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TO: CONSULTANT STRUCTURE DESIGN STAFF

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SUBJECT: MISCELLANEOUS STRUCTURE ITEMS

Prestressed Concrete Girders

The calculation of theoretical camber and proper detailing of stirrup projection (for horizontal shear) is essential to avoiding construction issues and can result in unanticipated haunch dead load and the need for additional haunch reinforcement ("hat" bars) if done incorrectly. The following **important reminders** are taken from Bridge Manual text and Standard Details in Chapter 19:

- The theoretical camber at strand release must be multiplied by **1.4** to account for camber growth. This value is used to determine haunch heights, beam seat elevations and the required stirrup projection.
- Stirrup projection is to be detailed to maintain a minimum deck embedment of 3" and clearance of 2 ½" from the top of deck.
- The height of the stirrup projection should be based on a minimum haunch of 2" at the controlling edge of the girder, taking into account the cross-slope, longitudinal profile and theoretical camber.
- Stirrup projection should be **varied for each 1/3** of the girder length to account for variable camber along the length of the girder.
- A variance in camber of +/- 3/4" should be provided for.

Structure Plans for Rehabilitation Projects

Structure plans (using a sheet border with a #8 tab) are required for **all structure rehabilitation projects**. This includes work such as superstructure painting and all overlays, including polymer (epoxy) overlays.

Plans for this work may be quite basic. For example a painting plan should include a plan view showing the overall width, length and number of spans, an elevation view showing what the bridge is crossing over, and an indication of the number and type of elements to be painted (plate girder, truss, etc.).

Preliminary Structure Plan Submittals

Preliminary plans (using a sheet border with a #8 tab) must be submitted along with a Structure Survey Report and Inventory Data Form for **all structure rehabilitation projects**. Failure to submit preliminary plans can result in costly redesigns and can negatively impact the project schedule.

Epoxy Overlays

Please note that the January release of the Bridge Manual has an error in Table 5.3-2. The contract unit bid price for "Epoxy Overlay" is shown as $24.27 per **square foot**. The unit (square foot) is incorrect, and should be **square yard**. Therefore the correct contract unit bid price is **$24.27 per square yard**.

Bridge Ratings

Bridges must be load rated for any project that results in a change to the loading. This includes all overlays - overlay removal and replacement; polymer (epoxy) overlays (5 psf dead load per Bridge Manual 40.5.2), etc.

Painting Steel Girders

The paint system for shop application on **steel plate I girders** shall be **the three-coat epoxy** system consisting of a prime coat of organic zinc-rich paint, an intermediate coat of epoxy paint, and a protective shop coat of urethane paint. (Note: a second coat of urethane is field applied as a fourth coat to the exterior girder fascias and bottom exterior girder flange surfaces after completing adjoining concrete work, form removal, and repairing field damage.)

The paint system for shop application on **steel box (tub) girders** shall be the **two-coat polysiloxane** system consisting of a prime coat of organic zinc-rich paint and a finish coat of polysiloxane.