08/26/2024

## Section 152. — CONSTRUCTION SURVEY AND STAKING

**Construction Requirements**

Include if no survey data is available.

**152.04 General.** Add the following to the fifth paragraph:

No horizontal or vertical control information will be furnished.

Include if survey data is available. Revise as needed to match project-specific requirements.

**152.04 General.** Add the following to the fifth paragraph:

The Government will establish vertical and horizontal survey control points.

The Government will furnish the following for use during bidding and construction:

1. 3D LandXML models of existing ground, subgrade surface, final surface, and top of base course surface;
2. 3D coordinates and offset distance from centerline for subgrade and slope staking information and top of base course information at 50-foot intervals and miscellaneous intermediate stations;
3. Horizontal and vertical alignment listings;
4. Superelevation listing; and
5. Earthwork quantity information.

Contact cflcontracts@dot.gov to request the files. These files are considered Physical Data according to FAR 52.236-4 Physical Data.

Include if survey data is available.

**152.05(b) Centerline establishment.** Add the following:

Reestablishment of centerline may be ordered and paid for under Section 623 for purposes other than to control the work.

Include if using pay item 15225-0000 Slope, reference, and clearing and grubbing control.

**152.05(d)(2) Conventional survey methods.** Add the following:

When the centerline curve radius is less than or equal to 250 feet, use a maximum longitudinal spacing between stakes of 25 feet. When the centerline is on a tangent or the curve radius is greater than 250 feet, use a maximum longitudinal spacing between stakes of 50 feet.

Include if using pay item 15236-2000 Survey control, grade finishing.

**152.05(f)(1) AMG method.** Delete the text and substitute the following:

Use conventional survey methods for grade finishing.

Include if using pay item 15215-3000 Survey and staking, drainage structure.

**152.05(g) Culverts.** Delete the text and substitute the following:

**(1)** Verify and set culvert locations at the inlet, outlet, and inlet basin points as shown in the plans. Plot to scale the profile along the culvert centerline. Show the existing ground, flow line, roadway section, and culvert including end treatments and other appurtenances. Show the elevations, grade, culvert length, degree of elbow, catch points, and hinge points on the plot.

**(2)** Perform the following if the culvert design shown in the plans does not fit field conditions, when the CO requires adjustment to a culvert location, or when a culvert design isn’t furnished for a new culvert, culvert replacement, or culvert extension:

*(a)* Recommend a revised culvert location and alignment if needed.

*(b)* Survey and record the ground profile along the culvert centerline and additional channel profile for an appropriate offset to capture required information in Subsection 152.05(g)(2)(e).

*(c)* Determine the slope catch points at the inlet and outlet.

*(d)*Set reference points and record information necessary to determine culvert length and end treatments.

*(e)* Plot to scale the profile along the culvert centerline. Show the existing ground, flow line, roadway section, culvert, end treatments, and other appurtenances. Show elevations, grade, culvert length, and degree of elbow.

*(1)* For single skewed culverts, submit a plotted field-design cross-section normal to roadway centerline and at each end section. Plot the offset and elevation of existing ground at the end section and at proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded.

*(2)* For multiple skewed culverts, submit a plotted field design cross-section normal to roadway centerline and at the end sections (left and right) nearest to the shoulder. Plot the offset and elevation of existing ground at the end section and at proposed template break points between centerline and the end section. Ensure the template design embankment slope is not exceeded.

*(3)* Submit the plotted field-design cross-section for approval of final culvert length and alignment. Plot at a clear and readable scale.

*(4)* Set inlet, outlet, and reference stakes when the field design has been approved. Stake inlet and outlet ditches to ensure the culvert and end treatments (such as drop inlets) are functional.

*(5)* Adjust slope, reference, and clearing stakes as necessary to provide for culvert inlet treatments in cut slopes. Readjust slope, reference, and clearing stakes as necessary when culvert inlets are moved from their plan locations. Review slope adjustments with the CO and obtain approval.

Include if project has walls or rockeries.

**152.05(i) Retaining walls, rockeries, special rock embankments, rock buttresses, gabion walls, and reinforced soil slopes.** Delete the first sentence and substitute the following:

Survey and record profile measurements along the face of the proposed wall, rockery, embankment, buttress, or reinforced soil slope along the face of the proposed wall or slope, and at 5 feet and 10 feet in front of the wall or slope face.

Include if using pay item 15210-3000 Centerline, verification and staking.

**152.05 Survey and Staking Requirements.** Add the following:

**(m) Centerline verification and staking.** Verify stationing shown in the plans by measuring along the existing centerline with an approved method. Calibrate all measuring devices and provide calibration data to the CO before use. Use landmarks, such as culverts, pullouts, and approach roads, to verify that the ground stationing matches the stationing shown in the plans. Use white spray paint to mark each centerline station. Add station equations to adjust field stationing to match the plans. Notify the CO of any readjustment or change to stationing or establishment of additional centerline points.

Measure the existing surface width at 200-foot intervals on tangent and at 50-foot intervals on curves. At each location, each side of the roadway and outside the construction limits, place an offset stake of adequate dimensions to place all required information. Label each stake with the following information:

**(1)** Station;

**(2)** Offset from striped centerline or other location as directed; and

**(3)** Offset from the proposed edge of pavement.

Measure stations to the nearest foot and offsets to the nearest 2 inches. Record the above information and provide to the CO.

Use this recorded information to control the proposed roadway width and reestablish striping.

Include if project scope is pavement preservation.

**152.05 Survey and Staking Requirements.** Add the following:

**(n) Pavement preservation roadway width verification.** Measure the existing pavement surface width at 500-foot intervals on tangents and at 100-foot intervals on curves. Use white spray paint to mark the pavement with the station on each side of the roadway. Take additional measurements between the above required intervals if the width varies more than 1 foot from the pavement surface width shown in the plans. Provide a record of width measurements and corresponding station locations to the CO for approval before starting surfacing operations. Take additional measurements, at no additional cost to the Government, when requested. The revised approved surface widths will become the new surfacing width unless otherwise directed.

Include if using pay item 15210-3000 Centerline, verification and staking.

**152.07** Add the following:

Measure centerline verification and staking only one time per project.