

TRANSMITTAL MEMORANDUM 00-02

MEMO TO: Design Consultants
Bridge Design Staff

FROM: Stephen E. Goodpaster, P.E. *seb*
Director
Division of Bridge Design

DATE: September 28, 2000

SUBJECT: Changes/New Policies for Design
and Details of Structure Plans

Recent construction issues have prompted the following changes and new policies for design and details of structure plans. These changes shall be in all projects beginning with the January 2001 letting.

- 1) Drilled Shaft Casings: The casing on all end bearing drilled shafts shall be left in place below ground line.
- 2) Intermediate Diaphragms: When intermediate diaphragms are required for spread box beam or PCI beams spans, the designer shall use steel diaphragms according to details provided on the attached sheets. Concrete diaphragms will no longer be an option.

Place diaphragms at the midpoint of the beam for PCI beams with a length of 40 ft. – 80 ft. For PCI spans greater than 80 ft., place diaphragms at the quarter points of the beams.

Place diaphragms at the midpoint of the beam for spread box beam spans with a length greater than 80 ft.

For consistent detailing practice, consider the length of the beam along centerline of beam to arrive at the midpoint and quarter points.

The designers and detailers should check the location of inserts on small skews and narrow beam spacing to make sure there isn't fabrication congestion. If it is obvious that inserts may be too closely placed, the designers should consider eliminating the offset of the diaphragms to avoid fabrication congestion.

Plans that have been detailed and checked using concrete intermediate diaphragms should include the steel diaphragm details as an option.

Details as shown on the attached sheets are available by contacting Larry Graves at lgraves2@mail.kytc.state.ky.us. These sheets are in MicroStation dgn format. Note that the steel diaphragm notes for PCI beams type 5-8 have been modified and should replace any previous versions.

- 3) Pile Points: Pile points shall be specified (and established as bid item) for all point bearing piles. The general note for pile points has been updated to accommodate this change and should be used on all plans with point bearing piles. A note shall be placed on the foundation layout sheet to indicate the type of pile point required.
- 4) Slenderness Ratio for Columns: For pier designs, the effective slenderness ratio, kl/r , shall not be less than 100 without the written permission of the Director of the Division of Bridge Design. For piers with stepped or tapered columns, the pier stiffness will be no less than that which would occur in a constant section design with kl/r less than 100.
- 5) AASHTO Interim Specifications: The 1999 Interims to the AASHTO Standard Specifications are available for order and shall be incorporated into all structure plans. A publication order form is attached.

In addition to the above changes, the designer is advised of the following issues. These comments are intended as guidance.

1. Paint Notes: All paint notes shall be submitted to Scott Kring (Division of Construction) for review and comments.
2. Dry Stone Masonry: Projects that contain work on existing dry stone masonry walls shall specify that work done on these walls be performed by a certified Dry Stone Mason.
3. Gap Between Plates at Field Splices: With the increased usage of 1" ϕ bolts a problem has occurred with fit up between plates. For 7/8" ϕ bolts the dimension from the center of the splice to the first row of bolts has been 2" traditionally and has served adequately.

Plans that have been detailed and checked using concrete intermediate diaphragms should include the steel diaphragm details as an option.

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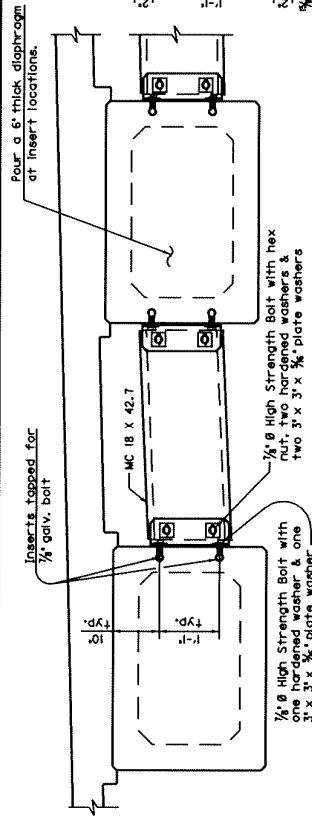
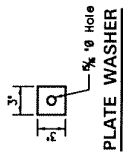
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When 1" ϕ bolts are used, this dimension needs to be increased to 2 1/4" to accommodate the additional required edge distance.

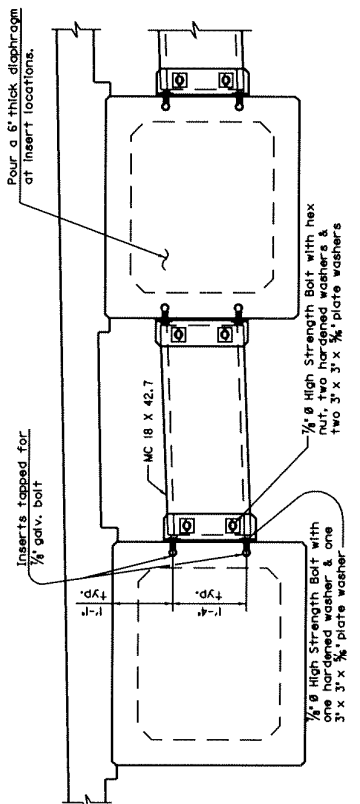
4. Referencing Existing Structures to New: When practicable, plans shall show reference to the existing structure as it relates to the new. This will help in determining whether wing walls can be constructed fully or if phase construction of the wing wall is required to avoid hitting the existing structure.
5. Stone Faced Barriers: When stone faced barriers are used for aesthetics, a plan note shall indicate that the guardrail shall be attached prior to stone placement and the crush tube shall be placed after stone placement.
6. Specification Changes: The designer is advised that changes to Class AAA concrete and the addition of a foundation preparation bid item were included in the 2000 standard specifications. As with any changes to the specifications, the designer is responsible for the inclusion of these specification changes into the plans.
7. Pier Column and Cap Rebar Conflict: When column reinforcement is carried into the cap, the designer should pay special attention to the intersection of column reinforcement and bottom cap reinforcement to assure that all bars can be placed within the cap.
8. General Notes: The General Note Library has been updated for the discussed changes and others. The designer should request an updated general note library from this office (Larry Graves).

SEG:ed
Attachments

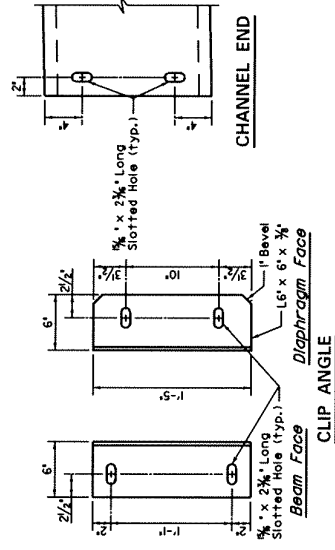
Use ONLY the details that apply to each particular project.



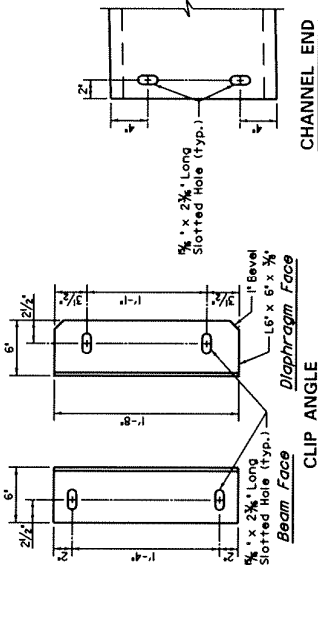
INTERMEDIATE DIAPHRAGM
~Typical for SB-33 Beams~



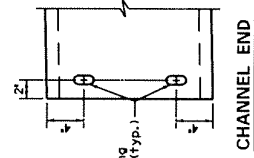
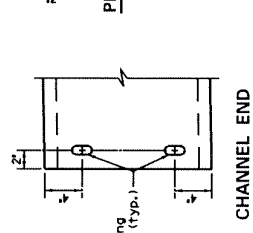
INTERMEDIATE DIAPHRAGM
~Typical for SB-42 Beams~



CLIP ANGLE



CLIP ANGLE



Diaphragm Notes

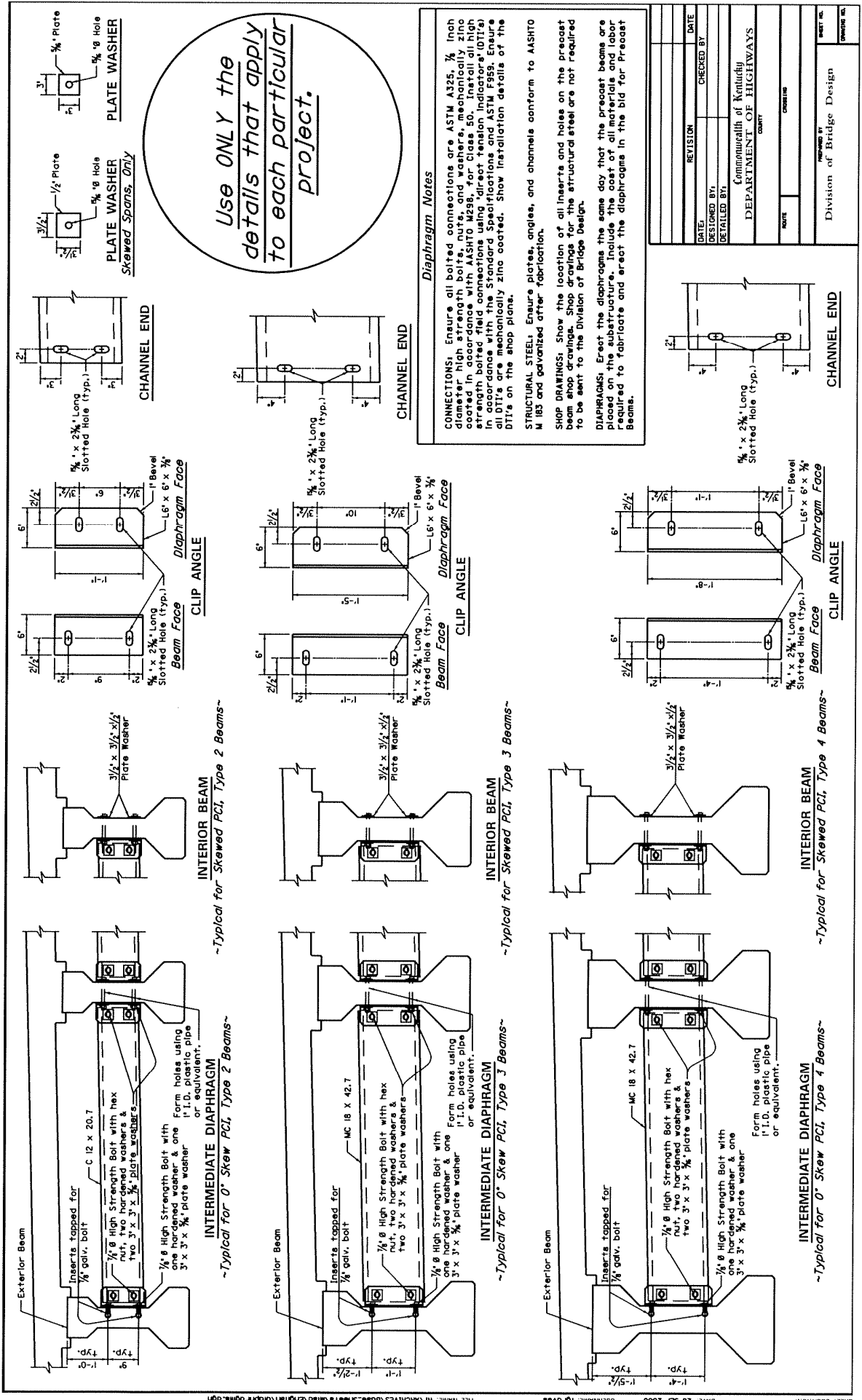
CONNECTIONS: Ensure all bolted connections are ASTM A325, 1/2 inch diameter high strength bolts, nuts, and washers, mechanically zinc coated in accordance with AASHTO M298, for Class 50. Install all high strength bolted field connections using "direct tension indicators" (DTIs) in accordance with The Standard Specifications and ASTM F959. Ensure all DTIs are hot dip galvanized zinc coated. Show installation details of the DTIs on the shop plans.

STRUCTURAL STEEL: Ensure plates, angles, and channels conform to AASHTO M 183 and galvanized after fabrication.

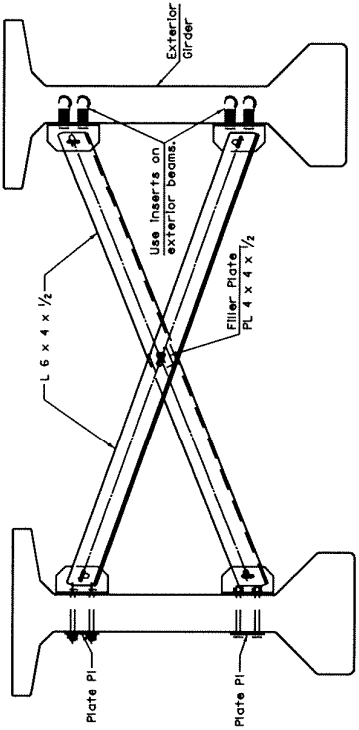
SHOP DRAWINGS: Show the location of all inserts and holes on the precast substructure. Shop drawings for the structural steel are not required to be sent to the Division of Bridge Design.

DIAPHRAGMS: Erect the diaphragms the same day that the precast beams are placed on the substructure. Include the cost of all materials and labor required to fabricate and erect the diaphragms in the bid for Precast Beams.

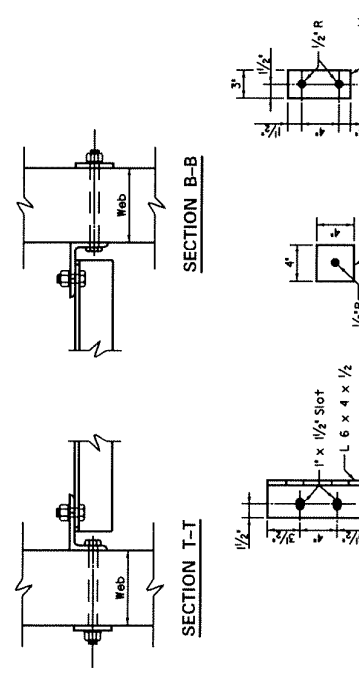
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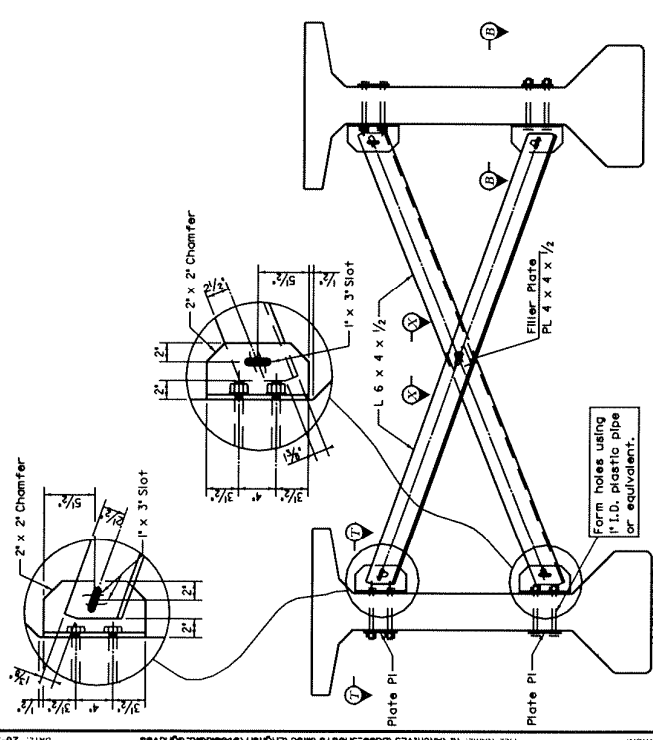
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INTERMEDIATE DIAPHRAGM DETAILS BETWEEN OUTMOST BEAMS
 ~Typical for Skewed Bridges~



CLIP ANGLE
 FILLER PLATE
 PLATE-PI



INTERMEDIATE DIAPHRAGM DETAILS BETWEEN INTERIOR BEAMS
 ~Typical for Skewed Bridges~

Diaphragm Notes

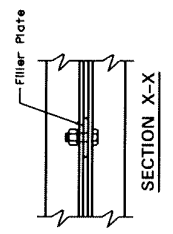
CONNECTIONS: Ensure all bolted connections are ASTM A325, 3/4 inch diameter high strength bolts, nuts, and washers, mechanically zinc coated in accordance with AASHTO M298, for class 50. Install all high strength bolted field connections using "Direct Tension Indicators" (DTIs) in accordance with the Standard Specifications and ASTM F959. Ensure DTIs are mechanically zinc coated. Show installation details of the DTIs on the shop plans.

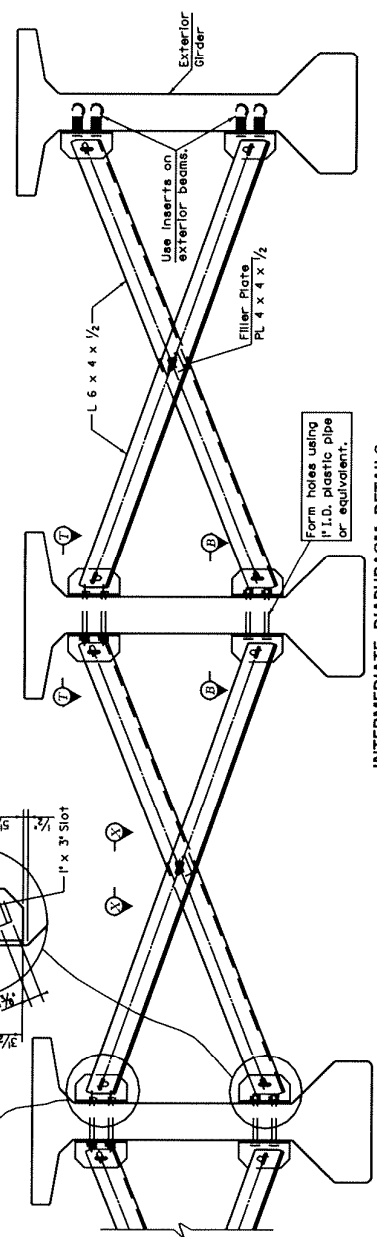
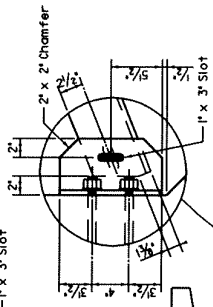
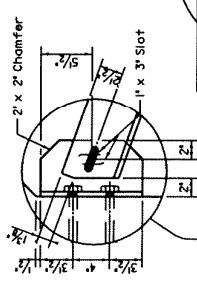
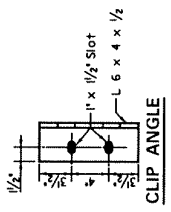
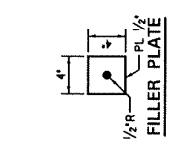
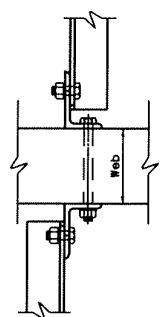
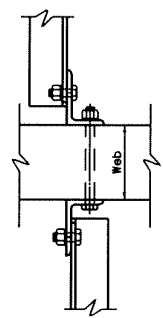
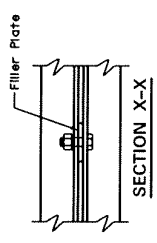
STRUCTURAL STEEL: Ensure plates and angles conform to AASHTO M 163 and galvanized after fabrication.

SHOP DRAWINGS: Show the location of all inserts and holes on the precast beam shop drawings. Shop drawings for the structural steel are not required to be sent to the Division of Bridge Design.

DIAPHRAGMS: Erect the diaphragms the same day that the precast beams are placed on the substructure. Include the cost of all materials and labor required to fabricate and erect the diaphragms in the bid for Precast Beams.

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Diaphragm Notes

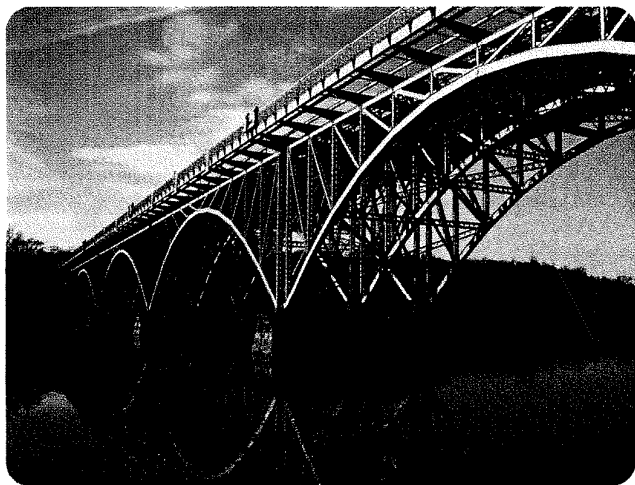
CONNECTIONS: Ensure all bolted connections are ASTM A325, 3/4 inch diameter high strength bolts, nuts, and washers, mechanically zinc coated in accordance with AASHTO M298, for class 50. Install all high strength bolts in accordance with the specifications and AASHTO M298. All bolts are to be installed with the correct torque. All bolts are to be installed with the correct torque. All bolts are to be installed with the correct torque.

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1998 Interim Revisions to Standard Specifications for Highway Bridges

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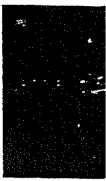
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TRANSMITTAL MEMORANDUM NO. 00-03

TO: Design Consultants
Bridge Design Staff

FROM: Stephen E. Goodpaster, P.E. *SEG*
Director
Division of Bridge Design

DATE: September 29, 2000

SUBJECT: Revised Sheet
Transmittal Memo 00-02

An error has been discovered in the second page of Transmittal Memorandum 00-02. Attached is the revised sheet. Please discard the original and substitute this revised sheet.

SEG:ed
Attachment