This Engineering Instruction was developed as an interim document to establish surveying standards and requirements until the DelDOT Surveying Manual has been finalized. This document also addresses the requirements for submitting survey files to DelDOT.

Surveying Classifications and Accuracy Standards

DelDOT utilizes the Survey Classifications and Accuracy Standards that have been established by the Federal Geodetic Control Subcommittee (FGDS), with modifications, as shown in the chart in the attached – Appendix A.

In summary:

Terrain Data Feature Location (Topographic Surveys)

- Linear / Proportional Horizontal Accuracy: C3 Order, 1:10,000

- Linear / Proportional Vertical Accuracy: Maximum Misclosure e = 0.05 ft. $\sqrt{D}$
  where e = hundredths of a foot and D = distance in miles

- Surveying Method: Total Station Positioning System, radial side shots from Secondary Project Control. All data is captured in observational mode.

- Required Datum Systems: Horizontal = NAD83; Vertical = NAVD88; GPS = Model 12B Geoid or most current model.

- Typical Applications: Terrain Data Surveys and Construction Stakeout Surveys.

Right of Way Mapping Feature Location

- Linear / Proportional Horizontal Accuracy: C3 Order, 1:10,000

- Linear / Proportional Vertical Accuracy: N/A

  Surveying Method: Total Station Positioning System, multiple side shots from Secondary Project Control. All data is captured in observational mode.

- Required Datum Systems: Horizontal = NAD83; Vertical = NAVD88; GPS = Model 12B Geoid or most current model.

- Typical Applications: Right of Way Mapping

Survey File Submissions to DelDOT

DelDOT utilizes the following applications from Bentley for Surveying and CADD:
- Survey: OpenRoads Designer*
- CADD: MicroStation CONNECT*

DelDOT requires that the following deliverables be provided for every survey file submission:
- DGN Fieldbook and Terrain File – This file contains the final adjusted survey data for the project. The terrain is auto generated from the data stored within the fieldbook. The data contained in this file is stored in an observational mode format. If translation is required to create this file, then all supporting files need to be included to show that original survey data was collected in an observational mode. The DelDOT Project Manager may request the unadjusted RAW data file when necessary.

- DGN Graphics File – This file contains the graphics that are exported from the final adjusted survey DGN file. This file is to be provided in a 3D format.

- ICS File – This file contains point data information that is exported from the final adjusted survey DGN file in an ASCII format.

* - Software versions shall comply with the versions stated in the DelDOT CADD Wiki.