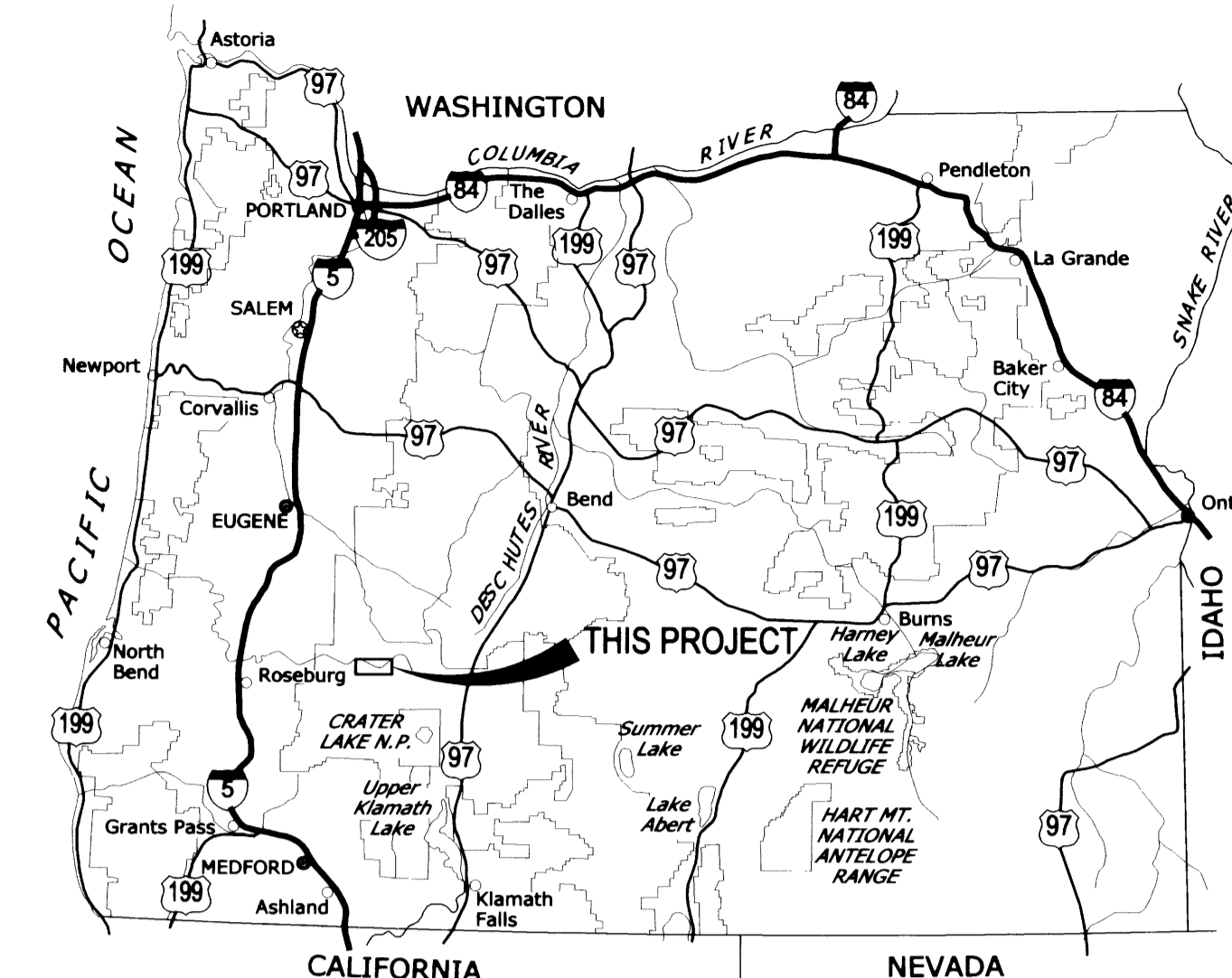


U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



HORIZONTAL CONTROL MAP FOR
UMPQUA NATIONAL FOREST HIGHWAY
FEDERAL HIGHWAY ADMINISTRATION PROJECT OR PFH 47(1)
NORTH UMPQUA HIGHWAY 138
DOUGLAS COUNTY, OREGON
JANUARY 2005



OREGON KEY MAP

SURVEY REPORT

This report is for the establishment of control for the Federal Highway Administration (FHWA) Project OR PFH 47(1) North Umpqua Highway, under the direction of Contract No. DTFH70-00-D-00015 and Task Order No. 04-DJ226. The project is located in Douglas County, Oregon along State Highway Route 138 in the Umpqua National Forest.

The project begins at MP 52.8 (milepost), approximately 52 miles East of Roseburg, OR and ends at MP 67.2 near the Northwest end of Stump Lake. It is approximately 14.4 miles in length.

Positions for the primary control were determined by redundant static GPS survey methods in accordance with the accuracy standards and survey specifications set forth by the FHWA. Seventeen GPS control points were processed using Trimble Geomatics Office software and were adjusted at the 95% confidence interval. The positions of the primary GPS control points were then held fixed and used to adjust the conventional control traverse. National Geodetic Survey (NGS) Continuously Operating Reference Stations (CORS), DDSN - OBEC - REDM, were held fixed to process the primary GPS control points; GEOID03 model was used in the adjustment. All closures between the conventional and GPS control data exceeded the FHWA Second Order, Class II survey standards.

All control points were leveled using differential and closed level loops, in accordance with the accuracy standards and survey specifications set forth by the FHWA. NGS bench mark station G 480 (PID PC0070) was used as the project benchmark for all differential levels. No other bench marks were found within the project area. The horizontal coordinates provided are in reference to Oregon State Plane NAD 83 Oregon South Zone. The elevations (orthometric heights) are referenced to the NAVD 88 vertical datum. Horizontal units for the project are given in International Feet and the Vertical units are in US Survey Feet.

Conventional measurements on this project were made using Leica TC 1800 total station theodolites in conjunction with Tripod Data Systems data collection software in Ranger or Recon data collectors. The Leica TC1800 has a standard angular error of ±1 second and a standard distance error of ±2 mm ±2 PPM. The theodolite calibrations were checked on the EDM Baseline in Missoula, Montana; and all tribrachs had recently been adjusted. The instrument PPM's were properly calibrated on site for the local elevations and temperatures.

Purpose:

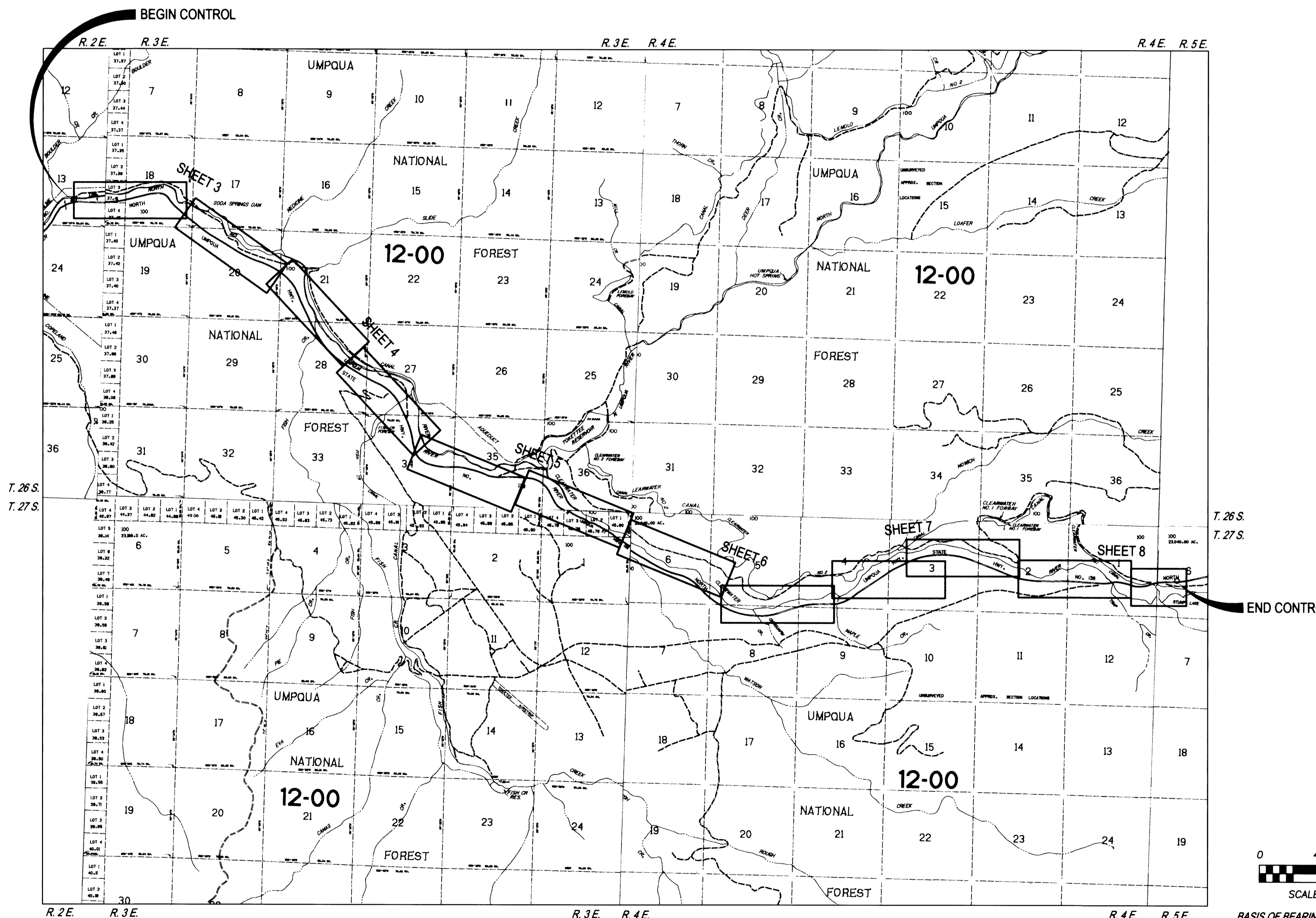
The purpose for this control survey was to facilitate the strip mapping of the North Umpqua Highway in support of highway engineering design for the FHWA. The contract required the establishment of permanent control points, all control point locations be intervisible both ahead and back, and they are not to exceed an interval of 800' in distance along the length of this project. The control point horizontal positions are to be referenced to the Oregon State Plane NAD83 datum, and the vertical position in reference to the NAVD 88 datum.

Points:

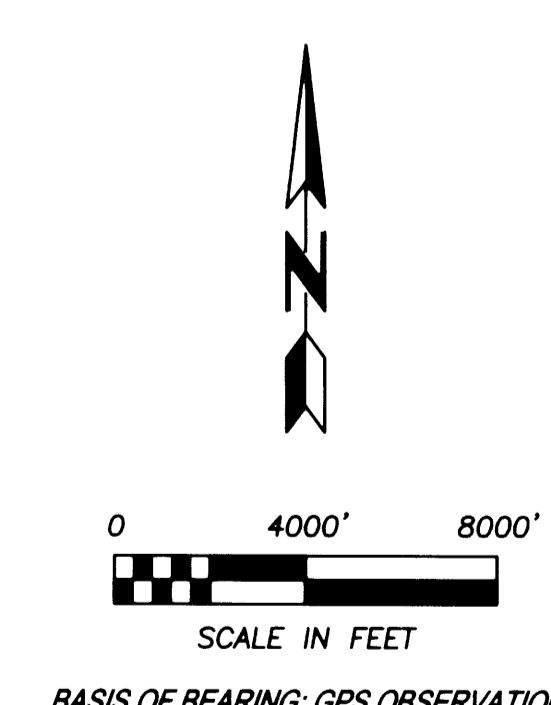
Point pairs were set so as to be intervisible along the highway. All control points set are marked with a 24" long, 1/2" diameter rebar with a 1" Yellow Plastic Cap (YPC) stamped "FHWA CP", as supplied by Federal Highways. The point numbering commenced in the northwest and proceeded to the southeast. A 48" lath with the control point number was set near all control points. Each control point has two reference tags with bearings and distances set out from them. Every effort was made to place each point outside the roadway prism and buried approximately 0.2' below the surface.

Field surveys were conducted between August 8, 2004 and October 22, 2004.

REGISTERED PROFESSIONAL LAND SURVEYOR
Kent A. Luedtke
STATE OF OREGON
NO. 14,128
EXPIRES 12/31/2006



FILED
Date: 6-22-2005 By: J.P.
This survey consists of: 8 SHEETS
Map: ST HWY 138-007 A
Narrative: _____
Corner Rpt: _____
DOUGLAS COUNTY
SURVEYOR



NOTE:
ALL ROAD AND PUBLIC LAND SURVEY LINE WORK AS SHOWN ON SHEET 1 IS IN REFERENCE TO DOUGLAS COUNTY ASSESSORS PLAT RECORD INFORMATION, AND IS SHOWN FOR REFERENCE ONLY.

D&A P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-6091
Phone 409/721-4320 Fax 409/548-0371

HORIZONTAL CONTROL FOR NORTH
UMPQUA HIGHWAY 138 SHEET 1 OF 8

ST. HWY. 138-007A