

Memorandum

TO: All Design Section Staff
FROM: Bijan Khaleghi
DATE: December 12, 2008
SUBJECT: Approach Slab Details

This design memorandum is to provide guidance on the plan preparation for bridge approach slabs, specifically in relation to the plan view, bar list and retrofit details. Specifics will be referenced in the next revision to the BDM.

Plan View

Dimensions need to be shown defining the plan of the approach slab. If there are skewed ends, then dimensions need to be provided for each side of the slab, or a skew angle and one side, in addition to the width. For slabs on a curve, the length along the project line and the width need to be shown. Occasionally the skew becomes so large that the approach slab should be stepped. A general rule of thumb is that if the approach area can be reduced by 50 SY or more, then the slab shall be stepped. At no point should the roadway end of the approach slab be closer than 25 feet to the bridge. See Figure 10.6.4-1 for clarification.

Reinforcement needs only to be shown by size, spacing, and edge clearance. The number and total spacing can be determined by the contractor. Be sure to include the traffic barrier bars and additional traffic barrier reinforcement in the plan view if applicable. Also remember that the spacing of the AS1 bars decreases near joints.

Bar List

The partial bar list and approximate quantities have been eliminated from the sheet. The only information required is the bending diagrams for all custom (non straight) reinforcement.

Retrofit Details

When approach slabs are to be added or replaced for existing bridges, modification may be required to the pavement seats. Either the new approach slab will be pinned to the existing pavement seat, or attached with approach anchors with a widened pavement seat.

The pinning option is only allowed as an approach slab addition or retrofit to an existing bridge. Figure 10.6.6-1 shows the pinning detail. As this detail eliminated the joint between the approach slab and the bridge, the maximum bridge superstructure length is limited to 150 feet. The Bridge Design Engineer may modify this requirement on a case by case basis. Additionally, if the approach slab is adjacent to PCCP roadway, then the detail shown in Figure 10.6.6-2 applies. PCCP does not allow for as much movement as HMA and a joint is required to reduce the possibility of buckling. All approach slabs will have a similar detail.

Staging plans will most likely be required when adding or retrofitting approach slabs on existing bridges. The staging plans will be a part of the bridge plans and should be on their own sheet. Coordination with the region is required to ensure agreement between the bridge staging sheet and the region traffic control sheet. The longitudinal construction joints required for staging shall be located on lane lines. As there may not be enough room to allow for a lap splice on the bottom transverse bars, a mechanical splice option should be added.

Background

There has been confusion as to how to show the bridge approach slabs, and to quantify their materials. With the increasing cost of approach slabs, and their requirement for most bridges, there is a need to establish plan view guidelines that will allow the Bridge Office to satisfy the design requirements and the regions to better anticipate their cost.

Approach slabs are bid on a square yard quantity. All the information in the former barlist was becoming confusing, and is not needed. The only information required, and that is contractual, is the bending diagram.

As far as retrofit goes, widening the pavement seat and adding approach anchors was the only option until recently. Getting all of the approach anchors aligned properly, especially on a skewed bridge, is not an easy task. If the anchors are not aligned, then the connection acts more like a pinned connection than an expansion connection. Additionally most pavement seats on older bridges are not long enough to allow for the expansion. The seat had to be widened adding construction time and money. Allowing for a pinned connection would reduce the amount of construction time required and the cost of the project.

If you have any questions regarding this issue, please contact Brian Aldrich at 705-7224, Amy Leland at 705-7394, or Bijan Khaleghi at 705-7181.

cc: Mohammad Sheikhezadeh, Bridge Construction - 47354

F. Posner, Bridge and Structures – 47340