>	FIXED
Geoid Height:	<u>-64.3012</u>	



## CONTROL MARK DATA

NAME OF MARK: V-456 COUNTY: DESCHUTES  
 MARK SET BY: OREGON STATE HIGHWAY STATE: OREGON  
 DATE OF MARK: 1954 COUNTRY: U.S.A.  
 LOCATION: SECTION 9 TOWNSHIP 14 S. RANGE 13 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS

DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

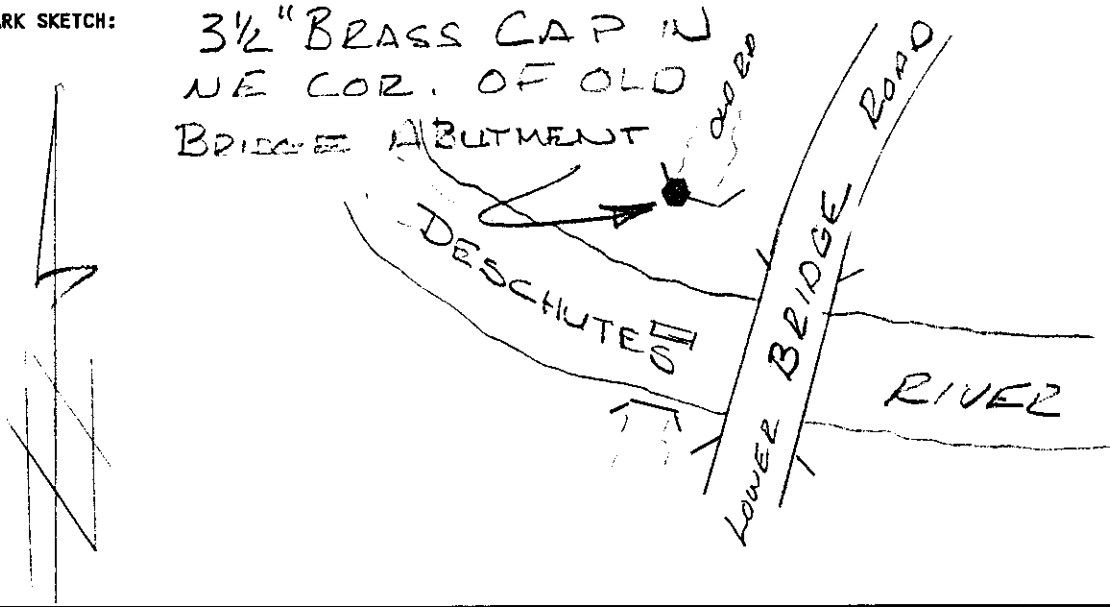
### GEODETIC AND MAPPING COORDINATES

<u>MARK: V-456</u>	HORIZONTAL ORDER: <u>FIRST</u>
Latitude:	44°22'15.800387" <span style="float: right;">ONE SIGMA ERROR</span>
Longitude:	121°10'41.683663"
Northing:	499876.6478 <span style="float: right;">0.009</span>
Easting:	3327484.6835 <span style="float: right;">0.009</span>
Convergence:	+ 0°04'24.5576"
Scale Factor:	1.000160862568
Ellipsoid Height:	2758.299 <span style="float: right;">0.012</span>
Orthometric Height:	2823.435 <span style="float: right;">FIXED</span>
Geoid Height:	-65.136

## CONTROL MARK DATA

NAME OF MARK: Y-419 COUNTY: DESCHUTES  
 MARK SET BY: U.S. C. & G.S. STATE: OREGON  
 DATE OF MARK: 1946 COUNTRY: U.S.A.  
 LOCATION: SECTION 16 TOWNSHIP 14 S. RANGE 12 E. MERIDIAN: WILLAMETTE  
 REFERENCE NUMBER: NONE

MARK SKETCH:



DATA COMPUTED BY: DESCHUTES COUNTY SURVEYOR'S OFFICE DATE: 1994  
 FIELD METHOD: GPS FIELD EQUIPMENT: TRIMBLE 4000ST ADJUSTED WITH: TRIMNET PLUS  
 DATUM: HORIZONTAL= NAD (83-91) CENTRAL MERIDIAN: W 121°17'00.000000"  
 VERTICAL= NGVD 29 LATITUDE OF ORIGIN: N 43°00'00.000000"  
 COORDINATE SYSTEM: TRANSVERSE MERCATOR ORIGIN NORTHING: 0.0000 F  
 ZONE: DESCHUTES COUNTY ORIGIN EASTING: 3,300,000.0000 F  
 LINEAR UNITS: INTERNATIONAL FOOT SCALE ALONG MERIDIAN: 1.000160000000

### GEODETIC AND MAPPING COORDINATES

MARK: <u>Y-419</u>	HORIZONTAL ORDER: <u>FIRST</u>	
Latitude:	<u>44°21'36.025234"</u>	ONE
Longitude:	<u>121°17'40.562469"</u>	SIGMA
Northing:	<u>495830.6286</u>	ERROR
Easting:	<u>3297052.5826</u>	0.011
Convergence:	<u>- 0°00'28.3598"</u>	0.011
Scale Factor:	<u>1.000160009920</u>	
Ellipsoid Height:	<u>2468.4538</u>	0.016
Orthometric Height:	<u>2534.4521</u>	FIXED
Geoid Height:	<u>-65.9983</u>	

**FIX & ADJUSTED**

**SURVEY POINTS**

**IN**

**DESCHUTES COUNTY**

**PLANE COORDINATES**

# DESCHUTES COUNTY PLANE COORDINATES

## Geodetic and Mapping Coordinates

Datum = NAD-83  
 Projection: Deshutes County Transverse Mercator  
 Zone = NONE  
 Central Meridian = W 121°17'00.000000"  
 Latitude of Origin = N 43°00'00.000000"  
 Origin Northing = 0.000' Easting = 3,300,000.000'  
 Scale along Central Meridian = 1.000160000000  
 Linear units = International Foot

STATION NAME	DATA	1.00 SIGMA ERROR	
10132500	Latitude	N 44°39'52.644522"	
	Longitude	W 121°07'59.753958"	
	Scale Factor	1.000161741308	
	Convergence	0°06'19.7695"	
	Northing(y)	606939.4833	0.023894F
	Easting (x)	3339052.3016	0.023603F
	Ellipsoid Height	2403.5417	0.033542F
	OrthoMetric Height	2469.9532	0.049117F
	Geoid Height	-66.4115	0.041396F
10132604	Latitude	N 44°39'52.540834"	
	Longitude	W 121°08'36.333219"	
	Scale Factor	1.000161513489	
	Convergence	0°05'54.0556"	
	Northing(y)	606924.2772	0.013528F
	Easting (x)	3336408.1459	0.013253F
	Ellipsoid Height	2377.3272	0.019304F
	OrthoMetric Height	2443.8255	FIXED
	Geoid Height	-66.4983	0.019304F
10133640	Latitude	N 44°39'26.338497"	
	Longitude	W 121°07'59.665384"	
	Scale Factor	1.000161742320	
	Convergence	0°06'19.7827"	
	Northing(y)	604274.9711	0.021603F
	Easting (x)	3339063.6106	0.021353F
	Ellipsoid Height	2404.0565	0.030141F
	OrthoMetric Height	2470.4063	0.047403F
	Geoid Height	-66.3499	0.042450F
10142900	Latitude	N 44°39'51.814183"	
	Longitude	W 121°05'33.403374"	
	Scale Factor	1.000162812545	
	Convergence	0°08'02.6460"	
	Northing(y)	606877.4949	0.028226F
	Easting (x)	3349631.6178	0.022867F
	Ellipsoid Height	2326.8779	0.245672F
	OrthoMetric Height	2392.9300	0.257173F
	Geoid Height	-66.0521	0.078192F
10143000	Latitude	N 44°39'52.111644"	
	Longitude	W 121°06'46.401619"	
	Scale Factor	1.000162246276	
	Convergence	0°07'11.3320"	
	Northing(y)	606895.9337	0.022115F
	Easting (x)	3344354.7722	0.021790F
	Ellipsoid Height	2503.2830	0.031471F
	OrthoMetric Height	2569.5235	0.068160F
	Geoid Height	-66.2405	0.062715F

10143140	Latitude	N 44°39'26.065861"	
	Longitude	W 121°06'46.510630"	
	Scale Factor	1.000162246041	
	Convergence	0°07'11.2003"	
	Northing(y)	604257.7530	0.023056F
	Easting (x)	3344352.4077	0.022581F
	Ellipsoid Height	2293.0947	0.032324F
	OrthoMetric Height	2359.2754	0.065347F
	Geoid Height	-66.1807	0.058315F
11130100	Latitude	N 44°38'09.425618"	
	Longitude	W 121°07'46.425262"	
	Scale Factor	1.000161830104	
	Convergence	0°06'28.9419"	
	Northing(y)	596486.3080	0.018376F
	Easting (x)	3340035.5010	0.024909F
	Ellipsoid Height	2175.0739	0.022104F
	OrthoMetric Height	2241.1942	0.011020F
	Geoid Height	-66.1203	0.019161F
11130200	Latitude	N 44°38'09.617302"	
	Longitude	W 121°08'59.316483"	
	Scale Factor	1.000161379878	
	Convergence	0°05'37.7287"	
	Northing(y)	596496.4375	0.018444F
	Easting (x)	3334763.8475	0.018254F
	Ellipsoid Height	2397.2534	0.025707F
	OrthoMetric Height	2463.5575	0.053202F
	Geoid Height	-66.3042	0.048050F
11130204	Latitude	N 44°38'09.459477"	
	Longitude	W 121°08'22.872388"	
	Scale Factor	1.000161597050	
	Convergence	0°06'03.3342"	
	Northing(y)	596484.9308	0.015791F
	Easting (x)	3337399.5745	0.015621F
	Ellipsoid Height	2183.0879	0.020198F
	OrthoMetric Height	2249.3070	0.041139F
	Geoid Height	-66.2192	0.037835F
11131004	Latitude	N 44°37'17.697734"	
	Longitude	W 121°09'35.573364"	
	Scale Factor	1.000161180155	
	Convergence	0°05'12.1749"	
	Northing(y)	591233.4290	0.010769F
	Easting (x)	3332149.6484	0.010466F
	Ellipsoid Height	2420.9380	0.017185F
	OrthoMetric Height	2487.2089	0.052276F
	Geoid Height	-66.2709	0.051575F
11131104	Latitude	N 44°37'17.412628"	
	Longitude	W 121°08'22.853993"	
	Scale Factor	1.000161597962	
	Convergence	0°06'03.2542"	
	Northing(y)	591213.1639	0.017570F
	Easting (x)	3337410.1902	0.017319F
	Ellipsoid Height	2247.7302	0.024335F
	OrthoMetric Height	2313.8741	0.041135F
	Geoid Height	-66.1439	0.036292F
11131200	Latitude	N 44°37'17.317580"	
	Longitude	W 121°07'46.590877"	
	Scale Factor	1.000161829925	
	Convergence	0°06'28.7261"	
	Northing(y)	591208.3184	0.016284F
	Easting (x)	3340033.4715	0.016020F
	Ellipsoid Height	2296.5904	0.020486F
	OrthoMetric Height	2362.6837	FIXED
	Geoid Height	-66.0933	0.020486F

11131300	Latitude	N 44°36'25.355241"	
	Longitude	W 121°07'46.877060"	
	Scale Factor	1.000161828945	
	Convergence	0°06'28.4258"	
	Northing(y)	585945.0835	0.022705F
	Easting (x)	3340022.6818	0.022355F
	Ellipsoid Height	2388.6369	0.031602F
	OrthoMetric Height	2454.5540	0.049579F
	Geoid Height	-65.9171	0.044752F
11131400	Latitude	N 44°36'25.452121"	
	Longitude	W 121°08'59.556332"	
	Scale Factor	1.000161379881	
	Convergence	0°05'37.3875"	
	Northing(y)	585945.6437	0.017622F
	Easting (x)	3334763.7635	0.017204F
	Ellipsoid Height	2316.4755	0.023485F
	OrthoMetric Height	2382.5262	FIXED
	Geoid Height	-66.0507	0.023485F
11132204	Latitude	N 44°35'33.516478"	
	Longitude	W 121°09'35.981447"	
	Scale Factor	1.000161179167	
	Convergence	0°05'11.7286"	
	Northing(y)	580681.0176	0.029610F
	Easting (x)	3332136.0798	0.032734F
	Ellipsoid Height	2440.2888	0.055874F
	OrthoMetric Height	2506.1838	0.055751F
	Geoid Height	-65.8950	0.053611F
11132304	Latitude	N 44°35'33.166845"	
	Longitude	W 121°08'23.374527"	
	Scale Factor	1.000161596343	
	Convergence	0°06'02.7027"	
	Northing(y)	580654.1949	0.024409F
	Easting (x)	3337391.1068	0.029218F
	Ellipsoid Height	2415.8027	0.045994F
	OrthoMetric Height	2481.6963	0.055751F
	Geoid Height	-65.8936	0.052616F
11132400	Latitude	N 44°35'33.165571"	
	Longitude	W 121°07'46.891977"	
	Scale Factor	1.000161829762	
	Convergence	0°06'28.3157"	
	Northing(y)	580658.8729	0.024320F
	Easting (x)	3340031.5555	0.023829F
	Ellipsoid Height	2391.9616	0.034482F
	OrthoMetric Height	2457.7167	0.061938F
	Geoid Height	-65.7551	0.056056F
11140500	Latitude	N 44°38'08.715842"	
	Longitude	W 121°05'23.868664"	
	Scale Factor	1.000162894069	
	Convergence	0°08'09.1009"	
	Northing(y)	596436.3596	0.019064F
	Easting (x)	3350345.6165	0.018723F
	Ellipsoid Height	2422.0828	0.027196F
	OrthoMetric Height	2487.8644	0.064780F
	Geoid Height	-65.7816	0.062468F
11140600	Latitude	N 44°38'09.121737"	
	Longitude	W 121°06'33.023771"	
	Scale Factor	1.000162347615	
	Convergence	0°07'20.5133"	
	Northing(y)	596466.2018	0.018046F
	Easting (x)	3345344.0922	0.017808F
	Ellipsoid Height	2323.0117	0.025337F
	OrthoMetric Height	2388.9797	0.049949F
	Geoid Height	-65.9680	0.044777F

11140700	Latitude	N 44°37'17.101158"	
	Longitude	W 121°06'33.150420"	
	Scale Factor	1.000162347839	
	Convergence	0°07'20.3118"	
	Northing(y)	591197.0739	0.017073F
	Easting (x)	3345346.1821	0.016707F
	Ellipsoid Height	2217.7411	0.022912F
	OrthoMetric Height	2283.6056	FIXED
	Geoid Height	-65.8645	0.022912F
11141900	Latitude	N 44°35'33.205739"	
	Longitude	W 121°06'33.342116"	
	Scale Factor	1.000162348744	
	Convergence	0°07'19.9525"	
	Northing(y)	580673.6294	0.012616F
	Easting (x)	3345354.7665	0.012126F
	Ellipsoid Height	2414.6393	0.020235F
	OrthoMetric Height	2480.2048	0.063630F
	Geoid Height	-65.5655	0.063564F
12131600	Latitude	N 44°31'13.584714"	
	Longitude	W 121°11'23.453894"	
	Scale Factor	1.000160679115	
	Convergence	0°03'55.9740"	
	Northing(y)	554342.8115	0.010242F
	Easting (x)	3324387.8432	0.009976F
	Ellipsoid Height	2623.2200	0.018592F
	OrthoMetric Height	2688.7162	0.075558F
	Geoid Height	-65.4961	0.075568F
12131700	Latitude	N 44°31'13.732954"	
	Longitude	W 121°12'36.042688"	
	Scale Factor	1.000160417754	
	Convergence	0°03'05.0775"	
	Northing(y)	554352.4575	0.017331F
	Easting (x)	3319127.6764	0.017084F
	Ellipsoid Height	2575.4859	0.026461F
	OrthoMetric Height	2641.1594	0.085787F
	Geoid Height	-65.6735	0.083364F
12131800	Latitude	N 44°31'13.786135"	
	Longitude	W 121°13'45.497029"	
	Scale Factor	1.000160226833	
	Convergence	0°02'16.3786"	
	Northing(y)	554353.9221	0.011600F
	Easting (x)	3314094.6614	0.011381F
	Ellipsoid Height	2549.8054	0.019844F
	OrthoMetric Height	2615.6559	0.091935F
	Geoid Height	-65.8505	0.091126F
13153040	Latitude	N 44°24'42.348633"	
	Longitude	W 120°59'18.614891"	
	Scale Factor	1.000166779924	
	Convergence	0°12'22.7713"	
	Northing(y)	514840.8574	0.014478F
	Easting (x)	3377056.2079	0.014052F
	Ellipsoid Height	3314.4125	0.021224F
	OrthoMetric Height	3378.1201	FIXED
	Geoid Height	-63.7076	0.021224F
13153300	Latitude	N 44°23'24.919678"	
	Longitude	W 120°56'52.490750"	
	Scale Factor	1.000168781745	
	Convergence	0°14'04.7082"	
	Northing(y)	507039.3052	0.015933F
	Easting (x)	3387696.8977	0.015614F
	Ellipsoid Height	2960.6850	0.022727F
	OrthoMetric Height	3024.3952	0.068389F
	Geoid Height	-63.7101	0.069253F

13153500	Latitude	N 44°23'25.312202"	
	Longitude	W 120°54'26.743795"	
	Scale Factor	1.000171029581	
	Convergence	0°15'46.6682"	
	Northing(y)	507125.0270	0.019805F
	Easting (x)	3398281.7768	0.019466F
	Ellipsoid Height	2956.6276	0.027986F
	OrthoMetric Height	3020.0893	0.086164F
	Geoid Height	-63.4616	0.085585F
14120188	Latitude	N 44°23'34.795290"	
	Longitude	W 121°13'45.481150"	
	Scale Factor	1.000160227866	
	Convergence	0°02'16.0807"	
	Northing(y)	507864.6427	FIXED
	Easting (x)	3314126.5176	FIXED
	Ellipsoid Height	2699.9180	FIXED
	OrthoMetric Height	2765.4308	0.059273F
	Geoid Height	-65.5128	0.059273F
14132500	Latitude	N 44°19'12.052420"	
	Longitude	W 121°07'42.323900"	
	Scale Factor	1.000161877615	
	Convergence	0°06'29.6294"	
	Northing(y)	481286.6151	FIXED
	Easting (x)	3340550.3429	FIXED
	Ellipsoid Height	2890.8465	FIXED
	OrthoMetric Height	2955.8104	FIXED
	Geoid Height	-64.9639	FIXED
14150100	Latitude	N 44°22'38.538655"	
	Longitude	W 120°53'11.379817"	
	Scale Factor	1.000172297769	
	Convergence	0°16'39.1582"	
	Northing(y)	502413.4066	0.019864F
	Easting (x)	3403778.1250	0.019331F
	Ellipsoid Height	2915.2972	0.027840F
	OrthoMetric Height	2978.7109	0.090377F
	Geoid Height	-63.4137	0.089825F
14151300	Latitude	N 44°20'54.162696"	
	Longitude	W 120°53'11.556126"	
	Scale Factor	1.000172306952	
	Convergence	0°16'38.5181"	
	Northing(y)	491841.7048	0.014733F
	Easting (x)	3403816.5080	0.014504F
	Ellipsoid Height	2862.8009	0.020738F
	OrthoMetric Height	2926.3796	0.076103F
	Geoid Height	-63.5787	0.076871F
14151500	Latitude	N 44°20'54.986233"	
	Longitude	W 120°55'36.588644"	
	Scale Factor	1.000169934631	
	Convergence	0°14'57.1390"	
	Northing(y)	491876.6791	0.015460F
	Easting (x)	3393275.4618	0.015196F
	Ellipsoid Height	2763.4919	0.021466F
	OrthoMetric Height	2827.3885	FIXED
	Geoid Height	-63.8966	0.021466F
14152200	Latitude	N 44°20'02.909778"	
	Longitude	W 120°55'36.990944"	
	Scale Factor	1.000169933322	
	Convergence	0°14'56.6261"	
	Northing(y)	486602.0483	0.015258F
	Easting (x)	3393269.1547	0.014942F
	Ellipsoid Height	2757.6385	0.021406F
	OrthoMetric Height	2821.5223	0.047900F
	Geoid Height	-63.8837	0.048476F



15131400	Latitude	N 44°15'43.386380"	
	Longitude	W 121°08'54.906150"	
	Scale Factor	1.000161423489	
	Convergence	0°05'38.5673"	
	Northing(y)	460142.9905	FIXED
	Easting (x)	3335307.3725	FIXED
	Ellipsoid Height	2984.8917	FIXED
	OrthoMetric Height	3049.9081	FIXED
	Geoid Height	-65.0164	FIXED
15140100	Latitude	N 44°17'27.799907"	
	Longitude	W 121°00'28.810271"	
	Scale Factor	1.000165937277	
	Convergence	0°11'32.1541"	
	Northing(y)	470810.2763	0.013322F
	Easting (x)	3372107.8976	0.012740F
	Ellipsoid Height	2960.2487	0.018202F
	OrthoMetric Height	3024.5601	0.067755F
	Geoid Height	-64.3114	0.067566F
15150800	Latitude	N 44°16'35.203702"	
	Longitude	W 120°58'03.604773"	
	Scale Factor	1.000167808181	
	Convergence	0°13'13.3455"	
	Northing(y)	465521.2289	0.012400F
	Easting (x)	3382691.9230	0.011942F
	Ellipsoid Height	3066.5046	0.017357F
	OrthoMetric Height	3130.4511	0.062391F
	Geoid Height	-63.9465	0.062797F
15143500	Latitude	N 44°13'07.211401"	
	Longitude	W 121°01'39.849891"	
	Scale Factor	1.000165129366	
	Convergence	0°10'41.7137"	
	Northing(y)	444400.5556	0.017745F
	Easting (x)	3367022.0123	0.016857F
	Ellipsoid Height	3233.3619	0.025135F
	OrthoMetric Height	3297.3369	0.072329F
	Geoid Height	-63.9750	0.068995F
15153000	Latitude	N 44°13'59.124840"	
	Longitude	W 120°59'15.053327"	
	Scale Factor	1.000166867348	
	Convergence	0°12'22.8879"	
	Northing(y)	449693.8351	0.017374F
	Easting (x)	3377549.7911	0.016613F
	Ellipsoid Height	3263.6444	0.024684F
	OrthoMetric Height	3327.4636	0.062810F
	Geoid Height	-63.8192	0.061478F
2711 PP&L	Latitude	N 44°21'54.055874"	
	Longitude	W 121°15'02.780596"	
	Scale Factor	1.000160082827	
	Convergence	0°01'21.9630"	
	Northing(y)	497658.3367	0.008789F
	Easting (x)	3308516.8653	0.008543F
	Ellipsoid Height	2644.3894	0.012016F
	OrthoMetric Height	2710.1050	FIXED
	Geoid Height	-65.7156	0.012016F
2906 ORE	Latitude	N 44°21'21.820622"	
	Longitude	W 121°07'26.761093"	
	Scale Factor	1.000161981427	
	Convergence	0°06'40.7606"	
	Northing(y)	494432.1927	0.014611F
	Easting (x)	3341656.4337	0.013974F
	Ellipsoid Height	2840.3710	0.021423F
	OrthoMetric Height	2905.2596	0.060663F
	Geoid Height	-64.8886	0.057410F

2971 RESET	Latitude	N 44°22'43.406995"	
	Longitude	W 120°54'22.978224"	
	Scale Factor	1.000171095475	
	Convergence	0°15'49.1054"	
	Northing(y)	502881.9310	0.017190F
	Easting (x)	3398574.7879	0.016855F
	Ellipsoid Height	2904.6340	0.024267F
	OrthoMetric Height	2968.1763	0.078327F
	Geoid Height	-63.5423	0.079011F
B-366	Latitude	N 44°23'02.731187"	
	Longitude	W 121°11'05.834702"	
	Scale Factor	1.000160755616	
	Convergence	0°04'07.7263"	
	Northing(y)	504627.8293	0.010636F
	Easting (x)	3325724.4021	0.010195F
	Ellipsoid Height	2694.0661	0.014133F
	OrthoMetric Height	2759.2290	FIXED
	Geoid Height	-65.1629	0.014133F
BIG FALLS 1945	Latitude	N 44°23'31.365800"	
	Longitude	W 121°17'46.935270"	
	Scale Factor	1.000160013267	
	Convergence	0°00'32.8342"	
	Northing(y)	507512.8992	FIXED
	Easting (x)	3296591.3706	FIXED
	Ellipsoid Height	2858.4843	FIXED
	OrthoMetric Height	2924.5034	0.072254F
	Geoid Height	-66.0191	0.072254F
C-15 PP&L	Latitude	N 44°26'38.049066"	
	Longitude	W 121°12'45.267020"	
	Scale Factor	1.000160390093	
	Convergence	0°02'58.3668"	
	Northing(y)	526428.8648	0.008894F
	Easting (x)	3318483.3975	0.008544F
	Ellipsoid Height	2791.3623	0.013171F
	OrthoMetric Height	2856.6601	FIXED
	Geoid Height	-65.2978	0.013171F
C-457	Latitude	N 44°20'15.921997"	
	Longitude	W 120°57'03.633018"	
	Scale Factor	1.000168635943	
	Convergence	0°13'56.1299"	
	Northing(y)	487893.5195	0.013069F
	Easting (x)	3386965.3103	0.012730F
	Ellipsoid Height	2751.0131	0.018595F
	OrthoMetric Height	2815.0361	FIXED
	Geoid Height	-64.0230	0.018595F
C-463	Latitude	N 44°14'51.087520"	
	Longitude	W 120°57'45.313982"	
	Scale Factor	1.000168069520	
	Convergence	0°13'25.6975"	
	Northing(y)	454981.2495	0.015003F
	Easting (x)	3384064.0886	0.014408F
	Ellipsoid Height	3169.2169	0.020864F
	OrthoMetric Height	3232.9757	FIXED
	Geoid Height	-63.7588	0.020864F
CLINE FALLS	Latitude	N 44°16'41.810500"	
	Longitude	W 121°15'30.541500"	
	Scale Factor	1.000160048384	
	Convergence	0°01'02.4549"	
	Northing(y)	466032.3417	FIXED
	Easting (x)	3306509.4115	FIXED
	Ellipsoid Height	2853.6048	0.016076F
	OrthoMetric Height	2919.1470	FIXED
	Geoid Height	-65.5422	0.016076F

COTTON 1	Latitude	N 44°38'09.416789"	
	Longitude	W 121°07'42.683555"	
	Scale Factor	1.000161854928	
	Convergence	0°06'31.5708"	
	Northing(y)	596485.9257	0.019353F
	Easting (x)	3340306.1096	0.018966F
	Ellipsoid Height	2175.0841	0.016695F
	OrthoMetric Height	2241.1942	FIXED
	Geoid Height	-66.1101	0.016695F
COTTON 2	Latitude	N 44°35'33.177825"	
	Longitude	W 121°08'47.723884"	
	Scale Factor	1.000161449413	
	Convergence	0°05'45.6079"	
	Northing(y)	580652.2812	0.023299F
	Easting (x)	3335628.8042	0.022805F
	Ellipsoid Height	2414.0808	0.032463F
	OrthoMetric Height	2479.9738	0.054909F
	Geoid Height	-65.8929	0.051259F
CROOK	Latitude	N 44°33'37.743659"	
	Longitude	W 121°15'39.678247"	
	Scale Factor	1.000160038630	
	Convergence	0°00'56.3587"	
	Northing(y)	568931.1326	0.014467F
	Easting (x)	3305816.5347	0.013968F
	Ellipsoid Height	2532.3447	0.025324F
	OrthoMetric Height	2598.7702	0.111795F
	Geoid Height	-66.4255	0.110107F
E-735	Latitude	N 44°16'13.809676"	
	Longitude	W 121°13'32.888235"	
	Scale Factor	1.000160259410	
	Convergence	0°02'24.5737"	
	Northing(y)	463200.6420	0.013650F
	Easting (x)	3315072.3916	0.013354F
	Ellipsoid Height	2939.4872	0.017662F
	OrthoMetric Height	3004.8556	FIXED
	Geoid Height	-65.3684	0.017662F
F-336	Latitude	N 44°29'02.219737"	
	Longitude	W 121°04'47.279400"	
	Scale Factor	1.000163223127	
	Convergence	0°08'33.4253"	
	Northing(y)	541089.4652	0.012894F
	Easting (x)	3353129.7947	0.012554F
	Ellipsoid Height	3053.1335	0.021328F
	OrthoMetric Height	3117.4016	FIXED
	Geoid Height	-64.2681	0.021328F
F-735	Latitude	N 44°16'08.890129"	
	Longitude	W 121°11'50.760859"	
	Scale Factor	1.000160578344	
	Convergence	0°03'35.8582"	
	Northing(y)	462708.8715	0.011470F
	Easting (x)	3322505.1506	0.011137F
	Ellipsoid Height	2939.9100	0.015017F
	OrthoMetric Height	3005.1444	FIXED
	Geoid Height	-65.2344	0.015017F
G-111	Latitude	N 44°19'06.724701"	
	Longitude	W 121°10'07.475841"	
	Scale Factor	1.000161027455	
	Convergence	0°04'48.2089"	
	Northing(y)	480729.6631	0.010445F
	Easting (x)	3329996.6528	0.010099F
	Ellipsoid Height	2887.0139	0.013696F
	OrthoMetric Height	2952.1522	FIXED
	Geoid Height	-65.1383	0.013696F

G-455	Latitude	N 44°20'56.251613"	
	Longitude	W 121°05'18.980639"	
	Scale Factor	1.000162963962	
	Convergence	0°08'10.0321"	
	Northing(y)	491862.5131	0.015006F
	Easting (x)	3350948.2064	0.014248F
	Ellipsoid Height	2773.3120	0.021595F
	OrthoMetric Height	2838.0821	0.053225F
	Geoid Height	-64.7701	0.051703F
G-457	Latitude	N 44°18'38.526205"	
	Longitude	W 120°53'25.134943"	
	Scale Factor	1.000172089658	
	Convergence	0°16'28.3605"	
	Northing(y)	478099.1913	0.013628F
	Easting (x)	3402895.4757	0.013275F
	Ellipsoid Height	2778.7973	0.019745F
	OrthoMetric Height	2842.3647	0.071618F
	Geoid Height	-63.5674	0.071356F
GIS 0021	Latitude	N 44°21'01.231340"	
	Longitude	W 121°10'16.763540"	
	Scale Factor	1.000160980643	
	Convergence	0°04'41.8802"	
	Northing(y)	492326.3839	FIXED
	Easting (x)	3329305.4539	FIXED
	Ellipsoid Height	2801.8930	FIXED
	OrthoMetric Height	2866.9948	FIXED
	Geoid Height	-65.1018	FIXED
GIS 0022	Latitude	N 44°17'28.648220"	
	Longitude	W 121°12'33.565460"	
	Scale Factor	1.000160428992	
	Convergence	0°03'06.0530"	
	Northing(y)	470783.9530	FIXED
	Easting (x)	3319382.7229	FIXED
	Ellipsoid Height	2883.8517	FIXED
	OrthoMetric Height	2949.1783	0.044937F
	Geoid Height	-65.3266	0.044937F
GIS 0023	Latitude	N 44°13'06.655070"	
	Longitude	W 121°13'48.386980"	
	Scale Factor	1.000160222432	
	Convergence	0°02'13.6303"	
	Northing(y)	444244.4739	FIXED
	Easting (x)	3313956.7691	FIXED
	Ellipsoid Height	3060.3018	FIXED
	OrthoMetric Height	3125.5971	FIXED
	Geoid Height	-65.2953	FIXED
H-478	Latitude	N 44°19'11.650410"	
	Longitude	W 121°09'04.752914"	
	Scale Factor	1.000161363587	
	Convergence	0°05'32.0383"	
	Northing(y)	481235.4130	0.013594F
	Easting (x)	3334556.7412	0.012968F
	Ellipsoid Height	2879.0520	0.017088F
	OrthoMetric Height	2944.1109	FIXED
	Geoid Height	-65.0589	0.017088F
HAY	Latitude	N 44°30'00.004910"	
	Longitude	W 121°09'13.886760"	
	Scale Factor	1.000161303596	
	Convergence	0°05'26.7034"	
	Northing(y)	546902.9569	FIXED
	Easting (x)	3333788.7437	FIXED
	Ellipsoid Height	2804.3346	0.016143F
	OrthoMetric Height	2869.3396	0.068963F
	Geoid Height	-65.0050	0.069593F

J-366	Latitude	N 44°34'28.090493"	
	Longitude	W 121°11'23.516722"	
	Scale Factor	1.000160677598	
	Convergence	0°03'56.1561"	
	Northing(y)	574043.8049	0.010304F
	Easting (x)	3324360.7451	0.009966F
	Ellipsoid Height	2480.3582	0.018839F
	OrthoMetric Height	2546.3896	0.070006F
	Geoid Height	-66.0314	0.069854F
J-735	Latitude	N 44°16'23.382607"	
	Longitude	W 121°15'16.011370"	
	Scale Factor	1.000160065390	
	Convergence	0°01'12.5924"	
	Northing(y)	464166.2624	0.011207F
	Easting (x)	3307567.3474	0.011085F
	Ellipsoid Height	2853.8441	0.015482F
	OrthoMetric Height	2919.3570	FIXED
	Geoid Height	-65.5129	0.015482F
JUIN AZ NO. 2	Latitude	N 44°27'36.586625"	
	Longitude	W 121°14'59.393960"	
	Scale Factor	1.000160087396	
	Convergence	0°01'24.4741"	
	Northing(y)	532351.6863	0.008736F
	Easting (x)	3308748.7334	0.008587F
	Ellipsoid Height	2800.3060	0.014590F
	OrthoMetric Height	2866.0248	0.076703F
	Geoid Height	-65.7189	0.076162F
K-336	Latitude	N 44°33'10.667842"	
	Longitude	W 121°09'34.387246"	
	Scale Factor	1.000161189277	
	Convergence	0°05'12.6280"	
	Northing(y)	566212.3504	0.011584F
	Easting (x)	3332273.3985	0.011201F
	Ellipsoid Height	2541.6426	0.020009F
	OrthoMetric Height	2607.2190	FIXED
	Geoid Height	-65.5764	0.020009F
K-752	Latitude	N 44°19'48.334073"	
	Longitude	W 121°05'27.688621"	
	Scale Factor	1.000162892651	
	Convergence	0°08'03.7820"	
	Northing(y)	484982.0737	0.012449F
	Easting (x)	3350331.4704	0.012028F
	Ellipsoid Height	2737.5465	0.017027F
	OrthoMetric Height	2802.3753	FIXED
	Geoid Height	-64.8288	0.017027F
KINGS GAP	Latitude	N 44°25'51.317512"	
	Longitude	W 121°06'04.463534"	
	Scale Factor	1.000162584554	
	Convergence	0°07'38.9083"	
	Northing(y)	521740.5687	0.011531F
	Easting (x)	3347576.1886	0.010801F
	Ellipsoid Height	3774.7673	0.017931F
	OrthoMetric Height	3839.0793	0.072137F
	Geoid Height	-64.3120	0.072355F
L-367	Latitude	N 44°25'29.835877"	
	Longitude	W 121°01'37.826961"	
	Scale Factor	1.000165115717	
	Convergence	0°10'45.4998"	
	Northing(y)	519616.6037	0.014500F
	Easting (x)	3366934.4058	0.014143F
	Ellipsoid Height	3090.9252	0.021941F
	OrthoMetric Height	3154.7999	FIXED
	Geoid Height	-63.8747	0.021941F

LONE PINE PK	Latitude	N 44°22'40.876596"	
	Longitude	W 121°04'07.132269"	
	Scale Factor	1.000163599074	
	Convergence	0°09'00.5367"	
	Northing(y)	502472.4133	0.013962F
	Easting (x)	3356142.1908	0.013303F
	Ellipsoid Height	2812.2452	0.019590F
	OrthoMetric Height	2876.7454	FIXED
	Geoid Height	-64.5002	0.019590F
M-419	Latitude	N 44°17'08.077392"	
	Longitude	W 121°15'02.369311"	
	Scale Factor	1.000160083636	
	Convergence	0°01'22.1339"	
	Northing(y)	468693.4430	0.016937F
	Easting (x)	3308558.2901	0.016081F
	Ellipsoid Height	2842.7424	0.023314F
	OrthoMetric Height	2908.2907	FIXED
	Geoid Height	-65.5483	0.023314F
N-463	Latitude	N 44°16'34.202321"	
	Longitude	W 120°54'19.927459"	
	Scale Factor	1.000171184598	
	Convergence	0°15'49.4976"	
	Northing(y)	465488.5706	0.013344F
	Easting (x)	3398968.6937	0.012898F
	Ellipsoid Height	3201.7976	0.018742F
	OrthoMetric Height	3265.3150	FIXED
	Geoid Height	-63.5174	0.018742F
N-752	Latitude	N 44°20'04.041374"	
	Longitude	W 121°01'08.353744"	
	Scale Factor	1.000165464873	
	Convergence	0°11'05.0562"	
	Northing(y)	486625.4697	0.013090F
	Easting (x)	3369180.1519	0.012706F
	Ellipsoid Height	2728.2602	0.018335F
	OrthoMetric Height	2792.7034	FIXED
	Geoid Height	-64.4432	0.018335F
PRINEVILLE	Latitude	N 44°18'04.566910"	
	Longitude	W 120°51'54.057920"	
	Scale Factor	1.000173700647	
	Convergence	0°17'31.8065"	
	Northing(y)	474692.4438	FIXED
	Easting (x)	3409536.5582	FIXED
	Ellipsoid Height	3125.1312	FIXED
	OrthoMetric Height	3188.5137	0.084499F
	Geoid Height	-63.3825	0.084499F
Q-336	Latitude	N 44°30'46.326826"	
	Longitude	W 121°06'22.129216"	
	Scale Factor	1.000162440246	
	Convergence	0°07'27.1924"	
	Northing(y)	551618.1074	0.012900F
	Easting (x)	3346229.3496	0.012318F
	Ellipsoid Height	2869.9040	0.021160F
	OrthoMetric Height	2934.5702	FIXED
	Geoid Height	-64.6662	0.021160F
Q-419	Latitude	N 44°18'24.818991"	
	Longitude	W 121°13'07.666356"	
	Scale Factor	1.000160326033	
	Convergence	0°02'42.2854"	
	Northing(y)	476471.0055	0.011245F
	Easting (x)	3316897.4571	0.010480F
	Ellipsoid Height	2756.1253	0.014719F
	OrthoMetric Height	2821.5223	FIXED
	Geoid Height	-65.3970	0.014719F

Q-463	Latitude	N 44°14'53.908563"	
	Longitude	W 121°02'58.126861"	
	Scale Factor	1.000164289438	
	Convergence	0°09'47.4349"	
	Northing(y)	455190.0634	0.010402F
	Easting (x)	3361289.6948	0.009711F
	Ellipsoid Height	3003.7224	0.014236F
	OrthoMetric Height	3068.0906	FIXED
	Geoid Height	-64.3682	0.014236F
RED 13 (DEA)	Latitude	N 44°18'18.081553"	
	Longitude	W 121°12'32.608699"	
	Scale Factor	1.000160431876	
	Convergence	0°03'06.7670"	
	Northing(y)	475790.7738	0.012955F
	Easting (x)	3319447.7929	0.012398F
	Ellipsoid Height	2827.7381	0.018727F
	OrthoMetric Height	2893.0792	0.041427F
	Geoid Height	-65.3411	0.037136F
ROD 1	Latitude	N 44°38'35.577089"	
	Longitude	W 121°07'47.417855"	
	Scale Factor	1.000161823089	
	Convergence	0°06'28.2944"	
	Northing(y)	599135.0321	0.018845F
	Easting (x)	3339958.7287	0.018598F
	Ellipsoid Height	2234.3084	0.025782F
	OrthoMetric Height	2300.4991	0.045250F
	Geoid Height	-66.1907	0.037761F
ROD 2	Latitude	N 44°39'51.606021"	
	Longitude	W 121°05'33.408077"	
	Scale Factor	1.000162812512	
	Convergence	0°08'02.6422"	
	Northing(y)	606856.4095	0.023188F
	Easting (x)	3349631.3272	0.022864F
	Ellipsoid Height	2326.8783	0.034012F
	OrthoMetric Height	2392.9300	0.083381F
	Geoid Height	-66.0516	0.078154F
ROUND	Latitude	N 44°36'38.000270"	
	Longitude	W 121°14'19.414910"	
	Scale Factor	1.000160154140	
	Convergence	0°01'52.7764"	
	Northing(y)	587191.3724	FIXED
	Easting (x)	3311618.8609	FIXED
	Ellipsoid Height	3205.3855	0.021607F
	OrthoMetric Height	3272.0385	0.105559F
	Geoid Height	-66.6530	0.104800F
SKY	Latitude	N 44°38'02.205020"	
	Longitude	W 121°07'40.236110"	
	Scale Factor	1.000161871385	
	Convergence	0°06'33.2765"	
	Northing(y)	595755.7894	FIXED
	Easting (x)	3340484.5059	FIXED
	Ellipsoid Height	2176.5256	FIXED
	OrthoMetric Height	2242.6148	FIXED
	Geoid Height	-66.0892	FIXED
T 463 1936	Latitude	N 44°10'17.524830"	
	Longitude	W 121°06'08.355789"	
	Scale Factor	1.000162576699	
	Convergence	0°07'34.0722"	
	Northing(y)	427162.5262	FIXED
	Easting (x)	3347502.3923	FIXED
	Ellipsoid Height	3177.9265	FIXED
	OrthoMetric Height	3242.2277	FIXED
	Geoid Height	-64.3012	FIXED

V-456	Latitude	N 44°22'15.800387"	
	Longitude	W 121°10'41.683663"	
	Scale Factor	1.000160862568	
	Convergence	0°04'24.5576"	
	Northing(y)	499876.6478	0.009591F
	Easting (x)	3327484.6835	0.009327F
	Ellipsoid Height	2758.2990	0.012941F
	OrthoMetric Height	2823.4350	FIXED
	Geoid Height	-65.1360	0.012941F

Y-419	Latitude	N 44°21'36.025234"	
	Longitude	W 121°17'40.562469"	
	Scale Factor	1.000160009920	
	Convergence	0°00'28.3598"	
	Northing(y)	495830.6286	0.011693F
	Easting (x)	3297052.5826	0.011350F
	Ellipsoid Height	2468.4538	0.016604F
	OrthoMetric Height	2534.4521	FIXED
	Geoid Height	-65.9983	0.016604F



**FIX & ADJUSTED**  
**SURVEY POINTS**  
**IN**  
**OREGON NORTH**  
**PLANE COORDINATES**

MAP PROJECTION TRANSFORMATION

Projection: User-Defined Lambert

Zone = SPC OREGON NO.

Central Meridian = W 120°30'00.000000"

Latitude of Origin = N 43°40'00.000000"

Origin Northing = 0.0000 Easting = 8202099.7380

North Standard Parallel = N 46°00'00.000000"

South Standard Parallel = N 44°20'00.000000"

Scale along Standard Parallels = 1.000000000000

Linear units = Internatl Foot

POINT	NAME	GEODETIC	MAP	SCALE & CONVERGENCE
1 10132500		N 44°39'52.644522" W 121°07'59.753958"	364474.3452 8037344.2071	0.999933040552 - 0°26'56.7696"
2 10132604		N 44°39'52.540834" W 121°08'36.333219"	364484.7326 8034700.6325	0.999933044940 - 0°27'22.7111"
3 10133640		N 44°39'26.338497" W 121°07'59.665384"	361810.4561 8037329.7285	0.999934161909 - 0°26'56.7068"
4 10142900		N 44°39'51.814183" W 121°05'33.403374"	364310.0199 8047920.0040	0.999933075701 - 0°25'12.9798"
5 10143000		N 44°39'52.111644" W 121°06'46.401619"	364379.5008 8042644.7943	0.999933063108 - 0°26'04.7492"
6 10143140		N 44°39'26.065861" W 121°06'46.510630"	361742.0695 8042616.9067	0.999934173615 - 0°26'04.8265"
7 11130100		N 44°38'09.425618" W 121°07'46.425262"	354014.5129 8038225.9879	0.999937532658 - 0°26'47.3171"
8 11130200		N 44°38'09.617302" W 121°08'59.316483"	354075.6535 8032955.8603	0.999937524086 - 0°27'39.0105"
9 11130204		N 44°38'09.459477" W 121°08'22.872388"	354038.6424 8035590.7623	0.999937531144 - 0°27'13.1649"
10 11131004		N 44°37'17.697734" W 121°09'35.573364"	348839.3644 8030291.4273	0.999939876885 - 0°28'04.7234"
11 11131104		N 44°37'17.412628" W 121°08'22.853993"	348768.1945 8035550.3615	0.999939889978 - 0°27'13.1519"
12 11131200		N 44°37'17.317580" W 121°07'46.590877"	348737.9676 8038172.8913	0.999939894343 - 0°26'47.4346"
13 11131300		N 44°36'25.355241" W 121°07'46.877060"	343476.2450 8038111.1819	0.999942312165 - 0°26'47.6375"
14 11131400		N 44°36'25.452121" W 121°08'59.556332"	343527.6911 8032853.6684	0.999942307599 - 0°27'39.1806"
15 11132204		N 44°35'33.516478" W 121°09'35.981447"	338289.8878 8030175.7298	0.999944786651 - 0°28'05.0128"

16	11132304	N 44°35'33.166845" W 121°08'23.374527"	338212.2195 8035429.1132	0.999944803553 - 0°27'13.5210"
17	11132400	N 44°35'33.165571" W 121°07'46.891977"	338191.3497 8038068.9109	0.999944803614 - 0°26'47.6481"
18	11140500	N 44°38'08.715842" W 121°05'23.868664"	353864.8429 8048532.8204	0.999937564403 - 0°25'06.2180"
19	11140600	N 44°38'09.121737" W 121°06'33.023771"	353943.0535 8043532.9442	0.999937546248 - 0°25'55.2618"
20	11140700	N 44°37'17.101158" W 121°06'33.150420"	348675.3301 8043484.0642	0.999939904283 - 0°25'55.3516"
21	11141900	N 44°35'33.205739" W 121°06'33.342116"	338154.6099 8043390.8591	0.999944801672 - 0°25'55.4876"
22	12131600	N 44°31'13.584714" W 121°11'23.453894"	312033.4330 8022174.5435	0.999958133771 - 0°29'21.2308"
23	12131700	N 44°31'13.732954" W 121°12'36.042688"	312094.0056 8016915.7812	0.999958125713 - 0°30'12.7097"
24	12131800	N 44°31'13.786135" W 121°13'45.497029"	312144.2136 8011884.0339	0.999958122823 - 0°31'01.9658"
25	13153040	N 44°24'42.348633" W 120°59'18.614891"	272031.9977 8074448.4968	0.999981173383 - 0°20'47.1851"
26	13153300	N 44°23'24.919678" W 120°56'52.490750"	264129.6512 8085011.5139	0.999986152885 - 0°19'03.5559"
27	13153500	N 44°23'25.312202" W 120°54'26.743795"	264113.3779 8095594.7830	0.999986127292 - 0°17'20.1942"
28	14120188	N 44°23'34.795290" W 121°13'45.481150"	265665.5832 8011465.6099	0.999985510067 - 0°31'01.9545"
29	14132500	N 44°19'12.052420" W 121°07'42.323900"	238837.5621 8037626.6391	1.000003380019 - 0°26'44.4085"
30	14150100	N 44°22'38.538655" W 120°53'11.379817"	259349.9220 8101044.5001	0.999989202051 - 0°16'26.7471"
31	14151300	N 44°20'54.162696" W 120°53'11.556126"	248780.2389 8100981.1237	0.999996245717 - 0°16'26.8721"
32	14151500	N 44°20'54.986233" W 120°55'36.588644"	248916.6861 8090442.7460	0.999996189157 - 0°18'09.7272"
33	14152200	N 44°20'02.909778" W 120°55'36.990944"	243643.2674 8090385.6443	0.999999796587 - 0°18'10.0125"
34	15131400	N 44°15'43.386380" W 121°08'54.906150"	217748.7934 8032180.3142	1.000018707782 - 0°27'35.8828"
35	15140100	N 44°17'27.799907" W 121°00'28.810271"	228058.6980 8069076.6444	1.000010912373 - 0°21'36.9667"

36	15150800	N 44°16'35.203702"	222668.7062	1.000014807710
		W 120°58'03.604773"	8079607.5749	- 0°19'53.9890"
37	15143500	N 44°13'07.211401"	201703.0652	1.000030837033
		W 121°01'39.849891"	8063737.0949	- 0°22'27.3470"
38	15153000	N 44°13'59.124840"	206893.9052	1.000026742795
		W 120°59'15.053327"	8074313.9575	- 0°20'44.6593"
39	2711 PP&L	N 44°21'54.055874"	255515.8430	0.999992173129
		W 121°15'02.780596"	8005758.3172	- 0°31'56.7742"
40	2906 ORE	N 44°21'21.820622"	251969.6905	0.999994354748
		W 121°07'26.761093"	8038859.5613	- 0°26'33.3716"
41	2971 RESET	N 44°22'43.406995"	259868.4357	0.999988879662
		W 120°54'22.978224"	8095846.8653	- 0°17'17.5237"
42	B-366	N 44°23'02.731187"	262317.2039	0.999987605390
		W 121°11'05.834702"	8023029.5982	- 0°29'08.7355"
43	BIG FALLS 1945	N 44°23'31.365800"	265483.8424	0.999985733042
		W 121°17'46.935270"	7993930.9362	- 0°33'53.1904"
44	C-15 PP&L	N 44°26'38.049066"	284183.3910	0.999973990991
		W 121°12'45.267020"	8016001.2710	- 0°30'19.2515"
45	C-457	N 44°20'15.921997"	244995.1780	0.999998889336
		W 120°57'03.633018"	8084095.6028	- 0°19'11.4578"
46	C-463	N 44°14'51.087520"	212117.5717	1.000022706904
		W 120°57'45.313982"	8080877.9533	- 0°19'41.0174"
47	CLINE FALLS	N 44°16'41.810500"	223915.7475	1.000014314897
		W 121°15'30.541500"	8003444.8520	- 0°32'16.4619"
48	COTTON 1	N 44°38'09.416789"	354011.5124	0.999937533052
		W 121°07'42.683555"	8038496.5194	- 0°26'44.6635"
49	COTTON 2	N 44°35'33.177825"	338227.3586	0.999944803022
		W 121°08'47.723884"	8033667.2564	- 0°27'30.7892"
50	CROOK	N 44°33'37.743659"	326797.9421	0.999950537989
		W 121°15'39.678247"	8003749.2302	- 0°32'22.9415"
51	E-735	N 44°16'13.809676"	221001.6471	1.000016410440
		W 121°13'32.888235"	8011978.7622	- 0°30'53.0238"
52	F-336	N 44°29'02.219737"	298505.3574	0.999965474667
		W 121°04'47.279400"	8050781.2121	- 0°24'40.2694"
53	F-735	N 44°16'08.890129"	220438.0190	1.000016780480
		W 121°11'50.760859"	8019405.3436	- 0°29'40.5965"
54	G-111	N 44°19'06.724701"	238382.7716	1.000003758868
		W 121°10'07.475841"	8027069.7229	- 0°28'27.3482"
55	G-455	N 44°20'56.251613"	249310.7761	0.999996102281
		W 121°05'18.980639"	8048124.5162	- 0°25'02.7514"

56 G-457	N 44°18'38.526205"	235049.5768	1.000005774953
	W 120°53'25.134943"	8099928.0563	- 0°16'36.5021"
57 GIS 0021	N 44°21'01.231340"	249983.7662	0.999995760754
	W 121°10'16.763540"	8026490.8504	- 0°28'33.9349"
58 GIS 0022	N 44°17'28.648220"	228541.7593	1.000010850069
	W 121°12'33.565460"	8016361.6778	- 0°30'10.9529"
59 GIS 0023	N 44°13'06.655070"	202059.7609	1.000030881245
	W 121°13'48.386980"	8010679.7869	- 0°31'04.0153"
60 H-478	N 44°19'11.650410"	238844.3154	1.000003408583
	W 121°09'04.752914"	8031633.7708	- 0°27'42.8660"
61 HAY	N 44°30'00.004910"	304504.4402	0.999962196303
	W 121°09'13.886760"	8031501.1143	- 0°27'49.3436"
62 J-366	N 44°34'28.090493"	331729.6743	0.999947998682
	W 121°11'23.516722"	8022338.1798	- 0°29'21.2753"
63 J-735	N 44°16'23.382607"	222039.7760	1.000015691980
	W 121°15'16.011370"	8004484.5043	- 0°32'06.1573"
64 JUIN AZ NO. 2	N 44°27'36.586625"	290199.1089	0.999970475106
	W 121°14'59.393960"	8006326.2604	- 0°31'54.3725"
65 K-336	N 44°33'10.667842"	323823.6488	0.999951927890
	W 121°09'34.387246"	8030172.9894	- 0°28'03.8822"
66 K-752	N 44°19'48.334073"	242437.7464	1.000000817491
	W 121°05'27.688621"	8047441.4498	- 0°25'08.9270"
67 KINGS GAP	N 44°25'51.317512"	279214.7464	0.999976854693
	W 121°06'04.463534"	8045041.9389	- 0°25'35.0073"
68 L-367	N 44°25'29.835877"	276904.2994	0.999978188033
	W 121°01'37.826961"	8064375.1330	- 0°22'25.9123"
69 LONE PINE PK	N 44°22'40.876596"	259868.2047	0.999989047160
	W 121°04'07.132269"	8053419.8461	- 0°24'11.7976"
70 M-419	N 44°17'08.077392"	226556.4825	1.000012365565
	W 121°15'02.369311"	8005519.1165	- 0°31'56.4825"
71 N-463	N 44°16'34.202321"	222479.3542	1.000014882492
	W 120°54'19.927459"	8095880.7607	- 0°17'15.3601"
72 N-752	N 44°20'04.041374"	243898.8545	0.999999717533
	W 121°01'08.353744"	8066302.0285	- 0°22'05.0104"
73 PRINEVILLE	N 44°18'04.566910"	231579.6755	1.000008227279
	W 120°51'54.057920"	8106534.9627	- 0°15'31.9115"
74 Q-336	N 44°30'46.326826"	309098.0999	0.999959624128
	W 121°06'22.129216"	8043984.2428	- 0°25'47.5355"
75 Q-419	N 44°18'24.818991"	234251.7435	1.000006761598
	W 121°13'07.666356"	8013931.9624	- 0°30'35.1368"

76 Q-463	N 44°14'53.908563" W 121°02'58.126861"	212545.8686 8058109.8977	1.000022489578 - 0°23'22.8599"
77 RED 13 (DEA)	N 44°18'18.081553" W 121°12'32.608699"	233546.9577 8016475.2021	1.000007248148 - 0°30'10.2744"
78 ROD 1	N 44°38'35.577089" W 121°07'47.417855"	356663.2603 8038174.8654	0.999936371148 - 0°26'48.0210"
79 ROD 2	N 44°39'51.606021" W 121°05'33.408077"	364288.9432 8047919.5095	0.999933084516 - 0°25'12.9832"
80 ROUND	N 44°36'38.000270" W 121°14'19.414910"	344997.1960 8009726.9730	0.999941718021 - 0°31'26.0199"
81 SKY	N 44°38'02.205020" W 121°07'40.236110"	353279.8479 8038667.8029	0.999937856155 - 0°26'42.9278"
82 T 463 1936	N 44°10'17.524830" W 121°06'08.355789"	184656.3462 8044054.5236	1.000044652990 - 0°25'37.7676"
83 V-456	N 44°22'15.800387" W 121°10'41.683663"	257550.0268 8024743.5198	0.999990715064 - 0°28'51.6079"
84 Y-419	N 44°21'36.025234" W 121°17'40.562469"	253799.6404 7994278.7756	0.999993390449 - 0°33'48.6709"



**FIX & ADJUSTED**

**SURVEY POINTS**

**IN**

**OREGON SOUTH**

**PLANE COORDINATES**

MAP PROJECTION TRANSFORMATION

Projection: User-Defined Lambert  
 Zone = SPC OREGON SO.  
 Central Meridian = W 120°30'00.000000"  
 Latitude of Origin = N 41°40'00.000000"  
 Origin Northing = 0.0000 Easting = 4921259.8430  
 North Standard Parallel = N 44°00'00.000000"  
 South Standard Parallel = N 42°20'00.000000"  
 Scale along Standard Parallels = 1.000000000000

Linear units = Internatl Foot

POINT	NAME	GEODETIC	MAP	SCALE & CONVERGENCE
1 10132500		N 44°39'52.644522" W 121°07'59.753958"	1093351.8352 4756454.0794	1.000237202399 - 0°25'59.6877"
2 10132604		N 44°39'52.540834" W 121°08'36.333219"	1093361.4881 4753809.6978	1.000237189148 - 0°26'24.7133"
3 10133640		N 44°39'26.338497" W 121°07'59.665384"	1090687.1379 4756440.3338	1.000233848761 - 0°25'59.6271"
4 10142900		N 44°39'51.814183" W 121°05'33.403374"	1093190.2937 4767033.1361	1.000237096289 - 0°24'19.5623"
5 10143000		N 44°39'52.111644" W 121°06'46.401619"	1093258.4057 4761756.3043	1.000237134300 - 0°25'09.5038"
6 10143140		N 44°39'26.065861" W 121°06'46.510630"	1090620.1708 4761729.1149	1.000233814091 - 0°25'09.5784"
7 11130100		N 44°38'09.425618" W 121°07'46.425262"	1082889.1569 4757339.0076	1.000224138973 - 0°25'50.5689"
8 11130200		N 44°38'09.617302" W 121°08'59.316483"	1082948.8412 4752067.3526	1.000224162995 - 0°26'40.4372"
9 11130204		N 44°38'09.459477" W 121°08'22.872388"	1082912.5622 4754703.0201	1.000224143216 - 0°26'15.5041"
10 11131004		N 44°37'17.697734" W 121°09'35.573364"	1077710.3118 4749403.6665	1.000217688659 - 0°27'05.2422"
11 11131104		N 44°37'17.412628" W 121°08'22.853993"	1077640.6159 4754664.0817	1.000217653285 - 0°26'15.4915"
12 11131200		N 44°37'17.317580" W 121°07'46.590877"	1077611.1081 4757287.3483	1.000217641493 - 0°25'50.6822"
13 11131300		N 44°36'25.355241" W 121°07'46.877060"	1072347.9305 4757227.0702	1.000211227188 - 0°25'50.8780"
14 11131400		N 44°36'25.452121" W 121°08'59.556332"	1072397.9200 4751968.1285	1.000211239087 - 0°26'40.6013"
15 11132204		N 44°35'33.516478" W 121°09'35.981447"	1067157.9648 4749290.9812	1.000204892805 - 0°27'05.5214"



16	11132304	N 44°35'33.166845" W 121°08'23.374527"	1067081.7687 4754545.7528	1.000204850301 - 0°26'15.8476"
17	11132400	N 44°35'33.165571" W 121°07'46.891977"	1067061.6259 4757186.2427	1.000204850147 - 0°25'50.8882"
18	11140500	N 44°38'08.715842" W 121°05'23.868664"	1082742.1912 4767648.8333	1.000224050030 - 0°24'13.0391"
19	11140600	N 44°38'09.121737" W 121°06'33.023771"	1082819.1138 4762647.5041	1.000224100892 - 0°25'00.3514"
20	11140700	N 44°37'17.101158" W 121°06'33.150420"	1077549.8913 4762600.0131	1.000217614643 - 0°25'00.4381"
21	11141900	N 44°35'33.205739" W 121°06'33.342116"	1067026.3176 4762509.5847	1.000204855029 - 0°25'00.5692"
22	12131600	N 44°31'13.584714" W 121°11'23.453894"	1040892.9004 4741295.6367	1.000174103994 - 0°28'19.0484"
23	12131700	N 44°31'13.732954" W 121°12'36.042688"	1040951.8772 4736035.7202	1.000174121091 - 0°29'08.7099"
24	12131800	N 44°31'13.786135" W 121°13'45.497029"	1041000.5132 4731002.8706	1.000174127225 - 0°29'56.2269"
25	13153040	N 44°24'42.348633" W 120°59'18.614891"	1000897.6135 4793589.4452	1.000130818032 - 0°20'03.1517"
26	13153300	N 44°23'24.919678" W 120°56'52.490750"	992996.2980 4804155.5907	1.000122686073 - 0°18'23.1813"
27	13153500	N 44°23'25.312202" W 120°54'26.743795"	992982.0008 4814740.3080	1.000122726936 - 0°16'43.4689"
28	14120188	N 44°23'34.795290" W 121°13'45.481150"	994513.5206 4730599.1883	1.000123715272 - 0°29'56.2160"
29	14132500	N 44°19'12.052420" W 121°07'42.323900"	967690.1510 4756771.2101	1.000097127971 - 0°25'47.7629"
30	14150100	N 44°22'38.538655" W 120°53'11.379817"	988218.8586 4820191.5742	1.000117883642 - 0°15'51.9088"
31	14151300	N 44°20'54.162696" W 120°53'11.556126"	977647.8981 4820129.9758	1.000107264489 - 0°15'52.0295"
32	14151500	N 44°20'54.986233" W 120°55'36.588644"	977782.4873 4809590.4033	1.000107347255 - 0°17'31.2531"
33	14152200	N 44°20'02.909778" W 120°55'36.990944"	972508.4951 4809534.2794	1.000102145435 - 0°17'31.5283"
34	15131400	N 44°15'43.386380" W 121°08'54.906150"	946598.2583 4751330.3557	1.000077188518 - 0°26'37.4199"
35	15140100	N 44°17'27.799907" W 121°00'28.810271"	956918.1817 4788226.5625	1.000087035913 - 0°20'51.1757"

36	15150800	N 44°16'35.203702"	951530.0489	1.000082042941
		W 120°58'03.604773"	4798759.3968	- 0°19'11.8338"
37	15143500	N 44°13'07.211401"	930559.9149	1.000062945240
		W 121°01'39.849891"	4782892.6892	- 0°21'39.7773"
38	15153000	N 44°13'59.124840"	935753.2907	1.000067615198
		W 120°59'15.053327"	4793468.7859	- 0°20'00.7151"
39	2711 PP&L	N 44°21'54.055874"	984360.6187	1.000113326121
		W 121°15'02.780596"	4724894.4387	- 0°30'49.1002"
40	2906 ORE	N 44°21'21.820622"	980823.9917	1.000110053012
		W 121°07'26.761093"	4758000.6669	- 0°25'37.1157"
41	2971 RESET	N 44°22'43.406995"	988736.5386	1.000118385307
		W 120°54'22.978224"	4814993.1787	- 0°16'40.8927"
42	B-366	N 44°23'02.731187"	991168.2618	1.000120382187
		W 121°11'05.834702"	4742165.7777	- 0°28'06.9943"
43	BIG FALLS 1945	N 44°23'31.365800"	994325.9086	1.000123357599
		W 121°17'46.935270"	4713062.1578	- 0°32'41.4062"
44	C-15 PP&L	N 44°26'38.049066"	1013035.6034	1.000143236989
		W 121°12'45.267020"	4735129.7114	- 0°29'15.0207"
45	C-457	N 44°20'15.921997"	973859.3388	1.000103439124
		W 120°57'03.633018"	4803243.3280	- 0°18'30.8042"
46	C-463	N 44°14'51.087520"	940978.5562	1.000072353989
		W 120°57'45.313982"	4800031.9942	- 0°18'59.3202"
47	CLINE FALLS	N 44°16'41.810500"	952756.7680	1.000082666498
		W 121°15'30.541500"	4722591.1764	- 0°31'08.0928"
48	COTTON 1	N 44°38'09.416789"	1082886.2299	1.000224137866
		W 121°07'42.683555"	4757609.6175	- 0°25'48.0090"
49	COTTON 2	N 44°35'33.177825"	1067096.4164	1.000204851636
		W 121°08'47.723884"	4752783.4336	- 0°26'32.5062"
50	CROOK	N 44°33'37.743659"	1055654.9358	1.000190979180
		W 121°15'39.678247"	4722861.4377	- 0°31'14.3436"
51	E-735	N 44°16'13.809676"	949845.2434	1.000080030905
		W 121°13'32.888235"	4731126.5944	- 0°29'47.6006"
52	F-336	N 44°29'02.219737"	1027369.9918	1.000159160718
		W 121°04'47.279400"	4769911.9177	- 0°23'48.0067"
53	F-735	N 44°16'08.890129"	949283.8893	1.000079569783
		W 121°11'50.760859"	4738553.8201	- 0°28'37.7304"
54	G-111	N 44°19'06.724701"	967232.3256	1.000096605929
		W 121°10'07.475841"	4746213.4383	- 0°27'27.0682"
55	G-455	N 44°20'56.251613"	978167.2307	1.000107474459
		W 121°05'18.980639"	4767267.3780	- 0°24'09.6950"

56 G-457	N 44°18'38.526205" W 120°53'25.134943"	963915.6906 4819079.1346	1.000093854168 - 0°16'01.3194"
57 GIS 0021	N 44°21'01.231340" W 121°10'16.763540"	978834.3397 4745631.1092	1.000107975422 - 0°27'33.4224"
58 GIS 0022	N 44°17'28.648220" W 121°12'33.565460"	957387.2570 4735507.4517	1.000087116985 - 0°29'07.0151"
59 GIS 0023	N 44°13'06.655070" W 121°13'48.386980"	930902.0392 4729833.5832	1.000062895542 - 0°29'58.2040"
60 H-478	N 44°19'11.650410" W 121°09'04.752914"	967695.2290 4750777.7785	1.000097088556 - 0°26'44.1565"
61 HAY	N 44°30'00.004910" W 121°09'13.886760"	1033365.0677 4750626.3742	1.000165683013 - 0°26'50.4054"
62 J-366	N 44°34'28.090493" W 121°11'23.516722"	1060593.7693 4741453.3717	1.000196990321 - 0°28'19.0914"
63 J-735	N 44°16'23.382607" W 121°15'16.011370"	950881.0150 4723631.5182	1.000080929856 - 0°30'58.1520"
64 JUIN AZ NO. 2	N 44°27'36.586625" W 121°14'59.393960"	1019049.2769 4725451.0932	1.000149642421 - 0°30'46.7833"
65 K-336	N 44°33'10.667842" W 121°09'34.387246"	1052688.1381 4749292.4121	1.000187771645 - 0°27'04.4308"
66 K-752	N 44°19'48.334073" W 121°05'27.688621"	971293.2993 4766586.0112	1.000100701110 - 0°24'15.6526"
67 KINGS GAP	N 44°25'51.317512" W 121°06'04.463534"	1008074.4758 4764176.6050	1.000138182357 - 0°24'40.8120"
68 L-367	N 44°25'29.835877" W 121°01'37.826961"	1005768.4279 4783513.4521	1.000135876386 - 0°21'38.3933"
69 LONE PINE PK	N 44°22'40.876596" W 121°04'07.132269"	988727.2675 4772560.6745	1.000118124488 - 0°23'20.5401"
70 M-419	N 44°17'08.077392" W 121°15'02.369311"	955398.3732 4724664.7163	1.000085155906 - 0°30'48.8188"
71 N-463	N 44°16'34.202321" W 120°54'19.927459"	951343.7893 4815033.7112	1.000081948521 - 0°16'38.8055"
72 N-752	N 44°20'04.041374" W 121°01'08.353744"	972759.1301 4785448.1439	1.000102257779 - 0°21'18.2293"
73 PRINEVILLE	N 44°18'04.566910" W 120°51'54.057920"	960446.5842 4825687.1766	1.000090565460 - 0°14'59.0093"
74 Q-336	N 44°30'46.326826" W 121°06'22.129216"	1037963.1175 4763110.8266	1.000170969267 - 0°24'52.8979"
75 Q-419	N 44°18'24.818991" W 121°13'07.666356"	963096.9454 4733075.7577	1.000092523408 - 0°29'30.3451"

76 Q-463	N 44°14'53.908563"	941401.8393	1.000072613102
	W 121°02'58.126861"	4777262.7086	- 0°22'33.3303"
77 RED 13 (DEA)	N 44°18'18.081553"	962392.8930	1.000091870952
	W 121°12'32.608699"	4735619.4338	- 0°29'06.3605"
78 ROD 1	N 44°38'35.577089"	1085538.6552	1.000227424473
	W 121°07'47.417855"	4757287.1413	- 0°25'51.2479"
79 ROD 2	N 44°39'51.606021"	1093169.2104	1.000237069690
	W 121°05'33.408077"	4767032.6470	- 0°24'19.5655"
80 ROUND	N 44°36'38.000270"	1073860.8028	1.000212782133
	W 121°14'19.414910"	4728834.7437	- 0°30'19.4317"
81 SKY	N 44°38'02.205020"	1082154.4031	1.000223234722
	W 121°07'40.236110"	4757781.1509	- 0°25'46.3346"
82 T 463 1936	N 44°10'17.524830"	913508.0330	1.000048129262
	W 121°06'08.355789"	4763213.9777	- 0°24'43.4749"
83 V-456	N 44°22'15.800387"	986400.9814	1.000115548058
	W 121°10'41.683663"	4743881.3402	- 0°27'50.4714"
84 Y-419	N 44°21'36.025234"	982640.3342	1.000111492259
	W 121°17'40.562469"	4713414.1039	- 0°32'37.0463"