

**PURPOSE**

THE PURPOSE OF THIS SURVEY IS TO RESOLVE THE FIELD LOCATION OF THE EXISTING RIGHT OF WAY OF PACIFIC HIGHWAY (INTERSTATE 5) IN THE VICINITY OF RICE HILL. OR THIS SURVEY ALSO PERPETUATES ANY EXISTING SURVEY MONUMENTS THAT LIE NEAR THE FUTURE IMPROVEMENTS OF SAID HIGHWAY. PERPETUATION OF THE MONUMENT LOCATIONS WAS ACCOMPLISHED BY TYING THE MONUMENTS TO THE PROJECT CONTROL NETWORK. THIS SURVEY WAS PERFORMED AT THE REQUEST OF THE OREGON DEPARTMENT OF TRANSPORTATION (ODOT) AND INCLUDES THE FILING OF THIS CONTROL, RECOVERY, RETRACEMENT MAP IN SUPPORT OF AN UPCOMING PROJECT NAMED "I-5: SUTHERLIN - ELKHEAD RD. PAVING & CLIMBING LANES". SURVEY FIELD WORK WAS PERFORMED BETWEEN AUGUST 17, 2009 AND NOVEMBER 23, 2009. THE ORIGINAL FIELD NOTES FOR THE PROJECT ARE ARCHIVED IN SALEM IN FIELD BOOK NUMBER 4467.

MARSHALL WAGSTAFF (ODOT) OVERSAW THE CONTROL AND RECOVERY WORK FOR THIS PROJECT. ANDY AUSLAND (ODOT) REVIEWED CONTROL AND RECOVERY WORK AND RETRACED THE RIGHT OF WAY FOR THIS SURVEY.

CONTROL POINTS FOR THIS SURVEY WERE NOT SET ON AND DO NOT REPRESENT PROPERTY LINES OR RIGHT OF WAY LINES AND ARE INTENDED FOR USE BY ODOT IN SUPPORT OF FUTURE PROJECTS. IT IS NOT THE INTENT OF ODOT TO PERPETUATE THESE POINTS AS BOUNDARY MONUMENTS.

**COORDINATES & BASIS OF BEARING**

THE BEARINGS ARE BASED ON THE OREGON COORDINATE SYSTEM (OCS) OF 1983 (CORS96) (EPOCH 2002), SOUTH ZONE (3602). THIS SURVEY UTILIZES A LOCAL DATUM PLANE (LDP) WHICH IS RELATIVE TO THE SAID OCS, WITH RESPECT TO THE LOCAL LATITUDE AND GROUND ELEVATION. THE LDP COORDINATES DEFINE TRUE GROUND DISTANCES. TO CONVERT LDP COORDINATES TO THE OCS, MULTIPLY THE COORDINATES BY 0.99989466.

**HORIZONTAL CONTROL**

THE ROSEBURG SURVEY CREW ESTABLISHED STATE PLANE COORDINATES IN INTERNATIONAL FEET USING OPUS-RS TO ESTABLISH POSITIONS ON TWO FOUND MONUMENTS AND ONE SET MONUMENT. THESE THREE MONUMENTS, W.C., RANCH1, AND RVALLEY, REPRESENT THE PRIMARY CONTROL FOR THIS PROJECT. THE COORDINATES WERE FIXED ON THESE PRIMARY CONTROL POINTS, WHEN THE HORIZONTAL LEAST SQUARES ADJUSTMENT WAS APPLIED TO THE NETWORK CONTROL. NETWORK CONTROL POINTS ARE CONSIDERED TO BE AT A SECONDARY LEVEL OF ACCURACY (POINT NUMBERS BETWEEN 1 AND 499). THE THREE PRIMARY CONTROL POINTS FORM THE BASIS OF BEARING FOR THIS PROJECT.

A GPS BASE STATION OCCUPIED THE PRIMARY CONTROL POINTS FOR THE REAL TIME KINEMATIC (RTK) GPS WORK. THIS WORK CONSISTED OF TYING STRATEGIC POINTS AND EXISTING MONUMENTS TWICE WITH A GPS RTK ROVER WITH AT LEAST 30 MINUTES BETWEEN OCCUPATIONS. MONUMENTS THAT COULD NOT BE TIED BY RTK GPS METHODS WERE DOUBLE TIED BY TOTAL STATION FROM PREVIOUSLY TIED RTK GPS MONUMENTS OR NETWORK CONTROL. THESE MONUMENTS THAT WERE DOUBLED TIED ARE CONSIDERED TO BE AT A TERTIARY LEVEL OF ACCURACY (POINT NUMBERS BETWEEN 500 AND 2999). HORIZONTAL POSITION OF THE MONUMENTS WAS VALID AT THE TIME OF THE SURVEY AND SHOULD BE FIELD VERIFIED BEFORE USING.

**HORIZONTAL CONTROL EQUIPMENT**

A LEICA GX1230 DUAL FREQUENCY GPS RECEIVER WAS USED FOR GPS OBSERVATIONS. IT HAS THE FOLLOWING ACCURACY: PHASED DIFFERENTIAL STATIC METHOD HORIZONTAL ERROR OF 5 MM + 0.5 PPM, AND A VERTICAL ERROR OF 10 MM, + 0.5 PPM; PHASED DIFFERENTIAL RTK METHOD HORIZONTAL ERROR OF 10 MM + 1 PPM, AND A VERTICAL ERROR OF 20 MM, + 1 PPM.

A LEICA TCRP1201 TOTAL STATION WAS USED FOR GATHERING TOPOGRAPHIC DATA AND SOME OF THE MONUMENT TIES. IT HAS THE FOLLOWING ACCURACY: STANDARD ANGULAR ERROR +/- 1 SECOND; STANDARD DISTANCE ERROR OF +/- 2MM, +/- 2 PPM.

**VERTICAL CONTROL**

BENCH MARKS N739, K555, AND P739 WERE HELD AS VERTICAL CONTROL FOR THE PROJECT. A LEVEL CIRCUIT WAS RUN TO ESTABLISH ELEVATIONS ON CONTROL POINTS USED FOR THE TOPOGRAPHY WORK. THE VERTICAL DATUM FOR THE PROJECT IS NAVD 1988. ELEVATIONS SHOWN ON MONUMENTS WERE VALID AT THE TIME OF THE SURVEY AND SHOULD BE FIELD VERIFIED BEFORE USING.

**VERTICAL CONTROL EQUIPMENT**

A LEICA DNA10 DIGITAL LEVEL AND A LEICA GBNL4C ALUMINUM LEVEL ROD WAS USED TO COMPLETE THE LEVEL CIRCUITS. THIS INSTRUMENT HAS THE FOLLOWING STANDARD DEVIATION OF 1.5MM IN A 1 KILOMETER DOUBLE-RUN LEVEL CIRCUIT.

**RESOLUTION OF RIGHT OF WAY**

INFORMATION SHOWN WITHOUT BRACKETS IS MEASURED/RESOLVED. IF MEASURED/RESOLVED DATA DIFFERS FROM RECORD DATA BOTH ARE SHOWN. IF ONLY RECORD INFORMATION IS SHOWN IT WAS HELD.

**PACIFIC HIGHWAY (INTERSTATE 5)**

THE CURRENT EXISTING HIGHWAY RIGHT OF WAY CENTER LINE HAS NO CENTER LINE DESIGNATOR AND WAS RESOLVED USING THE FOLLOWING ODOT RIGHT OF WAY DRAWINGS (DRG) LISTED IN REVERSE CHRONOLOGICAL ORDER: 7B-14-16, 5B-29-4, AND 4B-6-12. THE PROCEDURE INVOLVED HOLDING POINT NUMBERS 1019 AND 1025 AT 75.00 AND 190.00 FEET RIGHT RESPECTIVELY FOR THE FIRST TANGENT. THE RECORD DELTA AND DEGREE OF CURVE WAS THEN HELD FROM ODOT DRG. 4B-6-12 FOR THE AHEAD TANGENT. THE NEXT TANGENT (1037+29.21 P.I. TO 1197+96.04 P.I.) HELD THE RECORD DISTANCE FROM POINTS 1049 AND 1053. THE RECORD CURVE ELEMENTS WERE HELD AND AHEAD TANGENT CALCULATED (1197+96.04 P.I. TO 1215+53.67 P.I.). THE NEXT TANGENT (STATIONS 1215+53.67 P.I. TO 1237+79.61 P.I.) WAS A RESULT OF HOLDING RECORD CURVE INFORMATION FROM THE NEXT CURVE (1226+74.14 P.S. TO 1246+57.05 P.T.) AND SOLVING BACKWARDS. THE RESULTING CURVE BETWEEN THE TANGENTS (BETWEEN STATIONS 1203+05.26 P.S. AND 1226+40.33 P.T.) WAS CALCULATED BY ADJUSTING THE DEGREE OF CURVE TO FIT AN ORIGINAL RIGHT OF WAY POINT 1068 AND RESULTED IN AN EXACT FIT IN STATION AND OFFSET WITH POINT NUMBER 1053. THE LAST TANGENT (1237+79.61 P.I. TO 1275+00.00 P.O.T.) WAS RESOLVED BY HOLDING RECORD DISTANCE FROM POINTS 1061 AND 1064.

THE STATIONING FOR THE CENTER LINE ALIGNMENT FROM STATION 989+99.51 TO EQUATION STATION AH 1187+74.51 = BK 1050+27.40 WAS ESTABLISHED BY HOLDING POINT 1017 FROM ODOT DRG. 07B-14-16. THIS SOLUTION AGREES WELL WITH POINTS 1018, 1023, AND 1025. STATIONING FROM AH 1187+74.51 = BK 1050+27.40 TO 1274+98.31 WAS ESTABLISHED BY HOLDING THE STATIONING FOR POINT 1017 FOUND ON ODOT DRG. 4B-6-12. THIS AGREED WELL WITH RECORD DATA FOR POINTS 1018, 1023, AND 1025.

**"PH" - JOHN LONG COUNTY RD. NO. 126A (OLD PACIFIC HIGHWAY)**

THE RESOLUTION OF THE RIGHT OF WAY OF OLD PACIFIC HIGHWAY ("PH" ALIGNMENT) WAS COMPLETED UTILIZING RECORD DATA FROM ODOT DRG. 3B-11-12-04. RECORD SHAPE FOR THE ALIGNMENT FROM CENTER LINE STATIONS "PH" 1157+44.71 P.O.T. TO "PH" 1192+61.18 P.C. WAS RECREATED PER SAID ODOT DRG. 3B-11-12-04. THE RECORD RIGHT OF WAY WIDTHS WERE FOUND ON TWO ODOT DRG'S: 4B-6-12 AND 3B-11-12-04 AND SHOWN ON THIS MAP. TO CALCULATE THE BACK TANGENT, A LINE WAS HELD AT RECORD DISTANCE FROM POINTS 1081 AND 1085 (ALONG THE SOUTHEASTERLY RIGHT OF WAY LINE OF OLD PACIFIC HIGHWAY) TO ESTABLISH THE TANGENT LINE BEGINNING AT "PH" 1157+44.71 P.O.T. THE AHEAD TANGENT WAS THEN ESTABLISHED BY HOLDING THE RECORD DELTA ANGLE AND ADJUSTING THE ALIGNMENT UNTIL POINT 1052 WAS 30.00 FEET LEFT OF CENTER LINE. THE RADIUS OF THE CENTRAL CURVE WAS ADJUSTED UNTIL POINT 1049 WAS 70.00 FEET RIGHT OF CENTER LINE. STATIONING WAS CORRECTED BY CALCULATING THE STATION EQUATION 1181+24.1 = "PH" 1181+20.7 P.C. AS PER ODOT DRG. 3B-11-12-04.

**"C" ALIGNMENT (NORTHBOUND ONRAMP AND OFFRAMP)**

THE RESOLUTION OF THE RIGHT OF WAY FOR THE SECTION OF INTERSTATE 5 CONTROLLED BY THE "C" ALIGNMENT WAS COMPLETED UTILIZING ODOT DRG. 7B-14-16. THE RECORD ALIGNMENT AND RIGHT OF WAY SHAPE FROM STATIONS "C" 1021+76.00 TO "C" 1031+50.00 WAS RECREATED AND HELD PER RECORD DATA SHOWN ON ODOT DRG. 7B-14-16. THE STATIONING AND BEARING RELATIONSHIP WERE BASED UPON THE EQUATION STATION AT STATION 1021+76.00 = "C" 1021+76.00 AND THE DIFFERENCE IN BEARINGS CALCULATED BETWEEN PACIFIC HIGHWAY AND "C" ALIGNMENTS. THE RESULT OF THIS FIT WELL MONUMENTS SET ALONG EASTERLY RIGHT OF WAY LINE.

**"A" ALIGNMENT (SOUTHBOUND ONRAMP AND OFFRAMP)**

THE RESOLUTION OF THE RIGHT OF WAY FOR THE SECTION OF INTERSTATE 5 CONTROLLED BY THE "A" ALIGNMENT WAS COMPLETED UTILIZING ODOT DRG. 7B-14-16. THE RECORD ALIGNMENT AND RIGHT OF WAY SHAPE FROM STATIONS "A" 0+00.00 TO "A" 7+40.00 WAS RECREATED AND HELD PER RECORD DATA SHOWN ON ODOT DRG. 7B-14-16. THE "A" ALIGNMENT TANGENT POSITION WAS CALCULATED BY HOLDING THE RECORD STATION EQUATION AT 1028+68.00 P.O.C. = "A" 0+00.00 P.O.T. ON ONE END AND THEN ROTATED TO FIT POINT NUMBER 1028. THIS RESULTED IN A BETTER FIT WITH EXISTING MONUMENTS THAN BY HOLDING THE RECORD BEARING RELATIONSHIP TO THE INTERSTATE 5 ALIGNMENT AS CALCULATED.

**"RR" - CENTRAL OREGON & PACIFIC RAILROAD (COPR)**

THE RESOLUTION OF THE RIGHT OF WAY FOR THE SECTION OF THE CENTRAL OREGON & PACIFIC RAILROAD (COPR) FROM "RR" 0+00 TO "RR" 39+40.61 WAS COMPLETED UTILIZING RAILROAD DRAWING V 16-43. THE INTENT OF THIS RESOLUTION IS TO HOLD THE EXISTING RAILROAD TRACKS AS EVIDENCE OF THE EXISTING RIGHT OF WAY AND ESTABLISH STATIONING FOR THE RIGHT OF WAY ANGLE POINTS. INITIALLY I ESTABLISHED THE TANGENTS FROM THE MEAN LOCATION OF THE CENTER OF TRACK AS MEASURED IN THE FIELD FROM "RR" 0+00.00 TO "RR" 39+40.01 AND ATTEMPTED TO PLACE AND HOLD THE RECORD RAILROAD SIMPLE AND TAPER CURVES PER RAILROAD MAP V 16-43. AS A RESULT THE RECORD GEOMETRY OF THE TAPER CURVES DID NOT MATCH THE EXISTING CENTER LINE LOCATION OF THE TRACKS AS MEASURED BY ODOT SURVEY CREWS. A STANDARD HIGHWAY SPIRAL WAS USED TO AID IN FITTING THE TRACKS AS TIED IN THE FIELD. THE STATIONING WAS ESTABLISHED BY USING RECORD DISTANCE TIES FOR "RR" 36+86 SHOWN ON ODOT RIGHT OF WAY FILE NO. 10480 (EXHIBIT MAP). THIS WAS COMPARED WITH STATIONING SHOWN ON ODOT RAILROAD ENCROACHMENT MAP 02C-24-0011 FOR "RR" 1+83.0 B.C. AND CHECKED THE STATIONING BY 0.04 FEET.

NETWORK OBSERVATIONS	
OCCUPIED	MEASURED
58	58, RVALLEY
58	58, 59, RVALLEY
59	58, 58, 115, RVALLEY
81	58, 59, 115
82	81, 83
83	81, 82, 84, 85
84	83, 85
85	83, 84, 88, 114
88	84, 85, 114
100	101, 104
101	100, 102, 103, RANCH1
102	101, 108, 109, RANCH1
103	104, 105, 108, 108, RA, RANCH1
104	103, 108, 109, RA
105	108, 107, 108, 109, RANCH1

NETWORK OBSERVATIONS	
OCCUPIED	MEASURED
108	105, 107, 108, 109, 110
107	108, 110
108	102, 104, 105, 108, 110, RANCH1
109	104, 108, 108, 110, 111, RANCH1
110	108, 107, 109, 111, 112
111	110, 112, 113
112	110, 111, 113, 114
113	88, 112, 114
114	85, 88, 113
115	58, 59, 81
RA	103, 105, 108
RANCH1	105, 108, 109
RVALLEY	58, 58, 59
WC	100, 101, 102

FILED  
Date: 10/25/2010 By: JC  
This survey consists of:  
Map: ST HWY  
Narrative: I5-025.A-K  
Corner Rpt:  
DOUGLAS COUNTY SURVEYOR

BOUNDARY LINE LEGEND	
EXISTING HIGHWAY RIGHT OF WAY	_____
EXISTING HIGHWAY ACCESS CONTROL/RIGHT OF WAY	_____
EXISTING RAILROAD RIGHT OF WAY	_____
RIGHT OF WAY FALSE CALL	.....
EXISTING PROPERTY LINE	_____
EXISTING EASEMENT	-----
DONATION LAND CLAIM (THIS SIDE)	_____
DONATION LAND CLAIM (BOTH SIDES)	_____
TOWNSHIP	_____
SECTION	_____
1/4 SECTION	_____
1/16 SECTION OR GOVERNMENT LOT	_____

USE ODOT PEN TABLE SURV\_CRR\_GS.TBL (GRAYSHADE) TO PLOT SHEETS

REGISTERED PROFESSIONAL LAND SURVEYOR  
MARSHALL R. WAGSTAFF  
OREGON JANUARY 9, 2001  
49476LS  
EXPIRES 6/30/2012

REGISTERED PROFESSIONAL LAND SURVEYOR  
ANDREW D. AUSLAND  
OREGON JULY 15, 2003  
56136LS  
EXPIRES 12/31/2011

SI FEET OREGON DEPARTMENT OF TRANSPORTATION  
HORIZONTAL CONTROL, RECOVERY, AND RETRACEMENT MAP  
I-5: SUTHERLIN - ELKHEAD RD. PAVING & CLIMBING LANES  
PACIFIC HIGHWAY NO. 1, M.P. 146.44 - 149.23  
DOUGLAS COUNTY  
FILE: I6971RW.DGN MODEL: CRR  
FOR ODOT REGION 3 3500 NW. STEWART PKWY. ROSEBURG, OR. 97470  
OCTOBER 20, 2010  
SHEET 3 OF 11

ST. HWY. I5 - 025.C