

SCOPE OF SERVICES

PROJECT: DOLLY SODS, WV

SUBJECT: PHOTO CONTROL SURVEY

General Scope

06/28/95

Services requested shall consist of:

- a. Planning, coordination, supervision, field survey crew X,  
computations X, drafting X, analysis X.

Job No. 017/5

Work Order No. 36

To establish/and furnish to CEORH-ED-GI

Contractor WOOLPERT CONSULTANTS

1. Horizontal Control

a	Base	<u>N/A</u>
b	Other	<u>N/A</u>
c	Refs/Sketches	<u>N/A</u>
d	Final computer List	<u>N/A</u>
e	Computer Input List	<u>N/A</u>
f	Org Field notes	<u>N/A</u>
g	Draft/Plot/Ink	<u>N/A</u>
h	Computations	<u>N/A</u>
i	Plot horiz index	<u>N/A</u>
j	Profile List	<u>N/A</u>
k	Cross-Sects List	<u>N/A</u>
l	Utility List	<u>N/A</u>
m	Log shts	<u>N/A</u>
n	Zone SPCS	<u>N/A</u>
o	EDM Dist Red'ns	<u>N/A</u>
p	Field Folder	<u>N/A</u>
q	Horiz & Vert Books	<u>N/A</u>
r	Polaris Obsv's	<u>N/A</u>
s	Monuments	<u>N/A</u>
t	Trig Elev's	<u>N/A</u>

2. Vertical Control

a	Base	<u>N/A</u>
b	Other	<u>2 PHOTO POINTS</u>
c	Level adj shts	<u>X</u>
d	TBM Desc shts	<u>X</u>
e	Org Field Notes	<u>X</u>
f	Draft/Plot/Ink	<u>X</u>
g	Fathometer chts	<u>N/A</u>
h	Computations	<u>N/A</u>
i	Profile List	<u>N/A</u>
j	Cross-Sects List	<u>N/A</u>
k	Utility List	<u>N/A</u>
l	Log shts	<u>X</u>
m	Datum	<u>NAVD 88</u>
n	Cross-Sects Plots	<u>N/A</u>
o	Profile Plots	<u>N/A</u>
p	Plot Vert BASE	<u>N/A</u>
q	Monuments	<u>N/A</u>
r	Sketches/Ref's	<u>X</u>
s	Listing	<u>X</u>
t	Comparison	<u>N/A</u>
u	Photographs	<u>X</u>

3. All data to be furnished = original + 2 copies with cover sheet in a presentable fashion. 3.5" computer disk with final coordinate and elevation data in ASCII format and Reference cards done in Intergraph DGN format.



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WORK ORDER NO. 36

JOB NO. 017/5

PROJECT DOLLY SODS PHOTO CONTROL

LOCATION DOLLY SODS, WV

**A. SERVICES REQUESTED**

1. It is requested that the following field survey work be performed at Dolly Sods Photo Control job site at the location shown on the mapping (Already Provided).

a. Contractor shall provide all rights of entry.

b. Establish metric vertical control to two (2) photo points.

c. Vertical control shall be shown using NAVD 88 datum.

e. Both photo points shall be shown on a reference card and have a T.B.M. description.

f. Both photo points will be plotted and labelled on 7 1/2' Quadrangles previously provided.

f. Both point numbers and elevations shall be compiled on the back of the proper aerial photograph.

g. The work is located in Randolph, Tucker and Grant Counties, the state of WV and near the town of Davis, on/near Red Creek at the Dolly Sods site.

2. The requested package should be furnished to ED-GI by 20 July 1995.

B. Horizontal Control      YES \_\_\_\_\_, NO X

1. General

- a. GPS surveying shall be used where possible.
- b. Traverses should not commence and end on the same control point. Run traverse from one control point to another control point and tie back into the first.
- c. All other control points should be established by a single full page angle spurs from existing traversed control. Do not double spur to control stations.

2. Distances

- a. Distances shall be measured using an EDM equivalent to an HP 3808 or GTS-2B. Measure a minimum of three distances per control station. Measure distances forward and back on all traverse stations. Record temperature, pressure and PPM 's.
- b. When EDM distances cannot be obtained use a chain. Use tension handles and record the pull and temperature. Use only a chain that has been calibrated.
- c. All EDM distances are to be measured with environmental corrections.
- d. When establishing trigonometric elevations measure all HI's at each setup. This includes HI of instrument and HI of prism.
- e. Distance reductions should account for the following:
  - (1) Temperature
  - (2) Pressure
  - (3) Vertical difference (Trig. Elevations)
  - (4) Curvature
  - (5) Refraction
  - (6) Grid Factor

3. Angles

- a. All angles will be turned with a 1 second theodolite equivalent to Wild T-2.
- b. One page angles, as shown in the example notes, are required.
- c. Horizon closure shall not exceed 5 seconds.

4. Label spur shots prominently as such.

5. Do not put a spur shot on the same page as a traverse angle.

6. All horizontal control set and referenced will be plotted in ink on 7.5' Quad mylars provided by the C.O.E..

C. Vertical Control    Yes X No \_\_\_\_\_

1. Conventional Elevations will be acceptable for this job.
2. Run a Level circuit from one of the existing monuments through the photo point and back.
3. Closure must be of at least third order accuracy.
7. All Vertical Control set and referenced will be plotted in ink on 7.5' Quad mylars provided by the C.O.E..

D. **Horizontal Computations** NOT NEEDED FOR THIS WORK ORDER

1. Traverse computer printout must show:
  - a. Error of closure - total, latitude, departure, and angle.
  - b. Each station identification and type of point (i.e. hub, IP, mon, etc.) and azimuth or bearing between each point. Beginning and ending stations should be shown.
  - c. Header identifying completely the project, grid factor, and job number.
  - d. Type of adjustments (e.g., compass, least squares).
  - e. Computer program should be capable of computing a traverse as a complete run, with the ability to hold an azimuth in the run and to correct it.
  - f. Printout should have a header adequately identifying the job and traverse.
  - g. Side shot or spur comps should not be mixed in with traverse. Side shot or spur comps should reference azimuth and coordinates.
  - h. Fill out monument reference description cards for each monument set and referenced.
  - i. Horizontal closure must be a high 3rd order accuracy or better.
  - j. Include all GPS computations.
  - k. All Photo Points and monuments are to have coordinates.

## E Vertical Computations

1. Level adjustment sheets will be filled out as shown in examples furnished. The only exception will be if a computer program is available which will do the adjustment and print out all the information shown on the level adjustment sheets.
2. TBM description sheets must be filled out for TBM's set listing description and adjusted elevations on 88 NAVD datums. Also reference photo points.
3. All notes must be checked if notes are kept.
4. All Photo Points are to have elevations.

## F. Field Notes

1. If a data collector is used it is left up to the contractors discretion whether or not to keep field notes as shown below. It is requested that a sketch of the over all traverse and spurs be drawn. Sketch should show approximate north and any river flow present. This sketch does not have to be to scale.
2. Do not use page 1; this is an index.
3. Every page must be headed with a book number on right and left page, as shown in the example notes. The project name and job number should be at the top of the left hand page. The right hand page should be at the top of the left hand page. The right hand page should have the date and the party chief's name and instrument type and number.
4. The right hand page on horizontal notes should show as a minimum in addition to 3:
  - a. Extension of horizontal angle
  - b. Horizon closure
  - c. Adjustment applied to horizontal pipe
  - d. Sketch of angle showing backsight, foresight, station occupied, and either north arrow or direction of river flow.
  - e. Mean vertical angle
5. The left page should show in addition to 3:
  - a. Identification and type of the points backsighted, occupied and foresighted.
  - b. All HI's
  - c. All direct and reverse observations on horizontal angles
  - d. Direct and reverse on each vertical angle
6. If a wild NA-2000 or NA-2002 level with a record module is used the field note procedure below does not apply.
7. Vertical notes should show in addition to 3:
  - a. On the right hand page note where you obtained your starting elevation.
  - b. Describe fully each TBM set.
  - c. On the left hand page, the starting BM identification and elevation. Each point of reference (e.g. iron pins, monuments, TBM, etc.) turned through should be labeled as shown in the example note.
  - d. Do not crowd notes.
  - e. Show elevation actually closed with on left hand page and given elevation noted on right hand page with BM reference.

**NOTE: ALL REFERENCE SKETCHES SHALL BE ON THE RIGHT HAND PAGE. ALL LOCATION DESCRIPTIONS SHALL BE PLACED ON THE LEFT HAND PAGE. BE SURE TO PUT THE PAGE HEADERS ON AS DESCRIBED ABOVE.**

## G. Summary

### 1. Data furnished by government:

- a. Iron pins and caps, hubs, monuments, and stakes
- b. Log sheets
- c. Field books
- d. Flagging, tacks, etc.
- e. Quad Sheets
- f. Blueline showing area to be surveyed
- g. Control data
- h. TBM description cards
- i. Monument description cards
- j. Scope of work

### 2. Data to be furnished by the Contractor:

- a. Cover sheet
- b. Letter of transmittal
- c. Table of contents
- d. Report of Survey
- e. Typed listing of final data showing the following information:
  - (1) Project information such as Job #, date, site, grid factor, location and etc.
  - (2) Bearing/Distance/Remarks
- f. Project log sheet showing the information for each item and the entire project including control, horizontal control and reference.
- g. Computer listing of traverse. N/A
- h. Listing of cross section data. N/A
- i. Computer listing of spur shots. N/A
- j. Computer printout of distance reductions. N/A
- k. Trigonometric elevations where applicable. N/A
- l. Reference Sheets - Monument description card on iron pins, monument, or other permanent points set, as directed.
- m. Plot control data in on DGN files previously furnished. N/A
- n. Paper plot of all Dgn files created or used. N/A
- o. Original field notes ringed and tabbed if applicable.
- p. Return all data furnished in field folder
- q. Computer printout of all GPS computations. N/A

All data should be furnished in a package in a presentable fashion. Original and two copies with cover sheets. 3.5" computer disk with final coordinate and elevation data in ASCII format and Reference cards done in Intergraph DGN format.

#### H. JOB HAZARD ANALYSIS (JHA)

Prior to beginning on this work order, the contractor shall perform an analysis of all safety hazards. The analysis of hazards involved in each step of the work shall be evaluated and the actions to eliminate or minimize the hazard shall be implemented. The analysis shall be documented on ORH Form 2642. The completed JHA shall be submitted to the Survey Section CEORH-ED-AM prior to beginning work. The JHA must be reviewed by all employees assigned to the job prior to each time the job is performed.

# JOB HAZARD ANALYSIS

PROJECT: \_\_\_\_\_

DATE: \_\_\_\_\_

\*JOB: \_\_\_\_\_

ESTIMATED STARTING DATE: \_\_\_\_\_

PREPARED BY: \_\_\_\_\_

RECOMMENDED PROTECTIVE CLOTHING AND EQUIPMENT: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_

POSITIONS ASSIGNED TO DO JOB: \_\_\_\_\_

\*(Include Photographs Of Work Area If Possible)

PAGE \_\_\_\_\_ OF \_\_\_\_\_

PART I JOB STEPS	PART II HAZARDS	PART III ACTION TO ELIMINATE OR MINIMIZE HAZARD