NATURAL RESOURCES CONSERVATION SERVICE

DOCUMENTATION REQUIREMENTS FOR

ACCESS ROAD

CODE 560

Design Criteria

Design in accordance with the criteria listed in Conservation Practice Standard 560, Access Road.

Surveys

The amount of survey information necessary to design the access road will depend on the purpose of the finished job. In most cases, it will require a profile and cross section survey or a detailed topographic map.

A profile and cross section survey should be run as follows:

- Profile the proposed centerline of the road taking shots on 100-foot stations and at significant breaks in grade. Cross section data should be taken at locations not to exceed 500 feet apart and more often as needed to accurately describe the topography of the area needed for construction.
- Record survey data on Form NRCS-ENG-28 and Form NRCS-ENG-29, Loose Leaf Field Sheet, or Forms KS-ENG-37 and KS-ENG-37a, Field Notes, (or equivalent)
- Set at least 1 permanent bench mark. Set reference hubs as needed.
- Take additional shots or cross sections as needed at stream crossings or other channels to define the limits of the channel or stream.

Design

Develop the design in accordance with the Design Criteria section above.

In most cases, a plan map will be developed that shows the location of the proposed access road. A profile of the centerline of the road and detail cross sections will also be shown along with the location and structural information for drainage structures. The following items should also be included as part of the access road design and construction drawings:

- Prepare a table with quantities for excavation, earthfill, surfacing materials, and seeding areas.
- Locate and show any buried or overhead utility lines which may affect the design or construction of the access road. Safety procedures listed in National Engineering Manual (NEM) Part 503 and NEM Part KS503 should be strictly followed.

Layout

Locate and mark the centerline of the access road as needed to accurately define the work areas. Locate and mark the location of the no cut/no fill points for fill in the road and/or excavation in adjacent ditches as needed to define the areas of cut and fill at each full (100-foot) station. Locate and mark these locations on intermediate stations as needed to define the work properly at significant grade breaks or changes in the cross section of the road or excavation.

The distance between staked cross sections should not exceed 100 feet for straight centerlines. On curved centerlines, this distance may need to be reduced to 25 or 50 feet depending on the radius of curvature.

An offset hub or stake may be needed at full stations depending on the amount of cut or fill in the cross section. They are recommended when cut or fills exceed 5 feet from original ground or when the finished elevations are critical to maintain specific grades on the fill or in the excavated ditches. They may also be placed on intermediate stations if required by the complexity of the design.

The location and elevations of drainage structures should be clearly staked. The inlet and outlet of pipe drainage structures shall be located along with the required cut or fill to the design elevation. The stakeout of other types of drainage structures will be as needed to accurately locate structures along the road profile.

Temporary bench marks shall be set as needed near drainage structures to provide accurate elevation information for construction. Offset hubs or stakes may be used as temporary bench marks if convenient. Surveys and elevations for temporary bench marks shall meet the requirements for ordinary surveys as defined in Table 1-1 in Section 650.0102 in National Engineering Handbook Part 650 (NEH 650), *Engineering Field Handbook*.

Checkout

Checkout tolerances are dependent on the item being checked. The overall finished appearance of the access road and associated excavations should be taken into account as well as the recommended tolerances to the design elevations or slopes.

The finished top surface of the earthfill for the access road prior to application of the surfacing materials shall be the design elevation plus or minus 0.2 foot. For level tops, the change in elevation shall not exceed 0.3 foot at successive stations.

The finished surface of excavations shall be the design elevation plus or minus 0.2 foot. Excavated channels or ditches that are designed on a grade shall maintain a grade to the outlet so that no ponding occurs. The change in grade shall be uniform so that no excessive velocities develop due to grade changes.

The finished surfaces of excavated or constructed slopes shall be uniform across the slope and along the centerline of the road. The finished elevation shall be plus or minus 0.3 foot of the design elevation for any horizontal distance along the slope cross section. The elevation difference shall not exceed 0.5 foot for successive stations along the centerline of the road.

The flow line elevation of the inlet and outlet of pipe drainage structures shall be the planned grade minus 0.2 foot. The outlet elevation should be lower than the inlet elevation unless designed with negative grade.

The flow line elevations of other drainage structures such as cast-in-place concrete structures shall be the planned elevation plus or minus 0.1 foot. The outlet elevation shall be lower than inlet unless designed with negative grade.

Checkout surveys should include all of the following:

- A profile along centerline of the road with shots at every full station.
- Cross sections showing all fill and adjacent excavations. The section should extend to natural ground on both the left and right side. Left and right will be oriented looking at increasing stations. At least 1 shot should be taken a minimum of 10 feet beyond the no cut/no fill location.
- Elevation shots on the inlet and outlet flowline of all drainage structures.

Survey notes shall be kept as indicated in the survey portion of this document or recorded on the as-built plans if space is provided. Final elevations from survey notes shall be transferred to the as-built plans along with final quantities. The as-built plan shall be signed and dated as complete by the preparer of the plans or the Natural Resources Conservation Service employee with appropriate engineering job approval authority as delegated on Form KS-CPA-1, Kansas Practice Approval Certification. This will certify that the completed job conforms to the original design and is within allowable tolerances.