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Inter-Departmental Memorandum

DATE: March 4, 2009

TO: Roadway Design Division
Design Team Leaders

FROM: Roadway Design Division Engineer
Keith Purvis *CKP*

SUBJECT OR PROJECT NO: Cross sections from DTM Surveys

INFORMATION COPY TO:

- Roadway Design Division (Reese)
- Roadway Design Division (Boteler) ✓
- Roadway Design Division (Reeves)
- Roadway Design Division Section Engineers
- Assistant Chief Engineer, Pre-Construction
- Assistant Chief Engineer, Operational Maintenance
- District Engineers
- Active Consultants
- Design Memo File

The majority of surveys are now being submitted with a digital terrain model (DTM) created from a Spot Shot/Breakline survey. With this type of survey, cross sections can be cut at any location because the DTM provides a much more accurate representation of the actual ground surface than radial (90 degree to baseline) cross section surveys provide.

In an effort to aid field offices and contractors in stakeout/construction and to improve preliminary earthwork estimates, cross sections need to be cut from DTM's at critical design locations instead of only at the traditional even 50' or 100' stations. All new projects (Contract not yet signed for consultants, and new projects in which work has not started for In-House Design Teams) shall be designed using this new process when a DTM (Spot Shot/Breakline) Survey is performed on a project.

The attached page shows guidelines for this new process. Also, CADD tools are available to aid in locating the critical design locations.

CKP/HKB/JMR

Attachment



Cross Sections shall be cut at the following locations when a DTM Survey (Spot Shot/Breakline) is performed on the project's preliminary survey.

1. Critical Superelevation Break Points.
2. At points of non-tangency or geometric change of element type (or radius) along proposed edges of pavement, shoulders, alignments, and profiles. (i.e. Begin/End of tapers, PC/PT's, etc.).
3. At locations required by abrupt changes in the digital terrain model. (i.e. Top/Bottom of streams, ditches, hills, etc.).
4. At any other locations that are needed to provide a maximum distance between cross sections of 100-ft for rural projects and 50-ft for urban projects.
5. Driveway Locations.
6. Drainage Structure Locations. These can be skewed but they must not be included with Cross sections intended for EW computations. They should be clearly labeled as skewed and at what angle.

Cross Sections should be 90 degrees to the design alignment unless otherwise noted above. Where there are multiple non-parallel roadways shown on one set of cross sections, the following applies:

- Bridge Replacement (Detour Roads) – Sections should be cut along and at the critical design location of the permanent alignment.
- Non-parallel 4-Lane Roadways – Critical Stations do not have to be identified for the non-parallel roadway in non-parallel areas.

Below is a plan view representation of where cross sections should be located based only on criteria 1, 2, & 4.

- EP Break Points
- PC/PT of Curve
- Superelevation
- Supplemental based on 100' req'd max. spacing.

