

9.0 SURVEY

9.1 Administrative Requirements

9.1.1 Standards

The Contractor shall meet all applicable federal, state, and local requirements related to surveys, records, and monuments.

9.1.2 Project Survey Coordinator

Should the Contractor choose to collect additional field survey information, the Contractor shall designate a Colorado Registered Professional Land Surveyor as the Project Survey Coordinator. The Project Survey Coordinator shall be in responsible charge of all Contractor survey Activities on the Project. The Project Survey Coordinator shall direct and review all survey Work and shall be the point of contact for all survey related Activities. Contractor survey staff shall perform Work under the direct supervision of the Project Survey Coordinator.

9.1.3 CDOT-Supplied Survey Data

The full extent of control point information to be supplied by CDOT is provided in Book 4.

The full extent of survey and mapping information to be supplied by CDOT is provided in Book 4. Two levels of surveys are provided to the Contractor:

1. Aerial mapping was flown and developed to produce 2 foot contours accurate to one half of one contour interval.
2. Lidar supplemental mapping and supplemental TMOSS survey were developed to meet CDOT Class C and D-TMOSS survey minimal horizontal and vertical requirements as per Chapter 5 of the CDOT Survey Manual.

Surveys were performed according to the guidelines for preliminary surveys published in the CDOT *Survey Manual*. If the Contractor identifies any inaccuracies in CDOT provided survey information it shall be the Contractor's responsibility to provide additional surveys as necessary to resolve the inaccuracies as necessary to complete the Work

9.1.4 Contractor-Supplied Survey Data

Except as provided by CDOT above, the Contractor shall provide all other surveys required for completion of the Work.

9.1.5 Preservation of Survey Monuments

The preservation of survey markers and monuments (including geodetic monumentation) is mandatory and affects all governmental agencies. The Contractor shall notify the agency affected as soon as it becomes known that a marker is in a position that will interfere with new construction or with Contractor operations. The marker position shall be accurately preserved prior to disturbing any such marker.

9.1.6 CDOT Monuments

If any CDOT survey monuments are at risk of being destroyed at any time within the Right-of-Way (ROW), the Contractor shall immediately notify CDOT. The Contractor shall reset such monumentation as part of the Work and provide CDOT with the appropriate records after resetting. The Contractor shall also reset markers for properties acquired after NTP1 and provide any associated records to CDOT accordingly.

9.1.7 Other Agency Monuments

The Contractor shall coordinate with all other agencies with monuments on the Project to protect and restore their monuments as required to complete the Work. The Contractor may assume that the agency affected will send a new marker disk, which has been properly stamped, together with instructions for establishment of the new marker, or CDOT will provide a marker disk. The Contractor shall set the new marker in accordance with the provided instructions and the requirements of the Contract. The new marker shall be set under the direct supervision and responsible charge of the Project Survey Coordinator or other Colorado Registered Professional Land Surveyor. Where required by Colorado statute, the new marker shall bear the registration number of the responsible Professional Land Surveyor.

9.1.8 Survey Records

The Contractor shall prepare and maintain supporting documentation, including but not limited to, field notes, drawings, and calculations for all survey Work on the Project. All survey records shall conform to the formats shown in the CDOT *Survey Manual*. Such records shall be neat, legible, accurate, and maintained by the Contractor in a neat and orderly manner. The Contractor's Project Survey Coordinator shall be required to sign and seal all survey documentation in accordance with State law. All such documentation shall be transmitted to CDOT at the completion of the Work.

9.2 Design Requirements

9.2.1 Design Control Surveys

The Contractor shall plan, schedule, and perform all surveys and monumentation necessary to maintain and supplement the Project control network for the design Work on the Project.

The Contractor shall submit to CDOT a revised Project control diagram showing all modifications to the Project control network.

9.2.2 Design Surveys

The Contractor shall arrange for all supplemental survey information and Utility locations necessary to complete the design. Surveying shall be performed in accordance with the CDOT *Survey Manual*. Traffic control and permits necessary to complete the survey shall be the responsibility of the Contractor.

9.3 Construction Requirements

9.3.1 Construction Control Surveys

The Contractor shall plan, schedule, and perform all surveys and monumentation necessary to maintain and supplement the Project control network for the construction layout of the Work.

9.3.2 Construction Layout Surveys

The Contractor shall plan, schedule and perform all staking and construction layout required for the Work.

9.3.3 As-Built Surveys

The Contractor shall plan, schedule, and perform all surveys required to document the location of As-Built features on the Project.

The Contractor shall deliver the data (in InRoads TMOSS survey format) and field notes to CDOT for review upon completion of the survey. Errors and omissions found by CDOT shall be corrected by the Contractor and resubmitted. All work in completing the As-Built survey shall be at the responsibility of the Contractor and shall be completed in accordance with the CDOT *Survey Manual*.

9.3.4 ROW Monumentation

The Contractor shall replace all ROW monumentation lost or destroyed during the progression of the Work.

The Contractor shall submit to CDOT for Acceptance a revised ROW monumentation sheet listing all ROW monumentation reset by the Contractor.

9.4 Deliverables

At a minimum, the Contractor shall submit the following to CDOT for review, Approval, and/or Acceptance:

Deliverable	Review, Acceptance, or Approval	Schedule
Any discrepancies in control point information provided that is reported to CDOT	review	Within 60 Days of NTP1
Documentation for the preservation or re-monumentation of any survey monument	Approval by the affected agency	Submit with As-Built Documents
Revised ROW Monumentation Sheet	Acceptance	Prior to Final Acceptance
Documentation/date of the location of As-Built features on the Project (in InRoads TMOSS survey format) and field notes	Acceptance	Prior to Final Acceptance