

SCDOT Field Survey Check List

Project Name:

Project ID#:

Date:

Public Notification

The project's Program Manager has provide "reasonable notice" (by way of local public notice and/or letters) to landowners prior to any field survey.

The project's On-Call Contract Manager has provided a signed Field Survey Personnel letter.

Survey Mapping Limits

Survey mapping limits (pdf and/or Google KMZ).

Project Survey Control

Primary/Main Survey Control and Benchmarks per SCDOT Preconstruction Survey Manual specifications.

Best Fit Roadway Alignment (ERA)

ERA established using (1) the roadway and associated features as constructed (2) SCDOT's existing roadway plans, and possibly county/municipal roadway information.

SCDOT plans library, and if needed request individual R/W deeds from SCDOT R/W Department.

Courthouse Research

Search public records for Property Owner Information (Owner Name, Tax Map reference number).

Search public records for plats and deeds used to create a property strip map.

Property Monuments Field Survey

Reconnaissance and field survey of property monuments.

A survey of the entire boundary for each individual property is not typically performed on SCDOT highway projects. Instead, the property lines immediately adjacent to SCDOT rights-of-way are typically developed by utilizing the position of found property monuments, the property boundary information in deeds and plats, ground evidence of ownership lines, information from property owners, and sources of information for rights-of-way and easement lines. SCDOT considers this a partial property survey which does not constitute a full boundary survey of each individual property.

Present Rights-of-Way and Property Strip Map

Draft present rights-of-way lines (or notes describing r/w).

Draft property strip map.

Planimetric features (2D)

All cultural (man-made) and natural features pertinent to the roadway project must be located and mapped.

(Examples below are not all inclusive and other features could exist on project)

Roadways, curb and gutter, paved areas.

Sidewalks, trails.

Buildings, canopies, decks, steps.

Signs, mailboxes, columns, flag poles.

Stately trees, ornamental trees, wooded area boundaries, shrubs.

Fences, walls, guard rails.

Streams, rivers, lakes, marshes.

Utility poles, telephone pedestals, meter boxes.

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Breakline Features (3D)

Sufficient topographic break-line (3D) data collected at a maximum of 100-foot intervals on tangents and 50-foot intervals on curves along the roadway corridors, which is used to accurately develop the Digital Terrain Model for the project.

(Examples below are not all inclusive and other features could exist on project)

- Roadway break-lines (edge-of-pavement, crown).
- Curb and gutter.
- Sidewalks.
- Top and Bottom slope break-lines.
- Concrete features (pads, medians).
- Driveways.
- Stream, Creek, River, Outfall Ditch, Lakes, Retention/Detention ponds.
- Top of Railroad Tracks.
- Walls.

Drainage Surveys

Outfall Ditches, Streams, Creeks, Rivers, Lakes, Ponds, Marshes, and Tidal areas are surveyed in varying distances from the road centerline as directed in the requirements for hydraulic design studies and as directed by the Lead Hydraulic Engineer.

Drainage Feature Alignment.

*Outfall Ditch: Typically surveyed **300 feet** up and down-stream as measured from the end of the drainage structure (e.g., pipe, culvert), with cross-section intervals no greater than 100 feet.*

*Stream, Creek, and River: Typically surveyed **500 feet** up and down-stream as measured from the end of the drainage structure (e.g., pipe, culvert, bridge), with cross-section intervals no greater than 100 feet.*

Bridge Structures

Bridge Surveys must be performed to provide both accurate bridge planimetry (2D) with appurtenance, and DTM (3D) information for hydrographic and bridge design.

Typical features required on bridges:

- Bent cap (bearing seat) elevations and bent cap centerline.
- Planimetric (2D) location of concrete columns or piles (older bridges may have wooden piles).
- Low cord of bridge girder.
- Abutments (e.g., endwalls, wingwalls, etc).
- Utilities attached to bridge.

Other optional project specific features as directed by the Lead Structural Engineer:

- Bridge seams.
- Vertical clearance at crown of pavement and all painted travel lanes for overpass bridges.
- Raised sidewalks, multi-use paths, raised medians, median barriers, parapet wall, etc.

Additional items required for any bridge that spans a water course:

Typical features required on bridges over a water course:

- Observed water elevation on date of survey.
- Historical high water mark.
- Elevation on top of parapet wall.
- Abutment Toe.

Other features as directed by Lead Hydraulic Engineer:

- Flood Way & 100 year Flood (Floodplain) location.

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Major rehabilitation such as bridge widening, deck replacement or major reconfiguration of the bridge will have different and more extensive survey requirements to be requested by Lead Structural Engineer.

Storm Drainage Structures

- Culverts.
- Drainage Pipes.
- Headwalls and Wingwalls.
- Inlet Structures.

Gravity Sanitary Sewer Manholes

Rim and invert elevations determined at each manhole with flow lines depicted as running straight between manhole structures at ASCE38-22 Quality Level D (QLD) unless record information or site conditions indicate otherwise.

Wetland Boundaries

Wetland surveys are generally the surveyed location of an environmental engineer's flagged delineation of wetland (jurisdictional) areas.

New and Existing R/W staking

Temporary rights-of-way staking will be directed by the SCDOT right-of-way agent for each project. Rights-of-way break points including POTs, PCs, PTs, transition rights-of-way points, and rights-of-way along extended tangents are staked on 100' stations, with curves staked at 50 foot stations.

Geotechnical Bore Holes

Field survey the horizontal location of Geotechnical Bore Holes including a ground elevation at each bore hole.

Traffic Control

Maintain appropriate advance warning signage for traffic control purposes at all times when working within or near the existing traffic areas.

Rail Road Surveys

The following railroad survey information is required, unless direct otherwise by the SCDOT Railroad Projects Manager:

- Location of all railroad appurtenances.
- Existing drainage structures and flow patterns.
- Railroad right of way.
- Location of the nearest railroad milepost marker.
- Railroad alignments must be stationing using railroad VAL map stationing, unless other railroad documents are provided showing railroad stationing.

If a project involves a parallel encroachment on the railroad rights-of-way, include the following information in the survey:

- Distance to tracks (all measurements are referenced from the centerline of the tracks).
- Cross sections from the project to mainline tracks with ground line & top of rail elevations.
- Topography to the mainline tracks.
- Drainage structures/channels both sides of tracks with elevations of flow line/top of structures.
- Nearest railroad rights-of-way line to road project.

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When the SCDOT rights-of-way crosses or is within 25' of a railroad rights-of-way within the project limits, the field survey must include:

The centerline of the railroad must be located a minimum of 200 feet left and right of the roadway survey centerline with appropriate topography, drainage structures and cross section data within the railroad rights-of-way.

Deliverables

- One (1) digital copy of Planimetric survey data (2D) in Microstation format.
- One (1) digital copy of ERA described in a Geopak .gpk file.
- One (1) digital copy of Topographic Breakline data (3D) in Microstation format.
- One (1) digital copy of Digital Terrain Model in Bentley format (.tin).
- One (1) digital copy of all courthouse Deeds, Plats and Property Ownership records.
- One (1) digital copy of signed and sealed Wetland Exhibit survey.
- One (1) digital copy of signed and sealed Survey Control Data sheet(s).

Files must be delivered in a format that is compatible with the latest SCDOT's CADD and Plan Development Process. SCDOT Roadway Projects are assigned Project ID Numbers. All files must be referenced to a Project ID. The types of files and naming conventions are listed below, and are examples of some of the files that might be requested by the SCDOT design engineer. The examples shown below assume a Project ID number of "P012345".

An electronic copy of any digital data delivered to the SCDOT must be retained in the permanent files of the licensee. The term "Microstation" as used in this checklist refers to a native Bentley digital data format.

12345pp.dgn	Planimetric survey data (2D) in Native Bentley format.
345.gpk	ERA described in a Geopak file.
12345dtm.dgn	Topographic Breakline data (3D) in Native Bentley format.
12345.tin	Digital Terrain Model in Native Bentley format.
12345deed.pdf	Digital copy of all courthouse Deeds, Plats and Property Ownership records.
12345.new	ASCII file containing the final survey point data (Pt#, N, E, Elev, Desc).
12345_SCDS.pdf	Survey Control Data Sheet listing property monuments and survey control data.

NOTES