



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 16-08 Technical Advisory

March 11, 2016

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/George Snyder
George Snyder
Manager, Bridge Rehabilitation
Bridges Division

SUBJECT: Shop Drawing Review

REVISES: *Indiana Design Manual 14-1.02(08)*

The shop drawing review procedure has been revised to reflect the information found in Construction Memo 13-13.

As a reminder, for shop drawing review of structural members on Local Public Agency (LPA) projects, the LPA or their representative must forward a copy of approved shop drawings for structural members to the Department upon completion of the review. The Department is responsible for fabrication inspection of structural members for both LPA and State projects and must have approved shop drawings when evaluating compliance.

The approved drawings should be sent via email to George Snyder at gsnyder@indot.in.gov

Structural members include the following:

1. Structural steel and structural concrete members (typically beams or girders);
2. Modular expansion joints;
3. Strip Seal (SS) joints; and
4. Elastomeric bearings.

For the above items each sheet must contain the signed and dated approval stamp.

The *Indiana Design Manual* section has been revised in its entirety to reflect these changes.

14-1.02(08) Shop Drawings and Falsework-Review Procedure [Mar. 2016]

Working drawings as defined in the INDOT *Standard Specifications* include supplementary bridge plans, stress sheets, shop drawings, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcement, or any other supplementary plans, detailed drawings, design drawings, or similar data which a contractor is required to submit for approval.

The following procedure applies to the submittal and review of shop drawings, falsework drawings, or related documents as described below. Specific contact information is available via [Construction Memorandum](#).

LPA Projects. For LPA projects, review of all shop drawings and other items listed herein are the responsibility of the LPA or their designated representative except as follows. MSE wall design calculations and deck pour sequences should be forwarded to the Department for review as indicated below.

State Projects. For State projects, the following procedures have been implemented for submittal and review of shop plans, falsework drawings and related items as described below.

Design-Build Contracts. For design-build contracts, the responsibilities and procedures for shop drawing review and approval should be described in the contract documents.

General Instructions. Working drawings and calculations should use the same measurement units (English) as shown in the contract information book. Regardless of the submittal process described, it is the intent that the contractor communicates directly with the project engineer or supervisor (PE/S) to keep him or her informed of the status of submittals. All submittals must include the contract number, contractor's name, and a contact person with contact information.

Item-Specific Instructions.

1. Structural Members and Related Items. Shop drawings should be submitted by the fabricator or supplier directly to the Department's designated shop drawing review consultant. Shop drawings must be in accordance with the *Standard Specifications* applicable special provisions and project specific design parameters. The following items do not require a professional engineer's stamp for submittal:
 - a. structural steel and structural concrete members;
 - b. modular expansion joints;
 - c. strip seal (SS) joints; and

d. elastomeric bearings.

For the above items each sheet must contain the signed and dated approval stamp. The review consultant should send approved shop drawings to the Department for distribution to the district construction office. For LPA contracts, the LPA or LPA's representative should forward a copy of the approved structural member shop drawings to the Bridges Division Bridge Rehabilitation Manager.

2. Mechanically Stabilized Earth (MSE) Walls. MSE shop drawings and computations must be stamped by a professional engineer. Shop drawings and computations for MSE retaining walls should be submitted by the contractor or fabricator directly to the engineer of record for review and approval. The designer should forward an electronic copy of the shop drawings and design calculations to the Office of Geotechnical Services manager. Include the contract number as part of the subject line. The Office of Geotechnical Services will review the design calculations for both LPA and State contracts and will provide comments back to the designer. The designer will continue to provide the final approval of the MSE shop drawings and design calculations.

The designer should transmit an electronic copy of the approved shop drawings to the submitter and to the district construction office for further distribution.

3. Sound Barrier Systems. Shop drawings and computations for sound barrier systems must be stamped by a professional engineer. Shop drawings and computations for both State and LPA projects should be submitted by the contractor or fabricator directly to the designer of record for review and approval. An electronic copy of the approved shop drawing package should be returned to the submitter and the district construction office for further distribution.

4. Precast-Concrete Three-Sided Structures and Box Culverts. Shop drawings and design calculations are to be submitted for all precast concrete 3-sided structures and for precast concrete box culverts that have a dimension or design earth cover not listed in Table 1 of ASTM C 1577. Shop drawings and design calculations must be stamped by a professional engineer. Shop drawings for 3-sided structures must include details to provide sufficient horizontal restraint of the structure legs during installation until after the completion of backfill placement unless the design calculations demonstrate such restraint is not required. Load rating calculations must be included for box culverts and 3-sided structures whose span measured along the centerline exceeds 20 ft, except where the height of cover is greater than 8 ft and exceeds the perpendicular span length.

Plans and calculations should be submitted by the contractor to the Project Engineer/Supervisor (PE/S). The PE/S should send the shop drawings directly to the Engineer of Record for review and approval and a copy to the Office of Roadway Review Coordinator. For structures requiring load rating, the designer should forward an electronic copy of the shop drawings, design calculations, load rating calculations and load rating summary (RPD 700-B) to the Office of Bridge Inspection Load Rating Engineer. Load Rating Engineer will provide comments back to the designer.

The approved shop drawings will be distributed by PE/S.

5. Welded-Wire Reinforcement. Most contracts will allow the contractor to substitute welded-wire reinforcement in lieu of the reinforcing bars shown on the plans. If the contractor desires to pursue this substitution, shop drawings and design calculations must be stamped by a professional engineer and submitted to the Bridges Division Office of Bridge Design for review and approval. The Office of Bridge Design will distribute approved shop drawings to the PE/S.
6. Traffic Items. Shop drawings for Signing, Signals, and Lighting will be reviewed and approved by the Office of Traffic Design and Review. These items typically include all overhead sign structures, signal strain poles and cantilevers, high mast lighting, luminaries, and light poles. Plans and calculations should be submitted by the contractor to the Project Engineer/Supervisor (PE/S) and forwarded to the INDOT Office of Roadway Review Coordinator. The coordinator will distribute the plans and calculations to the Office of Traffic Design and Review for review and approval. The coordinator will distribute approved shop drawings to the PE/S.
7. Falsework and Temporary Bridge Drawings. Falsework drawings for the following items should be submitted to the PE/S. Each drawing must be stamped by a professional engineer:
 - a. cofferdams;
 - b. deck falsework – temporary;
 - c. coping falsework;
 - d. falsework for reinforced concrete slab superstructures;
 - e. falsework for hammerhead pier caps; and
 - f. temporary bridges for runarounds. Temporary bridge submittals must include design computations.

The PE/S will review drawings for compliance with the *Standard Specifications* and the specific job conditions only. Construction Management Division Field Engineers are

available for assistance on any of the above items. Questions should be directed through the Area Engineer and district construction office.

8. Permanent Metal Deck Forms. Working drawings for permanent metal deck forms should be submitted by the contractor to the district construction office for review for compliance with the specifications and the specific job conditions only. Working drawings submitted by the contractor must be stamped by a professional engineer. The Construction Management Division maintains a deck form computation spreadsheet that can assist in review of metal deck forms.

9. Foundation Seals and Deck Pour Sequences. Requests for use of foundation seals not shown in the plans should be submitted to the Office of Bridge Design for review and approval. The submittal must indicate the location and dimensions of the seal. The Office will distribute approved requests.

A request to revise planned deck pour sequences for both INDOT and LPA contracts should be submitted through the PE/S to the Office Bridge Design for review and approval. The submittal must indicate the original and proposed alternate sequence and pour rate. The Office will distribute approved requests.

10. Stream Crossings and Work Bridges. Proposals for stream crossings and work bridges for construction traffic should be submitted to the district construction office for review and approval. If the proposal varies from any of the contract's environmental permit conditions, the contractor must obtain approval for the change from the appropriate agency.

11. Miscellaneous. Shop drawings submittals for miscellaneous items not covered by the above, such as post-tensioning plans and non-standard manholes, should be submitted through the PE/S. The PE/S should work through the district construction office and the Construction Management Division to determine the approval process for these items.