

## 912 Project Control

### 912.1 General

The Project Control sheet provides a summary of horizontal and vertical datums (i.e., reference points, benchmarks, and control points). The reported datums shown on this sheet must provide clear and sufficient information to establish horizontal and vertical control during the construction of the project. The data shown can be extracted from the project network control survey and historical control data or may reflect assumed datums.

The Engineer of Record will create the Project Control sheet from data extracted from the project survey and will sign and seal the Project Control sheet. These sheets are to be placed in the component plans in accordance with **FDM 910.2**.

See **Exhibit 912-1** for example of a Project Control sheet.

### 912.2 Sheet Setup

Use standard symbols contained in the [CADD Manual](#).

Provide a note on the Project Control sheet that identifies the horizontal and vertical datums that the survey is based on.

### 912.3 Reference Points

Reference points are prominent, easily located points in the terrain used to define a location of another point that is located on the baseline of survey. The purpose of reference points is to provide horizontal locations to re-establish primary control points along the baseline of survey. Reference points should not be located on the baseline. Detailed descriptions of each reference point are illustrated with a sketch normally not drawn to any scale.

Place survey reference points on the Project Control sheet along the top of the sheet or where other space allows. Clearly indicate the baseline of survey and reference points, including all ties. Complete length of survey baseline between two consecutive reference points need not be shown. Clearly label each reference point, beginning at the first reference point within the limits of the project, and progressing in the direction of stationing. Reference points need not be drawn to any scale, but the distances and angles shown must be proportionate.

## **912.4 Benchmarks**

Benchmarks provide a known elevation that is used as the basis for measuring the elevation of other topographical points. When benchmarks are not used to provide horizontal control, they may be placed on the Project Control sheet along the bottom of the sheet or where other space allows. At a minimum, benchmarks are to include:

- (1) Identifying name (e.g., BM No. 9)
- (2) Description (e.g., nail in tree, concrete monument)
- (3) Station and offset
- (4) Elevation (in feet to two decimal places)

## **912.5 Control Points (Horizontal and Vertical Datum)**

Control points provide information for the locations and elevations of established monuments. Control points that provide vertical datum are also known as benchmarks.

Place the following information for the control points in a table titled Horizontal and Vertical Control:

- (1) Point Name – Often identified on the stamped disk placed on the established monument.
- (2) Northing and Easting – Show to three decimal places. Show northings and eastings to the nearest foot when a control point serves only as a benchmark.
- (3) Scale Factor – Show to eight decimal places.
- (4) Latitude and Longitude – Show seconds to five decimal places. If a control point serves only as a benchmark, show latitude and longitude to the nearest second.
- (5) Baseline Station and Offset – Show to two decimal places.
- (6) Elevation – If a control point only serves as horizontal control, show the elevation as “N/A”.
- (7) Description – Indicate the size, type, whether the monument is “found” or “set”, and include the monument ID number.

When this table is the sole means to convey horizontal and vertical datums, include a project sketch on the Project Control sheet that provides a visual reference for the locations of the control points. The sketch is normally not to scale but must provide clarity and legibility. Include the following information on the sketch:

- (1) Show the baseline of survey with stationing.

- (2) Flag and label the beginning and ending stations for project.
- (3) Show bearings for all tangent sections in the direction of stationing.
- (4) Label PC and PT points and show horizontal curve data.
- (5) Indicate graphically the location of intersecting roadways and railroads.
- (6) Indicate Township, Range and Sections that the survey traverses. Show the locations where section lines cross the baseline of survey.
- (7) Place a north arrow and scale in a conspicuous location, typically in the upper right portion of the sheet.

## **Exhibit 912-1: Project Control**