

Appendix I

Application: Control and Topographic Surveys Vicinity Footbridge at Willamette Mission Bottom, Oregon (Portland District)

I-1. Purpose and Background

This project involves a small topographic survey of a 0.5 acre site surrounding an existing 12 ft x 31 ft footbridge scheduled for replacement. The footbridge is located at Willamette Mission State Park. The park is adjacent to the Willamette River, Marion County Oregon. The target mapping scale was 1 inch = 40 ft at a 1 ft contour interval. The survey was performed in 2001 by in-house forces from Portland District. Details on the survey are described in the Survey Report in the next section.



I-2. Final Survey Report

Survey Report

Work Request No. 01-43

Job Name: Willamette Mission Surveys

Date of Survey: 16 – 18 April 2001

Performed By: CENWP-EC-HM personnel: Hoekstra, Bondurant, Howard

Geographic Information:

*Geographic Area: Willamette Mission Bottom AKA Wheatland Ferry
USGS 7-1/2 Quadrangle: Mission Bottom OR
Township Range Sections: T6S R3W WM
Projection Name: OR North
Horizontal Datum or Ellipsoid: NAD 83/91
Vertical Datum: NGVD 29/47
Projection Units: US Survey Feet*

Basis of Bearing/ Project Control: Data in this survey is based on the following monuments and the corresponding bearing and coordinate values.

<i>Point ID</i>	<i>Northing</i>	<i>Easting</i>	<i>Elevation</i>	<i>Description</i>	<i>PID #</i>
<hr/>					
<i>T5S R1W DLC 44 NW</i>	<i>536580.246</i>	<i>7591895.190</i>	<i>182.8</i>		<i>RD1626</i>
<hr/>					
<i>BM V 682</i>			<i>113.825</i>		<i>ORDOT</i>

Coordinate Precision: Third Order Class I

Description of Work: *The work involved setting control for mapping and construction purposes. Six points (3 point pairs) were set by GPS to enable data collection by total station. An additional point was set near the downstream footbridge near the Wheatland Ferry. The area surrounding the footbridge was mapped at a one-foot contour interval.*

Additional data was collected at two points upstream of the bridge. This data was supplied to requestors as coordinate data.

Equipment Used: *Equipment used are checked () below:*

*Ashtech Z-12 GPS receivers
Wild T2002 Total Station
DI5S Distance Meter
DI3000 Distance Meter
Gre-4 Data Collector
Wild NA2 Level*

Survey Software Used: Software used are checked () below:

Ashtech Inc. "Office" GPS adjustment Package
Listech Inc. "Liscad" survey software
Trimble Ltd "Geomatics Office" GPS adjustment Package

Survey Methodology: Control points were set in pairs at critical locations. The point pairs were located xyz using Rapid Static GPS. Each point pair was checked with a total station. Additional control points were set with the total station by multiple angle radiation (2 sets of angles). Topographic data was collected by single angle radiation. Sounding data was accomplished with a weighted tape hung from the side of the bridge at known locations.

Results of Survey: Accuracy is adequate for the requesters.

Survey Files:

Liscad Data files

.See

Wmission.see

Archive Files

Field data file (ASCII)

Mission.fld

ASCII DATA file

missbott.asc

Microstation Design file

Wmission.dgn

GPS Adj. Files

Notes:

1. Digital archived located at: gis5\surveys\Projects\Willamette Mission
2. Hardcopy archived Willamette River cabinet.

Field-Surveyor's Comments:

1. Additional data was obtained from Otak Engineering Corp. with metric contours of the surrounding Wheatland Ferry Crossing.
 2. Hydrographic data in corresponding area does not match provided data by approx. 5 feet. Extensive checking of the data failed to reveal any problems. In addition Otak elevations fit well.
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I-3. Data Collection

This 0.5 acre survey took one day to complete. One day was spent establishing control at the project site and at additional sites where data was needed. Control points were established by rapid static GPS observations. The actual site plan mapping took two days.

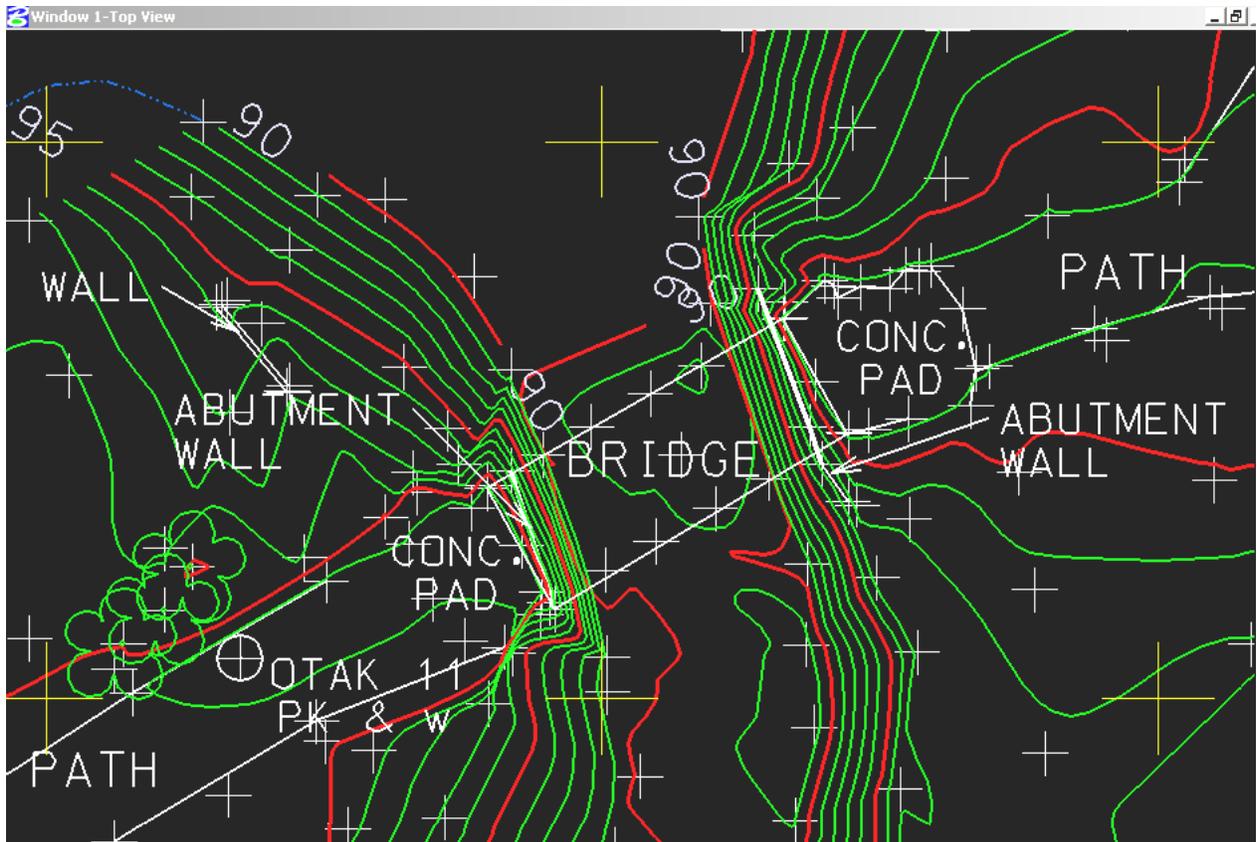
The Wild T2002 total station observations were collected using a Wild GRE-4A Data Collector. Approximately 395 points were shot during this project. A portion of the reformatted field data file (*.fld) from the total station is shown below. The field data file consists of a line number, a processor code, measurement data, and a descriptor code. Processor code 102 defines an occupation. Code 111 is a measurement block consisting of Horizontal Angle, Vertical Angle, Slope Distance and a Description code. Additional information concerning the field file format is available from Listech Corporations Leica Surveying Software.

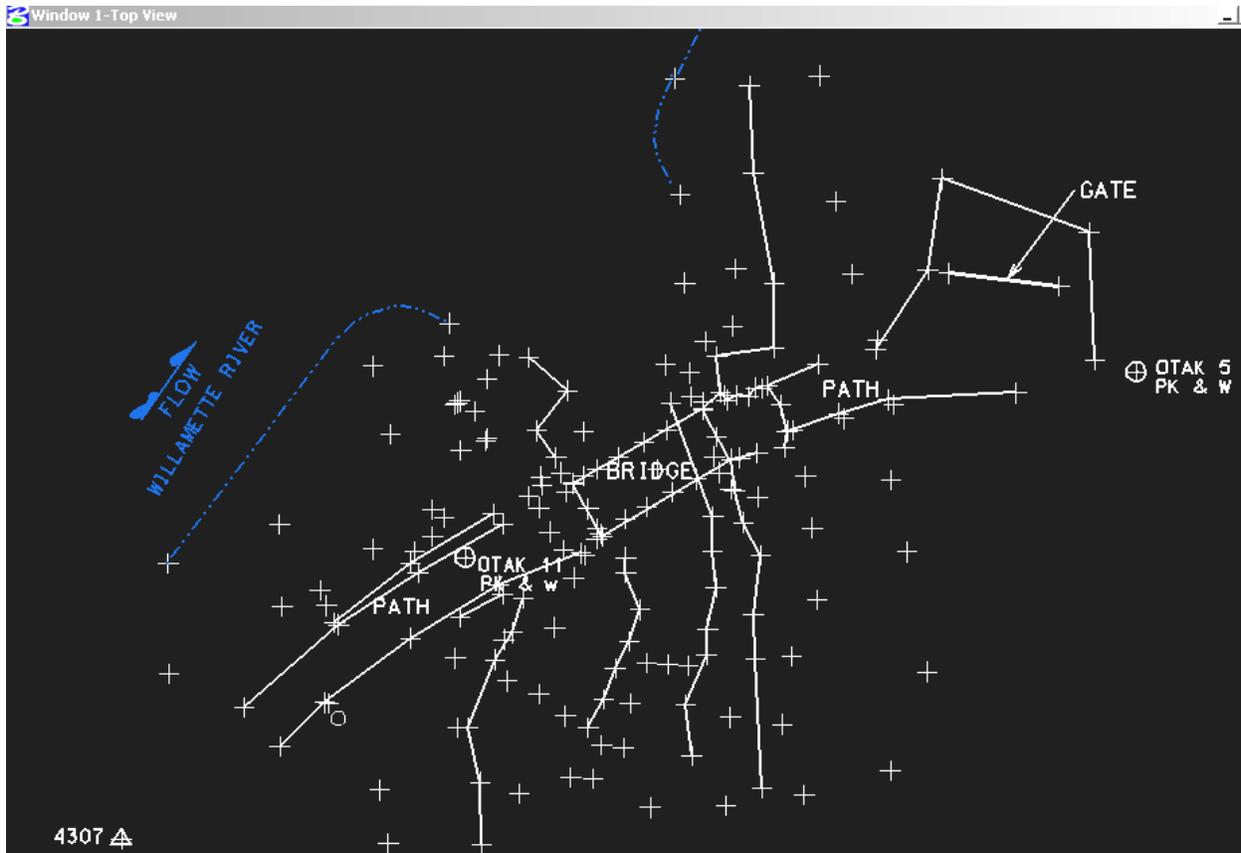
1	010	WILD GRE-4A	Mission.raw	17	111	4306	89.58242	89.45262	1362.8400	00000
2	011	Monday,	April 23, 2001	18	161					
3	051	DM		19	;					
4	053	F		20	102	4305	5.4800	0.0000	4306	0.00000
5	021	YX		21	160	1	4	0		
6	;			22	111	4306	359.59596	89.45337	1362.8500	00000
7	102	4305	5.4800	23	105	5.5000				
8	160	1	4	24	111	4307	130.20287	90.02312	402.8900	00000
9	111	4306	359.59593	25	111	4307	310.22071	269.57205	0.0000	00000
10	105	5.3300		26	111	4306	180.01484	270.14523	0.0000	00000
11	111	11	129.19061	27	111	4306	269.59599	270.14514	0.0000	00000
12	111	11	309.20383	28	111	4307	40.20145	269.57336	0.0000	00000
13	111	4306	180.01409	29	111	4307	220.18441	90.02421	402.9000	00000
14	111	4306	269.59595	30	111	4306	89.58153	89.45384	1362.8400	00000
15	111	11	39.19012	31	;111	4306	359.59598	89.55427	311.7200	00000
16	111	11	219.17402	32	;111	4307	184.29579	89.54378	91.3900	00000
				33	;111	4307	4.31323	270.05406	0.0000	00000

The above reformatted file was created from the raw measurement by Leica LISCAD software. Data reduction, processing and terrain modeling was performed in Liscad. This data was then exported from LISCAD to MicroStation.

I-4. Site Plan Detail Plates

The following plate shows the detail captured around the footbridge. [The contours were generated from a TIN model created LISCAD].





The above plate depicts the planimetric shots of the path and bridge. The ground elevation shots are indicated by a "+" sign and are spaced at roughly 10 to 15 ft intervals. The breaklines along the creek and at the top of riprap are shown by the connecting lines between ground shot points. Three control points for the total station survey are shown: "4307", "OTAK 11", and "OTAK 5".