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Date: 11/19/1998 By: JP  
 This survey consists of: 2 Pgs.  
 Map: M129-21B  
 Narrative: \_\_\_\_\_  
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 † DOUGLAS COUNTY SURVEYOR

# HORIZONTAL CONTROL, RECOVERY AND RETRACEMENT MAP

FOR THE OREGON DEPARTMENT OF TRANSPORTATION

LOCATED IN THE S.E. 1/4 OF SEC. 10, S.W. 1/4 OF SEC. 11, & N.E. 1/4 OF SEC. 15, T. 28 S., R. 6 W., W.M. DOUGLAS COUNTY

## SURVEY NARRATIVE

THE PURPOSE OF THIS METRIC SURVEY NETWORK WAS TO ESTABLISH CONTROL FOR AN OREGON DEPARTMENT OF TRANSPORTATION SAFETY IMPROVEMENT PROJECT CALLED "HIGHWAY 42 AT GRANGE ROAD".

THE NETWORK USED AS A BASIS OF BEARING TWO RIGHT-OF-WAY MONUMENTS NAMED POINTS \*1 & \*2. POINT \*1 IS A PK NAIL SET IN CONCRETE NEAR A METAL FENCE POST AT O.D.O.T. R/W STATION 1276+50 (90.00 FEET LT.). POINT \*2 IS A 5/8" (16 MM) IRON ROD WITH A 1 1/2" (38 MM) ALUM. CAP STAMPED "O.D.O.T. R/W STATION 1283+00 (90.00 FEET LT.)". THE BEARING BETWEEN POINTS \*1 AND \*2 WAS OBTAINED FROM STATE HIGHWAY RIGHT-OF-WAY MAP \*9B-7-5 DATED DECEMBER 1969. COORDINATES FOR POINTS \*1 AND \*2 WERE CALCULATED USING COORDINATES LISTED ON SAID MAP AND THEN CONVERTED TO METRIC.

POINT \*2 WAS OCCUPIED AND POINT \*1 WAS BACKSIGHTED. TWO TO FOUR NETWORK POINTS WERE THEN FORESIGHTED FROM EACH OCCUPIED POINT. POINT \*1 WAS THE ONLY POINT NOT OCCUPIED. NETWORK POINTS INCLUDE SET POINTS \*3 THRU \*7, FOUND POINT \*2 AND FOUND BENCH MARK \*J675.

A WILD T1610 ELECTRONIC THEODOLITE AND A WILD D11600 DISTOMAT DISTANCE METER WERE USED TO MAKE ALL NETWORK OBSERVATIONS. THE T1610 THEODOLITE HAS A STANDARD ANGULAR ERROR OF +/-1.5 SECONDS AND THE D11600 HAS A STANDARD DISTANCE ERROR OF +/- 3 MM +/- 2 ppm.

VERTICAL CONTROL WAS ESTABLISHED USING BENCH MARK \*J675. A CLOSED LEVEL CIRCUIT WAS RUN THRU NETWORK POINTS \*2 THRU \*7 AND B.M. \*J675 USING A WILD NA 2002 BAR CODE LEVEL. CLOSURE = 8 MM X SQUARE ROOT OF 1.341 = 0.0093 m. THE STANDARD DEVIATION FOR A WILD NA 2002 IS 0.9 MM IN A 1 km DOUBLE RUN LEVEL CIRCUIT.

THE HORIZONTAL CONTROL NETWORK WAS ADJUSTED USING A LEAST SQUARES ADJUSTMENT TECHNIQUE. THE LEAST SQUARES ADJUSTMENT PRODUCED: ANGULAR RESIDUALS (THE AMOUNTS THE FIELD OBSERVED ANGLES WERE CHANGED DUE TO THE ADJUSTMENT) AVERAGING 2.2 SECONDS; AND DISTANCE RESIDUALS (THE AMOUNTS THE FIELD OBSERVED DISTANCES WERE CHANGED DUE TO THE ADJUSTMENT) AVERAGING 0.7 MM. THE SURVEY WAS COMPLETED 11 JUNE, 1997.

THERE IS A 95% PROBABILITY THAT THE FINAL POSITIONS OF THE CONTROL POINTS ARE WITHIN THE ERROR ELLIPSES AS SHOWN IN THE TABLE BELOW:

PT.	ADJUSTED COORDINATES		STANDARD DEVIATIONS		STANDARD ERROR ELLIPSES		
	NORTH	EAST	NORTH	EAST	SEMI MAJOR	SEMI MINOR	ORIENTATION
J675	168130.561	375045.128	0.004	0.004	0.005	0.002	S45°53'04"E
3	168187.258	375109.149	0.006	0.006	0.009	0.002	S43°53'04"E
4	168248.435	375277.455	0.015	0.009	0.018	0.002	S31°11'21"E
5	168357.324	375380.503	0.021	0.015	0.026	0.003	S35°57'47"E
6	168413.216	375493.738	0.027	0.018	0.033	0.002	S33°52'45"E
7	168347.967	375467.010	0.026	0.015	0.029	0.003	S29°30'08"E

## RETRACEMENT NARRATIVE

THE ALIGNMENT INCLUDES ONE TANGENT SECTION ON EITHER END OF A SPIRAL-CURVE-SPIRAL SECTION. BASIS OF BEARING WAS HELD ON THE TANGENT INTO SPIRAL SECTION. THE TANGENT BEARING OUT OF SPIRAL WAS CHANGED FROM N 63° 52' 30" E AS PER 9B-7-5 TO N 63° 56' 29" E SO THAT OFFSETS FROM FOUND R/W POINTS 1022, 1023 AND 1024 (P.T., P.O.T. AND P.O.T. RESPECTIVELY) MATCHED THOSE ON RECORD.

GOOD CURVATURE ALIGNMENT WITH MATCHING SPIRALS WAS FOUND BY BUILDING SPIRALS AHEAD AND BACK ON LINE FROM LOCATED TANGENTS THEN FITTING THE RADIUS BY PROJECTING PERPENDICULARS FROM THE P.S.C. AND P.C.S.

ENGLISH RIGHT-OF-WAY STATION 1276+50.00 (POINT \*1) WAS MULTIPLIED BY 0.3048 TO OBTAIN THE METRIC STATIONING FOR THE ALIGNMENT.

REGISTERED PROFESSIONAL LAND SURVEYOR

*Robert G. Pappe*  
 OREGON  
 JANUARY 29, 1991  
**ROBERT G. PAPPE**  
 2483

EXPIRES 12-31-98



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COUNTY SURVEYORS FILE DATA  
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