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IOWA DEPARTMENT OF TRANSPORTATION

To Office Bridges and Structures Date March 24, 2005

Attention All Employees Ref No. 521.1

From Gary Novey

Office Bridges and Structures

Subject Method's Memo No. 81 (Deck Drains)

The following guidelines shall be used for determining types of deck drains and placement on bridge decks. For typical bridges, an analysis does not need to be done to determine drain spacing, if drains can be provided and spaced 25 feet to 40 feet. In situations with extremely flat grades, additional drains may have to be considered.

I. Bridge Deck Drain Location

1. Using vertical curve information, place drains at the low point of the deck if bridge is on a sag curve. If bridge is on a crest, do not place drains at the high point.
2. When placing drains over berms or dikes use splash basins. See Standard Road Plan RF-45.
3. Drains should be placed 10 feet or more from the centerline of a pier to keep corrosive salt water off of the piers.
4. For a super elevated deck, place drains on the low side only.
5. Drains should not be placed over traveled ways or railroad right of way.
6. If other choices exist, do not place drains over concrete slope protection because of erosion and settlement problems. However, placing drains over the toe of the concrete slope protection is acceptable. In addition, drains may be placed over macadam stone slope protection.
7. In unusual situations, a water collection system may have to be designed, such as for a finger joint expansion system over a pier support.

II. Drains and Extensions - Galvanize/Paint

On all bridges with tube type deck drains all parts of the drain, including bolts, concrete anchors, extensions and attachments, should be galvanized. For steel bridges, drains shall also be painted to match the color of the steel bridge (see specification 2408.30).

III. Selection of Type of Deck Drain

1. Use tube drains with angle nailer to formwork for prestressed beam and rolled steel beam bridges (CADD Standard 4380 to 4385).

2. Use tube drains for CWPG with two brackets attached to the web for girders that are deeper than 54 inches.
3. Use the aesthetic deck drain detail (CADD Standard 1054) when there is the need because of aesthetics to not have the drain located on the outside of the exterior beam or in order to avoid conflict with the top flange.
4. In unusual situations where additional drainage is required, check with your section leaders for options that are available such as grate drains.

IV. Orientation of Drain Grates

All grate drains are to be designed to orient the grate bars perpendicular to the direction of traffic thus improving the safety for motorcycles and bicycles.

Issues on eliminating deck drains is under discussion and guidelines will be released in a later memo.

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