

SECTIONS 8, 9, 16 & 17, T. 22 S., R. 6 W., W.M.

FILED
 Date: 7-29-2005 By: J.C.
 This survey consists of
 Map: 5+ HWY 38-12
 Narrative: A-6
 Corner rpt:
 DOUGLAS COUNTY
 SURVEYOR

SURVEY NARRATIVE

PURPOSE

THE PURPOSE OF THIS SURVEY WAS TO RESOLVE THE EXISTING RIGHT OF WAY AND TIE TOPOGRAPHY FOR THE DESIGN OF A PROJECT NAMED "OR38: TRUAX SLIDE REPAIR". THE FIELD SURVEY BEGAN SEPTEMBER 30, 2004 AND WAS COMPLETED BY OCTOBER 5, 2004.

HORIZONTAL CONTROL & BASIS OF BEARING

THE COORDINATES THAT APPEAR ON THIS MAP ARE IN INTERNATIONAL FEET AT LOCAL DATUM. THESE COORDINATES MAY BE CONVERTED TO A GRID HORIZONTAL DATUM OF NAD 83 (1998), SOUTH ZONE BY MULTIPLYING THE COORDINATES BY A COMBINED FACTOR OF 0.99992004. THE GEOMETRONICS SURVEY CREW FROM SALEM ORIGINALLY ESTABLISHED GRID STATE PLANE COORDINATES IN INTERNATIONAL FEET BY GPS ON TWO MONUMENTS SET BY THE ROSEBURG SURVEY CREW AS CONTROL FOR THIS PROJECT. THE GPS POINTS SET FOR CONTROL ARE NAMED TRUAX1 AND TRUAX2. THE GEOMETRONICS SURVEY CREW FILED THE SURVEY ST. HWY. 38-011A-D ON THE 2 CONTROL POINTS AT THE DOUGLAS COUNTY SURVEYOR'S OFFICE ON DECEMBER 10, 2004. THE ROSEBURG CREW CONVERTED THE COORDINATES TO LOCAL DATUM AND COMPLETED THE SURVEY. THE COORDINATES WERE FIXED ON THE GPS POINTS TRUAX1 AND TRUAX2, WHEN HORIZONTAL LEAST SQUARES ADJUSTMENT WAS APPLIED TO THE NETWORK CONTROL. POINTS TRUAX1 AND TRUAX2 FORM THE BASIS OF BEARING FOR THIS PROJECT.

HORIZONTAL LEAST SQUARES ADJUSTMENT

THE HORIZONTAL LEAST SQUARES ADJUSTMENT PRODUCED THE FOLLOWING RESIDUALS (THE AMOUNT THAT FIELD OBSERVED ANGLES AND DISTANCES WERE CHANGED DUE TO ADJUSTMENT). 70% OF THE ANGULAR RESIDUALS ARE WITHIN 3 SECONDS AND ALL ARE WITHIN 9 SECONDS. 100% OF THE DISTANCE RESIDUALS WERE WITHIN 0.016 FEET. THESE TOLERANCES ARE WITHIN O.D.O.T. STANDARDS.

HORIZONTAL CONTROL EQUIPMENT

A LEICA TCA 1800 TOTAL STATION THEODOLITE WAS USED TO MAKE NETWORK OBSERVATIONS. THIS INSTRUMENT HAS THE FOLLOWING ACCURACY: STANDARD ANGULAR ERROR OF +/- 1 SECOND; STANDARD DISTANCE ERROR OF +/- 2MM, +/- 2PPM.

VERTICAL CONTROL

BENCH MARK D246 WITH NAVD 1988 DATUM WAS HELD AS FIXED FOR VERTICAL CONTROL. TWO LEVEL CIRCUITS WERE COMPLETED TO PLACE ELEVATIONS ON THE CONTROL MONUMENTS.

VERTICAL LEAST SQUARES ADJUSTMENT

THE VERTICAL LEAST SQUARES ADJUSTMENT PRODUCED THE FOLLOWING RESIDUALS (THE AMOUNT THAT FIELD OBSERVED ELEVATIONS WERE CHANGED DUE TO ADJUSTMENT). 100% OF THE VERTICAL RESIDUALS ARE WITHIN 0.002 FEET. THIS TOLERANCE IS WITHIN O.D.O.T. STANDARDS.

VERTICAL CONTROL EQUIPMENT

A LEICA NA 2002 LEVEL AND A LEICA GBNL4C ALUMINUM LEVEL ROD WAS USED TO COMPLETE THE LEVEL CIRCUITS. THIS INSTRUMENT HAS A STANDARD DEVIATION OF 1.5 MM IN A 1 KILOMETER DOUBLE-RUN LEVEL CURCUI.

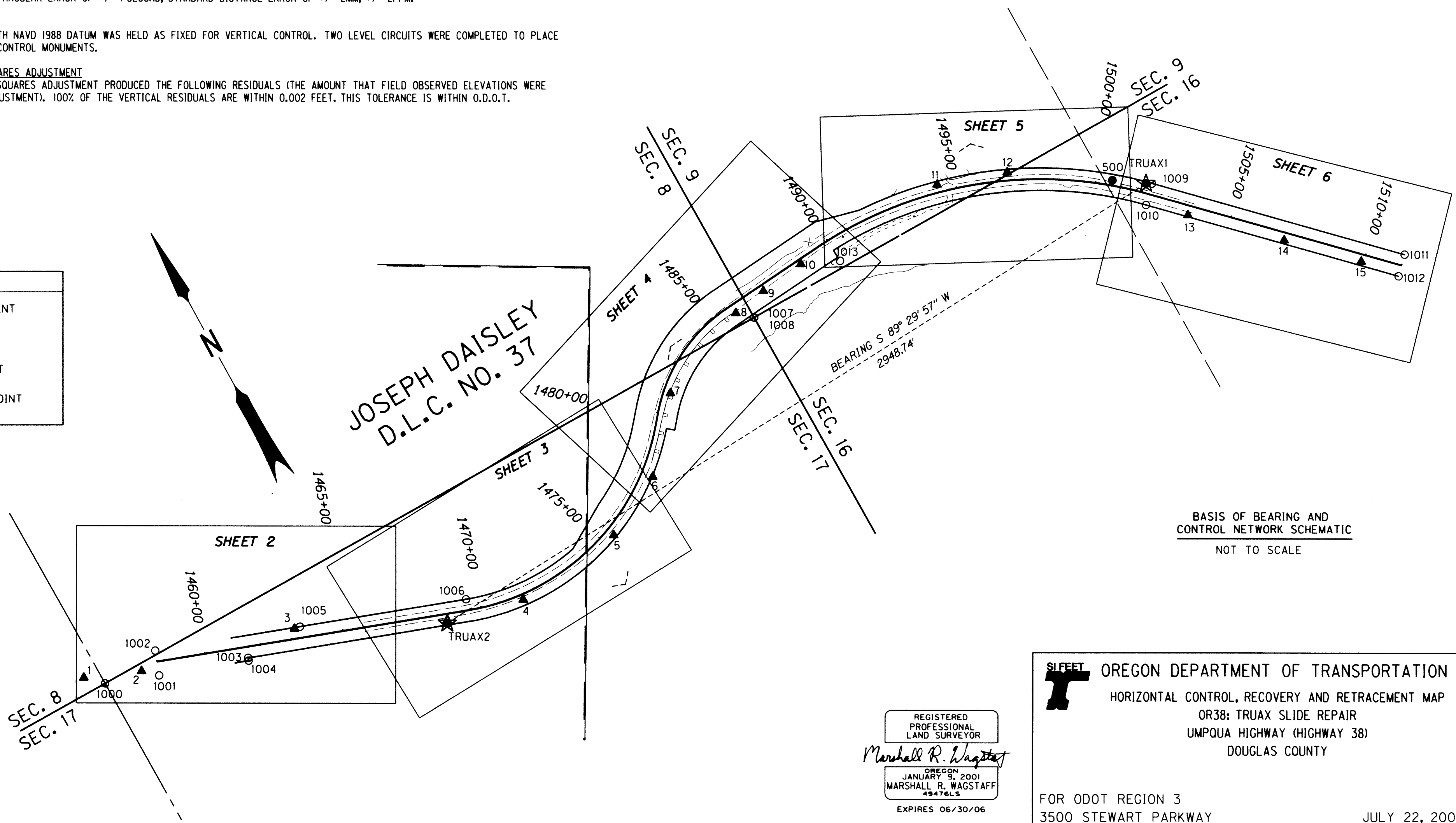
ACCURACY OF CONTROL

IN GENERAL THE NETWORK POINTS (USUALLY NUMBERED 1-499) ARE THE MOST ACCURATE HAVING MULTIPLE TIES BETWEEN MULTIPLE POINTS. STRATEGIC POINTS (OR AUXILIARY POINTS ARE USUALLY NUMBERED 500-999) HAVE BEEN TIED FROM 2 NETWORK POINTS. RECOVERED MONUMENTS (ARE USUALLY NUMBERED 1000-4999) ARE TIED FROM EITHER 2 NETWORK POINTS OR 2 STRATEGIC POINTS. ALL NETWORK, STRATEGIC, AND RECOVERED POINTS HAVE HAD A LEAST SQUARES ADJUSTMENT APPLIED. ELEVATIONS SHOWN ON NETWORK POINTS AND STRATEGIC POINTS WERE VALID AT THE TIME OF THE SURVEY AND SHOULD BE FIELD VERIFIED BEFORE USING.

RESOLUTION OF THE RIGHT OF WAY CENTER LINE

THE EXISTING RIGHT WAY WAS RESOLVED USING RIGHT OF MAP 18-20-15. THE FIRST TANGENT OF THE RIGHT OF WAY CENTER LINE WAS RESOLVED BY HOLDING THE PROPORTIONATE DISTANCE BETWEEN POINTS 1001 AND 1002 AND THE RECORD DISTANCE FROM POINT 1006. THE LAST TANGENT HELD THE RECORD DISTANCE FROM POINT 1010 AND THE PROPORTIONATE DISTANCE BETWEEN POINTS 1011 AND 1012. SINCE THERE WAS ONLY ONE EXISTING MONUMENT ON THE TANGENT BETWEEN 1483+49.25 P.I. AND 1496+16.14 P.I. AND IT IS IN A KNOWN SLIDE AREA AND ALSO DOES NOT FIT THE EXISTING ROADWAY THE RECORD ALIGNMENT WAS PROJECTED FORWARD FROM THE FIRST TANGENT AND BACKWARD FROM THE LAST TANGENT USING OUR BASIS OF BEARING. THE TANGENT BETWEEN THE STATIONS ABOVE FROM PROJECTION FORWARD AND FROM PROJECTION BACKWARD WAS FOUND TO BE ROUGHLY PARALLEL AND ABOUT 2 FEET APART. THIS DIFFERENCE OF ABOUT 2 FEET WAS SPLIT TO FORM A NEW TANGENT THAT WAS HELD HALFWAY BETWEEN THE PROJECTED TANGENTS. THE RECORD DEGREE OF CURVE WAS HELD ON ALL CURVES. STATIONING WAS HELD ON POINT 1003.

| LEGEND | |
|--------|-----------------|
| ○ | FOUND MONUMENT |
| ☆ | GPS STATION |
| ▲ | NETWORK POINT |
| ● | STRATEGIC POINT |



BASIS OF BEARING AND CONTROL NETWORK SCHEMATIC
 NOT TO SCALE

REGISTERED PROFESSIONAL LAND SURVEYOR
Marshall R. Wagstaff
 OREGON
 JANUARY 9, 2001
 MARSHALL R. WAGSTAFF
 49476LS
 EXPIRES 06/30/06

SHEET OREGON DEPARTMENT OF TRANSPORTATION
 HORIZONTAL CONTROL, RECOVERY AND RETRACEMENT MAP
 OR38: TRUAX SLIDE REPAIR
 UMPQUA HIGHWAY (HIGHWAY 38)
 DOUGLAS COUNTY

FOR ODOT REGION 3
 3500 STEWART PARKWAY
 ROSEBURG, OR 97470

JULY 22, 2005
 SHEET 1 OF 7

ST. HWY 38-012 A