



Existing Structures – Modifying Structures – Bridge Joint Restrainers

Revision and Approval

Revision	Date	Nature of Changes	Approved By
0	10-28-2022	Original Issue	Richard Foley

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Background

This process establishes Structure Construction (SC) responsibilities and procedures for review and authorization of bridge joint restrainers, including submittals, quality assurance, materials and fabrication, construction, and payment.

Bridge joint restrainers may consist of cable-type restrainers, bar-type restrainers, or pipe-type restrainers. Additional unique contract requirements for *cable, bar and pipe type restrainers* are detailed in the following [Contract Specifications](#):

- Section 11, *Welding*
- Section 51-1.01, *Concrete Structures – General*
- Section 51-1.03E, *Concrete Structures – General – Construction – Miscellaneous Construction*
- Section 52-1, *Reinforcement - General*
- Section 59-1, *Structural Steel Coatings – General*
- Section 59-2, *Structural Steel Coatings – Painting Structural Steel*
- Section 60-4.04, *Existing Structures – Modifying Structures – Coring Concrete*
- Section 75, *Miscellaneous Metal*

Prior to reviewing this Bridge Construction Memo (BCM), it is essential to review the *Contract Specifications*, Section 60-4.09, *Existing Structures – Modifying Structures – Bridge Joint Restrainers* that this BCM is based on as identified in the title block above.

The information in the contract specifications typically will not be repeated in the text of this BCM.

Process Inputs

1. Submittals
2. Manufacturer's product data

Procedure

1. All work associated with this process is charged as [Project Direct – Construction](#)
2. Inspection of field work for this process is:
 - a. [Benchmark](#) for the following activities:
 - i. Verifying restrainer length and placement
 - ii. Verifying scaffolding/protective covers are constructed per authorized drawings.
 - iii. Material inspection
 - b. [Continuous](#) for the following activities:
 - i. Rebar detection
 - ii. Coring
 - iii. Concrete and grout placement (if placed)
 - iv. Tensioning restrainer cable (if applicable)
3. Before construction begins the Structure Representative (SR) or delegate must:
 - a. Review the [contract documents](#) regarding bridge joint restrainers.
 - b. Complete applicable safety training such as:
 - i. Confined spaces
 - ii. Lead exposure
 - iii. Fall protection
 - c. Request necessary tools such as:
 - i. Harness
 - ii. Headlamp
 - d. Review the Resident Engineer (RE) Pending File (accessed in either Category 11 or via [VISION](#)) and bridge inspection reports (accessed in either BIRIS or [BView](#)).

- e. Document existing conditions with photos or video.
- f. Review the following reference documents for information and guidance on joint restrainers:
 - i. Memos to Designers ([MTD 20-3](#)), *Restrainers at Support Joints*
 - ii. [BCM 11](#), *Welding*
 - iii. [BCM 51-1.01](#), *Concrete Structures – General*
 - iv. [BCM 51-1.03E](#), *Concrete Structures – General – Construction – Miscellaneous Construction*
 - v. [BCM 52-1](#), *Reinforcement – General*
 - vi. [BCM 59-1](#), *Structural Steel Coatings – General*
 - vii. [BCM 59-2](#), *Structural Steel Coatings – Painting Structural Steel*
 - viii. [BCM 60-4.04](#), *Existing Structures – Modifying Structures*
 - ix. [BCM 75](#), *Miscellaneous Metal*
- g. Review and authorize (or reject for resubmittal) the following submittals (if required by contract):
 - i. Scaffolding
 - ii. Protective Cover
- h. Coordinate the review and authorization of the cable-type or pipe-type bridge joint restrainer shop drawings (if required by the contract) with the Designer and the Materials and Engineering Testing Services Representative ([METS Rep](#)). For all bridge joint restrainers:
 - i. Verify the bridge joint restrainer shop drawings have been received by the SC Office Associates from the contractor per the *Contract Specifications*, Section 5-1.23(B)(2), *Control of Work – Submittals – Action Submittals – Shop Drawings*.
 - ii. Perform a concurrent review with the Designer and the METS Rep to verify the submittal meets the requirements detailed in the *Contract Specifications*. Unique considerations that should be addressed in the shop drawings for installing bridge joint restrainers:
 - 1. On existing concrete structures include:
 - 1-1. Coring of existing concrete requirements in the CS, Section 60-4.04, and guidance in [BCM 60-4.04](#).
 - 1-2. Drill and bond dowels requirements in the CS, Section 51-1.03E(3), and guidance in [BCM 51-1.03E](#).
 - 1-3. Rebar and concrete for a bolster requirements in the CS, Sections 51-1.01 and 52-1, and guidance in [BCM 52-1](#) and [BCM 51-1.01](#).

2. On existing steel structures include:
 - 2-1. Removal of the existing paint system per guidance in [BCM 59-1](#), Structural Steel Coatings – General.
 - 2-2. Application of new paint per guidance in [BCM 59-2](#), Structural Steel Coatings - Painting Structural Steel.
3. On new structures include:
 - 3-1. Installation and verification in accordance with contract documents.
- i. Provide all authorized submittals to Assistant Structure Representative (ASR).
- j. Communicate means and methods of construction and inspection of restrainers to ASRs.
- k. Communicate with the METS Rep to review the following control of materials requirements:
 - i. If specified, verify restrainer test samples have been received and accepted by METS Rep at the fabrication site.
 - ii. Verify materials are released in conformance with *Construction Manual*, Chapter 6, [Table 6-2.3](#), *Materials Accepted by Certificate of Compliance*.
- l. Request assistance from the METS Rep with welding quality control plan review (if applicable). For guidance on the welding quality control plan submittal review, refer to [BCM 11](#), *Welding*.
 - i. Welding of the restrainer miscellaneous metals should be in accordance with AWS D1.1.
4. During construction the SR or delegate must:
 - a. Verify that any scaffolding or protective covers (if any) is constructed per authorized submittals.
 - b. Check for and obtain materials inspection release tags on all restrainer units delivered to the project. The SR must field release items described in *Construction Manual*, [Chapter 6](#), *Sampling and Testing*.
 - c. Verify lengths of restrainers.
 - d. Verify the restrainer and coring (if any) layout does not conflict with the access openings and rebar.
 - e. Follow installation procedures outlined in the project plans and authorized submittals. Verify torque on nuts, installation of thread locking compound, installation of cable yield indicator (if required), and that restrainers have sufficient length given the movement rating of the structure shown on the project plans.

- f. Keep track of installed quantities for payment purposes.
 - g. Document all inspection, construction, and quality assurance activities, pertinent to this BCM, in the Daily Reports per [BCM C-7](#), *Daily and Weekly Reports*.
 - h. Maintain as-built project plans per [BCM C-6](#), *Required Documents to be Submitted During Construction*.
5. File all project documentation (correspondence, material acceptance documentation, daily reports, etc.) in the appropriate category in the project records as specified in the *Construction Manual*, [Section 5-102](#), *Organization of Project Documents*.

Process Outputs

1. Authorized submittals
2. Daily Reports
3. Completed restrainers and as-built shop drawings

Attachments

None