

CHAPTER 10

FINAL SURVEYS

Chapter Contents

| | |
|-------------------|--|
| Sec. 10.01 | <u>General</u> |
| Sec. 10.02 | <u>Alignment</u> |
| Sec. 10.03 | <u>Levels</u> |
| Sec. 10.04 | <u>Cross-Sections</u> |
| Sec. 10.05 | <u>Borrow Pits</u> |
| Sec. 10.06 | <u>Plan Quantity Projects</u> |
| Sec. 10.07 | <u>Federal Aid State Force Account Projects</u> |
| Sec. 10.08 | <u>Non-Federal Aid State Force Account Projects</u> |
| Sec. 10.09 | <u>Minimum Plan Projects</u> |
| Sec. 10.10 | <u>Submitting Survey Data</u> |

Sec. 10.01 General

The district survey review and preparation procedures for final estimates shall be in accordance with the current [Post-Construction Manual](#), or as directed by the District Construction Engineer. If the District Construction Engineer requests finals, the following sections of this Chapter and the Post-Construction Manual should be used as guidelines. In addition to projects designed by VDOT Structures and Bridge section and borrow pits, the P-CM states final survey may be warranted if the final right of way lines are in question, to verify as-built drawings or payments, and to ensure that any significant changes to the plans were incorporated into the final project.

Additionally, the [Road and Bridge Specifications](#), Section 105.13 identifies and/or clarifies situations when VDOT Survey personnel may be required to provide final surveys. Specific guidance for borrow pits and right of way lines are included therein. Any unusual situations or any project specific concerns and/or requirements related to the Final Survey should be clearly identified in the task order.

Sec. 10.02 Alignment

The centerline should be retraced accurately putting in all points where slope DTM's will be required for the final survey. If the centerline can be retraced accurately without running a traverse line over the project, a note conspicuously placed in the digital file, ascii file, or field book should state that a traverse line was not run as it was not necessary for the establishing of the centerline, and that the project was constructed according to plan alignment. When the line is retraced this is to be done in accordance with the procedures outlined in [Sec. 11.02](#).

Sec. 10.03 Levels

After the centerline has been re-established, centerline levels are to be run taking elevations at all points where slope stake DTM's are to be taken. These levels shall be run in accordance with the procedure outlined in [Sec. 11.03](#).

Sec. 10.04 Cross-Sections

Cross Sections are no longer used in final surveys. In lieu of securing cross-section information, a DTM surface is the accepted VDOT format for determining final volumetric and final grading information. In case of emergency or a special situation, cross sections can be requested.

Except in the case of Plan Quantity projects Section 10.06, DTMs shall be secured as outlined below.

Sec. 10.05 Borrow Pits

The Department will provide all borrow pit DTMs or cross-sections, both original and final. The same benchmark elevation must be used when securing both the original and final ground elevations. A traverse or baseline must be established and referenced, and used when securing both the original and final surfaces. DTM readings must be taken in a manner to ensure that an accurate computation of volume of material removed can be obtained. A break line should be secured to define the beginning of excavation. In the case of more than one borrow pit, they must be numbered to correspond with the number used in staking them out.

If it becomes necessary to secure DTM readings for a borrow pit area not covered by original ground elevations, the original ground elevation may be interpolated and placed in the same format as the originals.

Sec. 10.06 Plan Quantity Projects

A centerline profile at "Final" stage on plan quantity projects is not required. Spot checks will be made to ensure that the vertical alignment is within required specifications. In some cases, a complete profile may be needed to provide proper assurance; but in most cases, this can be accomplished by use of reference stakes and benchmarks along the project.

On secondary roads having a daily traffic count of two hundred (200) or less, five-tenths (0.5 ft.) of a foot tolerance would be allowed provided such tolerances tend to equalize and are not to the detriment of the quality of the project.

On Class IV primary roads and comparable secondary roads the allowable tolerance is three-tenths (0.3 ft.) of a foot. On Class I, II and III primary and on secondary roads comparable thereto, the allowable tolerance is two-tenths (0.2 ft.) of a foot except in the case of Portland cement concrete surfaces where the tolerance is reduced to one-tenth (0.1 ft.) of a foot.

When setting slope stakes, in the event areas are found that show changes from the original location of the DTMs, these areas will again have DTMs collected to show the changes and a final DTM surface taken to coincide with these sections.

DTMs are required on all borrow pits and all material pits.

Sec. 10.07 Federal Aid State Force Account Projects

Finals on Federal Aid State Force Account Projects are to be taken up in the same manner as regular contract projects.

Sec. 10.08 Non-Federal Aid State Force Account Projects

If deemed necessary by the District Construction Engineer, finals can be taken on this type project and specific information obtained.

Sec. 10.09 Minimum Plan Projects

A Minimum Plan Project is to be handled the same as the Plan Quantity Project, except that DTMs are **not** necessary.

Sec. 10.10 Submitting Survey Data

As soon as the final survey is completed, the Survey Party Manager (Land Surveyor) should send to the District Survey Manager all notebooks and Inspector's records which are in their possession. The District Survey Manager will then transmit these books to the District Design Unit.

For the current Post-Construction Manual please click here:

https://www.virginiadot.org/business/resources/const/pc_manual.pdf

For the current Construction Manual please click here:

<https://www.virginiadot.org/business/resources/const/ConstructionManual.pdf>

For the current Road and Bridge Specifications please click here:

<https://www.virginiadot.org/business/const/spec-default.asp>