



PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

MEMORANDUM TO: Project Engineers
Project Design Engineers

FROM: T. K. Koch, P.E.
State Structures Engineer

DATE: January 12, 2016

SUBJECT: END BENT WING LENGTH AND SLOPE PROTECTION
DETAILS

To facilitate proper grading of fill and construction of slope protection, the policy for determining end bent wing length and detailing slope protection has been revised as follows:

- Use Design Manual Figure 12-25a (see attachment) to determine the station, elevation and offset of the slope pivot points. Label this information on Standard Drawing SP2.
- Label the berm width and elevation at each end of the end bent cap on the General Drawing and Standard Drawing SP2.
- Calculate the turned back wingwall length using a 1'-0" berm width, regardless of the computed berm width of the bridge. The minimum length of the wingwalls is 7'-0" for 2'-6" and 4'-0" deep end bent caps.

The Design Manual, Standard Drawing SP1 and Standard Drawing SP2 have been updated and are available on the Structures Management Unit website. The Standard Drawings are also available on the SMU server at the following location:

- S:\Share\Structures Standards\Standards English 2012

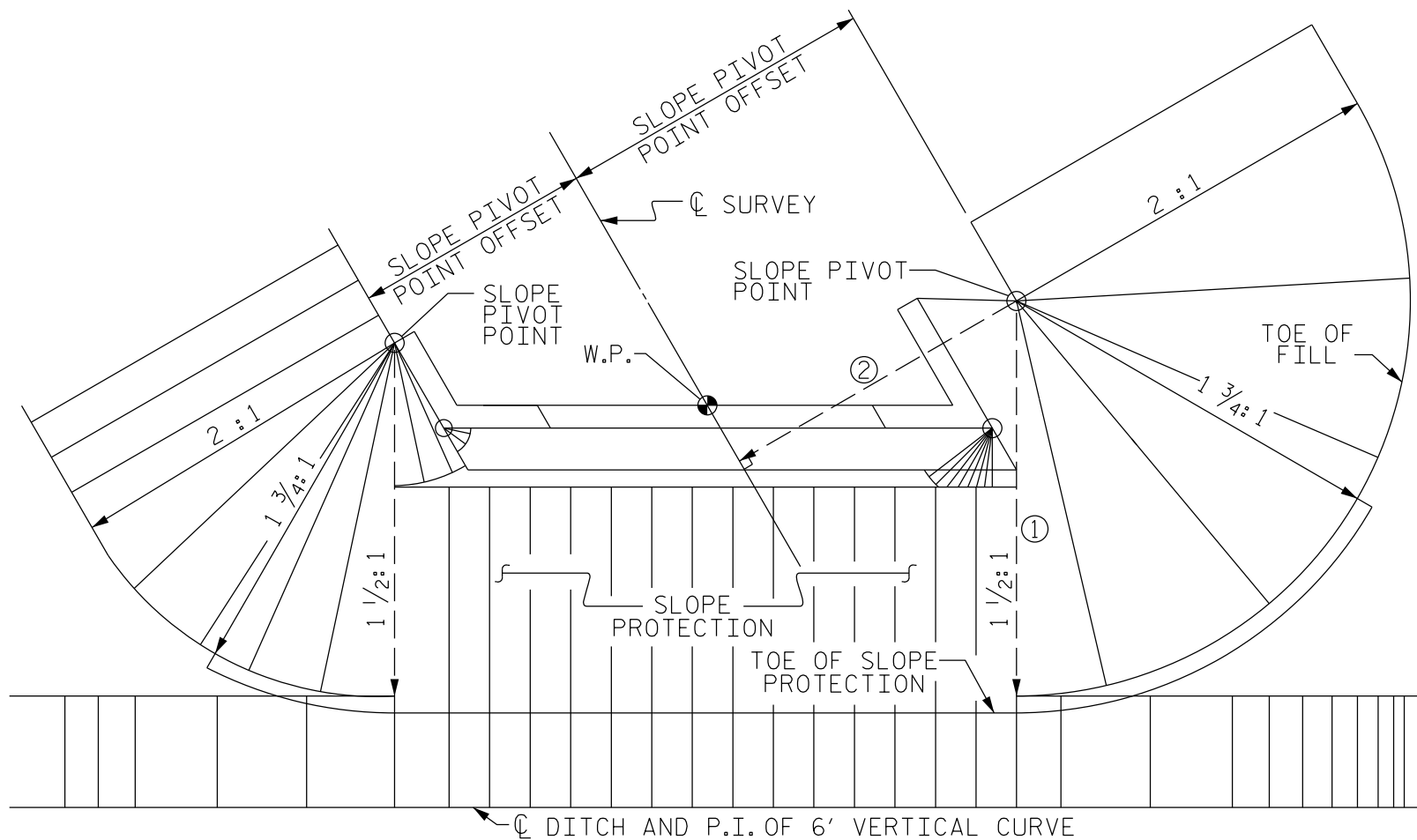
This policy is effective with the April 2016 letting.

TKK/TMG/kaw

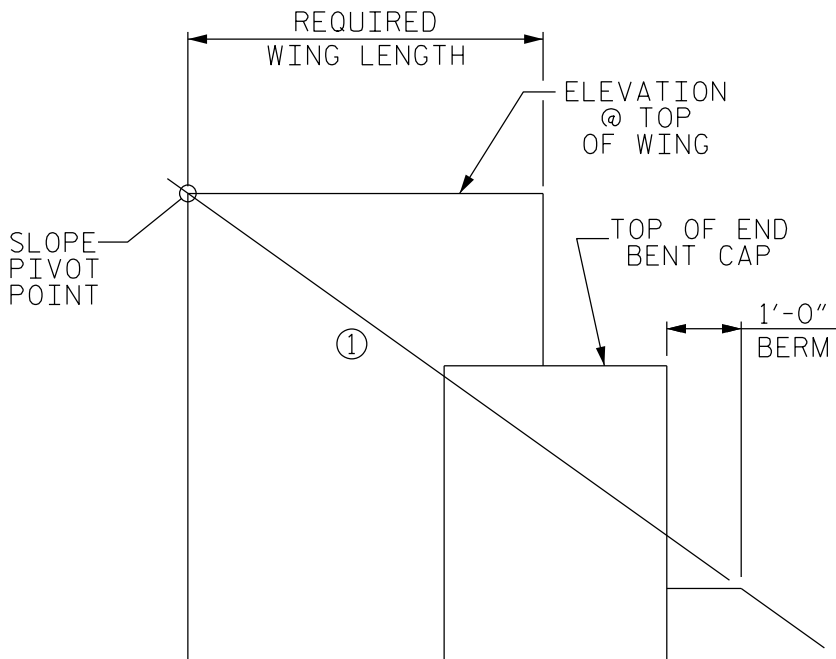
Attachment: Figure 12-25a

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FOR BOTH SIDES OF THE END BENT CAP FOR 90° SKEWS, AND FOR THE ACUTE CORNER SIDE OF SKEWED BRIDGES, USE THE FOLLOWING TO DETERMINE THE LOCATION OF THE SLOPE PIVOT POINT(S):



- A) CALCULATE THE SLOPE PIVOT POINT ELEVATION. THIS ELEVATION WILL ALSO BE THE TOP OF WING ELEVATION. IF THE WING IS SLOPED, USE THE LOWEST WING ELEVATION.
- B) PROJECT THE 1 1/2:1 SLOPE FROM THE TOE OF THE SLOPE PROTECTION, PERPENDICULAR TO THE BERM, TO THE POINT OF INTERSECTION WITH SLOPE PIVOT POINT ELEVATION. (SEE ①)
- C) PROJECT THE SLOPE PIVOT POINT ONTO THE CENTERLINE ROADWAY. DETERMINE THE STATION AND OFFSET TO THE SURVEY LINE. (SEE ②)
- D) SHOW THE SLOPE PIVOT POINT STATION, OFFSET AND ELEVATION ON THE SLOPE PROTECTION DETAILS SHEET.

FOR THE OBTUSE CORNER OF SKEWED BRIDGES, THE LOCATION OF THE SLOPE PIVOT POINT SHOULD CORRESPOND WITH THE LOCATION OF THE END OF WING.

SLOPE PIVOT POINT LOCATION

(1 1/2:1 FRONT SLOPE SHOWN, 2:1 FRONT SLOPE SIMILAR)

FIGURE 12-25a