COLORADO DEPARTMENT OF TRANSPORTATION

PRELIMINARY SURVEY SCOPE

PROJECT INFORMATION	Project Number		Project Location		Project Code
Highway Number	Maintenance Patrol #	From Mile Post	To Mile Post	City or County Designation	
Section (s)	Township (s)	Range (s)	Principal Meridian	Nearest City / Town	
Design Unit Assigned	Project Manager	Survey Unit Assigned	Field Surveyor in Charge	Office Surveyor in Charge	ROW agent Assigned

Schedule Information

	Scheduled date	Actual date
Date survey is needed:		
FIR date:		
FOR date:		
Right-of-way Plan Review (ROWPR):		
Ad date:		

Roadway Design Requirements — Completed by Roadway Manager

Proposed project type:	
Length of survey	Width of survey
Number of lanes	

Check all that apply:

☐ Control Survey ☐ TMOSS ☐ TMOSS by aerial methods
☐ Right-of-way preliminary field ties and investigation ☐ Survey for overlay quantities
☐ Other:

Include a sketch map / Previous plans of area and any special instructions as final page(s) of this request

Deliverable Requirements For Design — Completed by Roadway Manager and Surveyor in Charge

MicroStation DGN Drawing Scale(s) Requested:

1" = 20' 1" = 40' 1" = 50' 1" = 100' 1" = 200' 1" = 500' Other _____

Electronic products required:

- ☐ MicroStation drawings as required by the CDOT file structure and workflows showing the proper topography line styles & symbols and separate drawings for the symbols, notes, elevations, codes, & names.
- ☐ One MicroStation drawing called _____SURVEYSurface01.dgn containing all three-dimensional spatial data in its edited form. All TMOSS shot notes shall be shown on this drawing. Triangle sides in the TIN should not exceed: _____. All boundary strings should be defined.
- ☐ All DTM model from MicroStation and InRoads.
- ☐ One Survey Geometry (.ALG) file consisting of a listing of all control points and property data used to create the Project Control and/or the Land Survey Control Diagram (_____SurveyPlanSheetLSCD03a.DGN) for right of way.
- ☐ Two copies of a MicroStation drawing called _____SURV_LSCD-Plan##.dgn and _____SURV_LSCD-Title.dgn of the Land Survey Control Diagram to be delivered at the FIR.
- ☐ A MicroStation drawing which includes **contours** on intervals of (Major:Minor)
  1:5 2:10 10:50 20:100 Other _____
- ☐ Coded 283's and 277's in electronic format in TMOSS only
- ☐ Copies of Permission to Enter Forms
- ☐ Survey Report
- ☐ Original Field Books

Distribution: Region Program Engineer, Project Structural Engineer, Region Planning / Enviromental Manager, Region ROW Manager, Hydraulics Engineer, Resident Engineer, Traffic Engineer, Materials Engineer

Environmental Requirements **Completed by Roadway Manager and Enviromental Manager**

Wetlands ☐ **Not Applicable**

Check all that apply:

- ☐ Coordinate schedule with a wetland biologist to Survey wetland limits that have been established by the wetland biologists
- ☐ Do not survey in wetland limits. Provide the final MicroStation drawing file to the environmental manager and wetland biologist. The wetland limits will be added to the MicroStation drawing by environmental personnel.
- ☐ Perform TMOSS survey for wetland design/enhancement. Describe area to be surveyed. (Attach a location map)
- ☐ Locate monitoring wells

NOTE: Inform the environmental manger and wetland biologist that the survey is complete by means of a courtesy copy of the survey transmittal letter whenever the survey request includes any wetland option checked above.

Hazardous Materials ☐ **Not Applicable**

Are there any known hazardous materials located in the proposed work zone? ☐ Yes ☐ No

CAUTION: Surveying around hazardous materials requires special training and equipment. Contact the Environmental Manager if hazardous materials are suspected on a project.

Noise Study ☐ **Not Applicable**

☐ Locate buildings within 100, 200, 300, 400, _____ feet of the proposed centerline
(Coordinate the specifics needed with the Region Environmental Unit)

Structure Requirements ☐ **Not Applicable**

Number of Structures crossed (attached as constructed plans)	Number of major structures	Length from structure to be surveyed

Major Structure Structure ID No: _____ Mile Point: _____
Major Structure Structure ID No: _____ Mile Point: _____
Major Structure Structure ID No: _____ Mile Point: _____

Check all that apply:

- ☐ Existing structure
- ☐ Clearance heights required
- ☐ TMOSS all features within typical limits described in the Survey Manual
- ☐ Bridge expansion device elevations
- ☐ Survey attached utilities
- ☐ Visible high-water mark
- ☐ Present water level (record Date and Time of Survey
- ☐ TMOSS special limits (describe):
- ☐ List additional structure features needed:
- ☐ Other special instructions:
- ☐ Deck cross-section normal to a control line

Number of minor structures: _____

Check all that apply:

- ☐ Include Drainage Code 283 in TMOSS notes
- ☐ Include width of head walls in TMOSS notes
- ☐ Digit Photgraphs of Inlet and Outlets
- ☐ Other special instructions:
- ☐ Include type and height of inlets in TMOSS notes
- ☐ TMOSS limits described in Survey Manual.
- ☐ TMOSS special limits (describe)

Traffic Requirements ☐ **Not Applicable**

Check all that apply:

- ☐ Signing changes are required on this project
- ☐ Signalization changes are required on this project
- ☐ Include all traffic control devices in TMOSS
- ☐ Include the following in a note:
  - · What is on the sign · Panel size · Panel reflective quality--high or low
  - · Date on sign · Post material · Post size & type of breakaway
- ☐ Include the following details at signalized intersections:
  - · Controller location · Detector loop locations · Camera Locations
- ☐ Include end anchor type on all guardrail installations
- ☐ Traffic Control will be needed for Roadway TMOSS
  - Traffic Control Company to be used:

Access ☐ **Not Applicable**

Number of accesses _____ ☐ Access Code 277 in TMOSS

Special instructions:

Any anticipated closure or moving of access points requires CDOT form 138

Utility Requirements ☐ Not Applicable

Include owner name, contact person, address, and telephone number. Always show whether or not utilities are on CDOT right of way. Check all that apply:

☐ A. **Gas**
Owner: _____
1. Buried, overhead or crossing
2. Size and pressure
3. Location (horizontal and vertical)
4. Locate vents, valves, markers, etc.

☐ B. **Transmission lines**
Owner: _____
1. Buried, overhead, crossing
2. Elevation of lines
   a. Depth
   b. Height at poles
   c. Height at low point of sag
3. Type of structures
   a. Lattice
   b. Single pole
   c. "H" frame
4. Construction
   a. Steel
   b. Wood
   c. Other
5. Kilo volt rating
6. Single points (poles, etc.)
7. Guy-anchor poles

☐ C. **Electric lines (local)**
Owner: _____
1. Buried, loose cables or in ducts; overhead, crossing
2. Kilo volt rating
3. Elevation at poles, at sag points, depths
4. Type and construction of poles

☐ D. **Telephone**
Owner(s): _____
1. Buried, loose cables or in ducts; overhead, crossing
2. Fiber optics or conventional wire cables
3. Location of pedestals, vaults, regeneration stations
4. Local services (drops, etc.) above, on, below surface

☐ E. **Water (domestic)**
Owner: _____
1. Buried or supported
2. Size and type of pipes
3. Angle and junction points
4. Locations of valves, meters, vents, drains, etc.

☐ F. **Sanitary sewers**
Owner: _____
1. Size and type of pipe
2. Manholes
   i. Inlet and outlet elevations
   ii. Top of manhole elevations

☐ G. **Television**
Owner: _____
1. Buried, overhead
2. Owned poles, attached to others
3. Cables loose, in ducts
4. Depth
5. Locate pedestals, etc.

☐ H. **Pipelines**
Owner: _____
1. Buried or aerial
2. Size and type of pipe
3. Pressure
4. Product--gas, oil, water, etc.

☐ I. **Irrigation company**
Owner: _____
1. Basic size of ditch
2. Flow-from ditch company
3. High water mark
4. Direction of flow
5. Period of use
6. Ditch Breaklines
7. Locate all division boxes
8. Get elevations of all boxes, drops, etc.

☐ J. **Miscellaneous**
Owner: _____
1. Get all details (explain):

☐ K. **CDOT**
Owner: _____
1. Get all details (explain):

L. **InRoads Fieldbook**
1. Separate Field Book for Attributes

Railroad Requirements Not Applicable ☐

Railroad name / Operator	Person to contact at railroad
Address of railroad right-of-way office	Phone number and, if known, e-mail address of contact

Check all that apply:
RAILROAD CROSSING ID NO: _____
APPROXIMATE HIGHWAY STREET LOCATION _____
- ☐ Area affected by the proposed design railroad milepost _____ to railroad milepost _____
- ☐ Show if railroad right of way is fenced
- ☐ Locate and tie railroad milepost (required for any railroad acquisition)
- ☐ Show all lines and note sidings
- ☐ Note type and condition of rail bed surface and material at all crossings
- ☐ Survey profile grade on top of both rails at road crossings
- ☐ Survey as-situated Centerline Alignment
- ☐ Survey terrain data within railroad right of way
- ☐ Locate all railroad topography in TMOSS including switches, sensors, signs, signals, X-bucks, etc.

NOTE: Permission to Enter from the Railroad company is required prior to strarting Survey

Overlay Surveys ☐ **Not Applicable**

☐ Establish stationing on:
☐ 100' intervals ☐ 250' intervals ☐ 500' intervals ☐ 1000' intervals ☐ Other: _____

☐ Establish milepost references
☐ Gather topographic data by station and offset
☐ Gather topographic data by milepost and offset
☐ Included guardrail height samples
☐ Include overhead clearances on utilities and structures
☐ Include sign locations and heights to bottom of sign from ground
☐ Tabulate existing delineators
☐ Tabulate hazards within clear zone limit of _____
☐ Reference striping and no passing zones
☐ Tabulate existing striping for inclusion in the plans
☐ Establish centerline and take cross-sections. Cross-section interval: _____
☐ Locate and reference Government and aliquot corners that may be affected in the area the proposed design
☐ Tabulate aliquot corners for inclusion in the plans within _____ distance from the edge of roadway.
☐ Tabulate all government survey monuments; i.e., bench marks horizontal control within _____ distance from the edge of roadway.

Paper products required:

☐ Two copies and the original of all field books

Survey Requirements **Completed by Professional Land Surveyor**

MONUMENTATION ☐ Not Applicable

What monument type(s) and quantities will be set or reset?
- o ROW Monuments _____
- o Control Monuments _____
- o Aliquot Monuments _____
- o 3-D Deep Rod Monuments _____

Have monument materials been provided by CDOT? (See CDOT Survey Manual for most current Specifications)
Yes ☐ No ☐

Control Monuments shall be set such that they are intervisible with at least two other adjacent control monuments and shall have minimum conflict with construction activities.

Horizontal Control ☐ **Not Applicable**

Horizontal control by: ☐ CDOT ☐ Consultant ☐ Existing (explain: _____)

Horizontal control method:

☐ Traverse with total station
☐ Trilateration with total station
☐ Triangulation with total station
☐ GPS densification and bluebook
☐ GPS fast-static where densification has been completed
☐ Project control tied to National Geodetic Survey (NGS) National Spatial Reference System (NSRS) High Accuracy Reference Network (HARN) Continuing Operating Reference System (CORS)

Establish control monuments **NOT** to exceed 0.6 mile or _____spacing. As per Survey Coordinator
Specify monuments to begin and end horizontal control survey on:
Horizontal control tolerances required: ☐ CDOT Class A - Primary
Documentation required in submittal (check only those needed):

☐ Original and two copies of field books
☐ Traverse file from data collector as an Electronic File
☐ CTL or CTM file as an Electronic File
☐ Project Control Diagram file as an Electronic File
☐ GPS files as an Electronic File
☐ InRoads Control File .CTL as an Electronic File
☐ Copies of any new monument records from this survey

A note is required on all survey markers found and tied in TMOSS. The note must include a description of the monument's size, shape, material, color, and markings. A field book shall be included with a sketch showing what was found and relate it to the point # in the electronic file.

Vertical Control ☐ **Not Applicable**

Vertical control method:

☐ Differential level closed loop through control monuments
☐ Trigonometric level closed loop through control monuments
☐ GPS differences from known bench marks

Known bench marks in the vicinity with NAVD '88 elev's:

Mark Number: _____ Elevation: _____ m.
Mark Number: _____ Elevation: _____ m.
Mark Number: _____ Elevation: _____ m.

☐ Establish a bench mark on each control monument
☐ Establish additional bench marks every _____ feet.
☐ A complete "Report on the Condition of Survey Mark" is required on all found federal bench marks
☐ Establish vertical control for an aerial survey.
☐ Establish profile grade on "as constructed" centerline

☐ No elevations needed-overlay quantity survey only

Documentation required:

☐ Original and two copies of field books ☐ Copy of reduced Electronic level notes on disk

☐ Final elevations included in CTL file on disk

Topography ☐ **Not Applicable**

Topographic survey method:

☐ TMOSS ☐ Other – explain :_____

Locate features:

☐ All within survey area ☐ Utility surface appurtenances only

☐ Streets, roads, and approaches only ☐ Drainage and irrigation structures only

☐ Structures only ☐ Landscaping features only

☐ Others:

Tolerances on TMOSS topographic survey are listed in the most current CDOT Survey Manual.

Other topographic methods do not include elevations.

Distances between shots in TMOSS on any given string should not exceed:

☐ 50 ☐ 100 ☐ 150 ☐ 200

Documentation required: ☐ Digital ☐ Paper

Submit electronic products on: ☐ CDROM ☐ E-mail attachments ☐ Other: _____

Right-of-Way Requirements ☐ **Not Applicable**

Is right-of-way involvement anticipated on this project? ☐ Yes ☐ No

Are Forest Service and/or Bureau of Land Management clearances needed on this project? ☐ Yes ☐ No

Approximate number of property owners _____. (Attach assessors' maps, deeds, subdivision plats, right-of-way plans, preliminary plots, permission to enter forms.)

☐ Professional Land Surveyor responsible for plans will research deeds and plats.

Check all that apply:

☐ Tie all the Public Land Survey System needed for CDOT R.O.W. acquisition purposes in Section(s) _____, Township(s) _____, Range(s) _____, Principal Meridian _____.

☐ Establish straddle ties as described in the most current CDOT Survey Manual on all section corners

☐ Establish references and complete a monument record form for all corners that are required by statute.

☐ Search for all owners' property pins adjacent to survey to aid in the establishment of property boundaries.

☐ Search for and tie all right-of-way markers found

☐ Include possession evidence and all improvements within _____ feet (minimum = 5' per CRS) of the right-of-way line in the TMOSS survey

☐ Include evidence of burial grounds and cemeteries in TMOSS

☐ Include evidence of easements like paths, utility markers, and risers, poles and valves, in the TMOSS survey

☐ Note street names and alleys in TMOSS survey

☐ Note street address numbers in TMOSS survey

☐ Establish "as constructed" centerline from right-of-way markers (Attach right-of-way plans)

☐ Make appropriate land ties to describe and purchase a wetland or construction parcel or easement

A note is required on all survey markers found and tied in TMOSS. The note must include a description of the monument size, shape, material, color, and markings. A field book shall be included showing a sketch of the monuments and relating to the Shot # in the electronic file.