

42. Quality Acceptance Procedure for Bridge Expansion Joints

1. PURPOSE

This procedure describes the Quality Acceptance inspection, testing, documentation and reporting of the Harbor Bridge Project Bridge Expansion Joints. This Procedure includes the commitment to review and approve the associated material certifications, review and approve surface preparation certification statements, perform dimensional checks of completed items, perform visual inspections of welds and applied coating systems, and perform thickness verification tests on completed items. CQAF will also conduct audits of fabricator and shop coating applicator facilities and perform CQAF fabrication inspections and measurements as described within this procedure.

2. SCOPE

This document defines the CQAF acceptance procedure for the expansion joint hardware. Technical Provisions Attachment 13-1, Item 454 “37. Bridge Expansion Joints” describes the requirements for Bridge Expansion Joints and it and the other Items it references within Attachment 13-1 of the Technical Provisions, govern the definition and requirements of the materials.

3. DEFINITIONS

Fabricator(s) – the Company manufacturing / fabricating the components.

Protective Coatings Applicator – The Company applying the corrosion protection coatings to the fabricated items.

Owner – Texas Department of Transportation.

4. RESPONSIBILITIES

The Design Engineer must be available during fabrication to provide design related recommendations regarding manufacturing.

The Construction Quality Acceptance Manager (CQAM) must provide qualified technicians to perform the review of certificates, fabrication documentation, and dimensional checks. The Construction Quality Acceptance Firm (CQAF) will review and approve all submittals required for acceptance.

5. MATERIAL PRODUCER LIST

The materials for the HBP are not required to be listed on the TxDOT Material Producer List (MPL).

6. DEVELOPERS' AND SUPPLIERS' REQUIREMENTS

Use of pre-qualified product does not relieve the Developer of the responsibility to provide products that meet the Specification. The Construction Quality Acceptance Firm (CQAF) may inspect or test material at any time and reject any material that does not meet the specifications.

7. ACCEPTANCE PROCESS

Fabricator Submittal Include the following information for each of the individual Bridge Expansion Joints:

- **Fabricator(s) company name;**
- physical and mailing addresses, and;
- contact person, title, phone number, and email address, and;
- list of items being fabricated.

- **Protective Coatings Applicator(s) company name (if different from the Fabricator);**
- physical and mailing addresses;
- contact person, title, phone number, and email address; and
- surface preparation specification and type of protective coatings being applied to the fabricated items.

- **Material properties certifications from both the Fabricator and the Protective Coatings Applicator;**
- Certification statement/documents will be provided with each delivery to the Project.

The CQAM may contact the Fabricator(s) and/or the Protective Coatings Applicator(s) to review their quality control processes.

CQAM Evaluation of Certification Documents

The CQAM will review and approve the certification documents from the Fabricator(s) addressing the following:

Sealed Expansion Joints (SEJs):

- Edge Rails and Clamp Profiles shall be fabricated from ASTM A36 steel
- Elastomeric Seals shall meet the Hardness, Tensile Strength, Elongation at Break and Compression Set Requirements listed on the approved revision of Mageba Drawing No. P600118-AD018
- Anchor Studs shall be ASTM A108
- Cover Plates shall be fabricated from ASTM A709 Grade 50

Finger Expansion Joints:

- Joint Finger Plates, Barrier Plates and Joint Substructure shall be ASTM A709 G50 F2
- Joint Secondary Plates shall be ASTM A36 G36
- Fasteners
 - Fasteners shall be ASTM F3125 Type 1 120ksi HDG and meet:
 - ASTM A563 for Nuts
 - ASTM A153 for Galvanized Nuts, Bolts and Washers
 - ASTM F879 for Flat Head Screws, and;
 - ASTM A436 for Stack Washers / Shims
 - ASTM F593 for Stainless Steel H Bolts / Wing Screws;
 - Nuts shall be ASTM F594 Type 304; Washers shall be ASTM F436 and SS Washers shall be SS Type 304
- Rubber Troughs shall be CR 50 Durometer or EPDM
- Trough Clamping Bars shall be ASTM A240 Type 316

General:

- All steel items must meet Buy America requirements;
- Each welder must be properly qualified for each weld they will perform, in accordance with requirements of the AWS D1.1 Structural Welding Code -- Steel, for fabrication of the Expansion Joints.
- Fabricator's Welding Procedure Specification (WPS) are appropriate and being followed.

The CQAF will review and approve the certification documents from the Protective Coatings Applicator(s) (if different from the Fabricator(s)) for the following:

- Steel surfaces shall be prepared per SSPC SP5;
- All galvanized surfaces shall be prepared in accordance with ASTM A123, and;
- Shop Test Reports for each item confirming required thickness is met.

All required certifying statement documents related to the Bridge Expansion Joints will be submitted to the Owner for review and comment prior to CQAF finalizing any consideration of approval or acceptance.

CQAF Fabrication Shop Visits

CQAF will conduct an initial audit of the fabricator's facility to evaluate existing quality control processes and procedures related to fabrication of Harbor Bridge Project Expansion Joint fabrication, with additional visits to the Fabricator's shop as follows:

- First visit to audit the materials documentation and fabrication method, evaluating adequacy of, adherence to and effectiveness of the Fabricator and Shop Coating Applicator's quality control process and procedures. During CQAF's initial Fabricator Shop audit, CQAF will review and approve Welding Procedure Specifications (WPS's) and pertinent Procedure Qualification Records (PQR's) per requirements of AWS D1.1 Structural Welding Code -- Steel, for those WPS's utilized in the fabrication of the Finger Expansion Joints.
- A visit during onset of Finger Expansion Joint Fabrication to monitor the fabrication process, and confirm compliance with approved fabrication details and document results of dimensional and coating tolerance verification by both the CQAF Inspector and the Fabricator / coating applicator. The first additional visit will occur during the onset of fabrication. CQAF shall monitor the fabrication process throughout fabrication and coating of the first Expansion Joint at a minimum, and as required to verify conformance to the approved details and to document results of dimensional check and coating thickness measurements conducted by CQAF and Fabricator / Coating Applicator.
- Additional periodic fabrication shop visits in conjunction with inspection visits associated with the fabrication of other items for the Harbor Bridge Project. During these additional periodic visits, the CQAF will perform dimensional checks and coating thickness measurements on any expansion joint parts and / or assemblies currently in the shop.

Welding Procedure Specifications, Welder Qualifications and Weld Tests Review

The CQAF will review and approve the welding procedure specifications (WPS's) and pertinent procedure qualification records (PQR's) per the requirements of AWS D1.1 Structural Welding Code -- Steel for those WPS's utilized by the fabricator in the fabrication of the expansion joints and will verify the Welders are properly qualified per the AWS D1.1 Structural Welding Code -- Steel.

- The CQAF will verify all welding is performed per appropriate WPS's.
- The CQAF will visually inspect welds for compliance with the AWS D1.1 Structural Welding Code -- Steel, and;
- Review weld test reports for tests performed by an Independent Weld Testing company.

Dimensional Check and Coating Thickness Verification

Protective Coating Thickness Verification

The CQAM will perform a visual inspection of the coatings adherence and measure the protective coating thickness for any expansion joint pieces being assembled at the time of the visit, to confirm the requirements of the approved fabrication and assembly drawings are met. Additional coating thickness measurements on the Finger Expansion Joints will be conducted after delivery to the Project site to ensure the coating thicknesses are confirmed on each expansion joint. All aspects of the Sealed Expansion Joints inspection for acceptance may be performed after delivery to the Project site.

If the coating system layers fail to meet specification, the CQAF will contact the Fabricator to quarantine the item, until the failing tests are resolved.

Dimensional Checks (CQAF)

The CQAF will perform a visual check of the required dimensions of each of the fabricated joint assemblies and acceptable surface roughness of thermal cut faces currently being fabricated during each site visit. All joint assemblies will be visually checked either during one of the periodic fabrication shop visits or after delivery to the Project site..

Forms developed by CQAF to document protective coating thickness, and required dimension verification shall be submitted to TxDOT for review and comment prior to use by CQAF.

Acceptance

If the above review of the certification documents, visual inspections, dimensional checks and coating system inspections and thickness tests conducted by CQAF validate compliance with the Specifications and Fabrication / Assembly Drawings, the CQAF will accept as many of the Finger Expansion Joints for use on the Project, as can be completed during the periodic fabrication shop visits prior to shipment from the fabrication shop to the Project site. Acceptance inspection will be completed at the Project site for any Finger Joint Assembly not accepted prior to shipment. All Sealed Expansion Joints may be accepted after delivery to the Project site.

The Fabricator or Protective Coatings Applicator must immediately notify the CQAF when any changes to the manufacturing process, management/ownership or contact persons at the facilities occur.

Failure

The Supplier must adequately correct all deficiencies in delivered items prior to consideration for final acceptance.

CQAF Inspector Qualifications

The training and experience of the CQAF Technician conducting the quality acceptance activities shall be commensurate with the scope, complexity, and nature of the activity or work to be inspected or tested.

8. RANDOM INSPECTIONS AND TESTING

The CQAF reserves the right to inspect, sample, test, conduct random audits, and review documentation at any time to ensure compliance with the Specification. The Fabricator(s) / Protective Coatings Applicator(s) must provide facilities and safe access to allow for inspection of materials, the manufacturing processes, and the finished product, if requested.

9. SHIPPING / IDENTIFICATION

Item Identification

Identification tags shall be affixed to each Pre-Assembled Bridge Expansion Joint Unit which include the following:

- Manufacturer's name and location of manufacture (and assembly, if different);
- Piece Number(s) from approved Shop Drawings;
- Weight of item.

Documentation Required with each Shipment

Buy America: Notarized original of the FORM 1818 with the proper attachments.

CQAF will review Buy America Documents provided by the Manufacturer, to both confirm the documentation provided with each shipment to the Project meet the requirements of Buy America 23 CFR 635.410 and to verify that material requirements are met for the steel component items.

10. REFERENCES

Harbor Bridge Technical Provisions 13.2.1.13

ASTM A36

ASTM A108

ASTM A123

ASTM A153 Galvanized Nuts, Bolts and Washers

ASTM A240 Type 316

ASTM A436 Stack Washers / Shims

ASTM A563 Nuts

ASTM A709

ASTM D2240

ASTM D395 (Method B)

ASTM D412

ASTM F3125

ASTM F436

ASTM F879 Flat Head Screws

ASTM F593 Stainless Steel H Bolts / Wing Screws

ASTM F594

SSPC SP5 Surface Preparation

Technical Provisions Attachment 13-1, Item 454 37. Bridge Expansion Joints

11. RELATED DOCUMENTS

Harbor Bridge Construction Organization Chart

TxDOT DB QAP 2011

Construction Quality Management Plan (CQMP)

Form 1818

12. FIGURES

None