Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

MEMORANDUM TO: Project Engineers
Project Design Engineers

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

DATE: December 30, 2015

SUBJECT: Prestressed Concrete End Bent and Bent Caps for Cored Slab Standard Design Plans

As part of the Federal Highway Every Day Counts initiative, details for Standard Prestressed Concrete End Bent and Bent caps have been developed and are available for use in conjunction with the Cored Slab Standard Design Plans. When Cored Slab Standard Design Plans utilize steel HP piles, prestressed concrete piles or steel pipe piles, place the following note on the General Drawing:

> ***At the Contractor's option, prestressed concrete End Bent and Bent caps may be substituted in place of the cast-in-place caps. The Contractor shall coordinate with the Resident Engineer to receive revised plans and details from the Structures Management Unit. The redesign and any additional materials needed will be at no additional cost to the Contractor.***

When the Contractor elects to use prestressed End Bent and/or Bent caps on a project, the Structures Management Unit will be responsible for revising the contract plans. The following is a list of revisions that should be made to the contract plans:

- To maintain the beam lengths and the distance between the bearing and centerline of a prestressed Bent cap, the centerline of a prestressed End Bent cap (same as centerline of piles) must be shifted away from the center of bridge detailed in the cast-in-place option. This shift is detailed in the Standard Prestressed End Bent details. The control line through the work point of the prestressed End Bents will still be designated as the fill face. The work point stations, as well as the total bridge length from work point to work point (or fill face to fill face), will remain the same. The beginning and end of approach slab stations will remain the same. If prestressed End Bent caps are used in place of 2'-6" deep cast-in-place End Bent caps, begin front slope stations will not change. If prestressed End Bent caps are used in place of 4'-0" deep cast-in-place End Bent caps, revise begin front slope stations.
- For some prestressed End Bent and Bent caps, the number of piles varies from the cast-in-place option. When the number of piles increases, assume the length of each pile from the cast-in-place option remains the same and increase the total length of pile (in linear feet) accordingly.
- Revise the approach slab dimension from 1'-1 ½" to 1'-6 ¾" in the Section at End Bent on the Cored Slab Standard Design Plans Superstructure sheet containing the Typical Section.

- Revise the approach slab dimension from 1'-1 ½" to 1'-6 ¾" in the Section Thru Slab on the Cored Slab Standard Design Plans Approach Slab sheet.
- Revise the Bill of Material on the Cored Slab Standard Design Plans Approach Slab sheet by adding the following amounts to each approach slab Class AA concrete quantity:
  - 0.4 cubic yards for 21" Cored Slab bridges of widths 27', 30', and 33'.
  - 0.5 cubic yards for 21" Cored Slab bridges of widths 36' and 39'.
  - 0.6 cubic yards for 24" Cored Slab bridges of widths 27', 30', and 33'.
  - 0.7 cubic yards for 24" Cored Slab bridges of widths 36' and 39'.
- When prestressed End Bent caps are substituted for 4'-0" deep cast-in-place End Bent caps, revise the cap depth to 2'-6" and show the top of rip rap 1'-6" from the bottom of cap in the Section views on the Rip Rap Details plan sheet. Revise the earth berm elevations accordingly. Compute revised begin front slope stations based on the revised earth berm elevations and 3'-0" prestressed End Bent cap widths. Revise begin front slope stations in the Plan of Rip Rap. Notify the Hydraulics Unit of the revised berm elevations and prestressed End Bent and Bent cap widths since the hydraulic bridge opening will be altered.

The Standard Prestressed End Bent and Bents are intended to be used only as an option to the Cored Slab Standard Design Plans. Details are available on the Structures Management Unit website and on the SMU server at the following location:

- S:\Share\Cored Slab Standard Design Plans\Drawings\Substructure

Standard Prestressed End Bent and Bent details are not available for Box Beam Standard Design Plans.

This policy is effective with the April 2016 letting.

TKK/TMG/kaw

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