DESCRIPTION
The work consists of rehabilitating bridge joint systems by installing the required portions of a bridge joint system.

A. Replace sealing element. The existing joint system consists of armoring angles, concrete or elastomeric concrete headers, and a sealing element. The sealing element is deteriorated, debonded, missing, or leaking. The sealing element is replaced as part of the work.

B. Replace partial joint with an armorless joint system: Remove and replace damaged portions of headers with elastomeric concrete. The existing joint system consists of armoring angles and concrete or elastomeric headers that are locally deteriorated or damaged whereby they may leak. The entire sealing element is replaced and a portion of the header is replaced with elastomeric concrete.

C. Replace full joint with an armorless joint system. In this case, one or both sides of the existing joint system are significantly deteriorated. Remove the existing joint system in its entirety and install an approved armorless joint system.

MATERIALS
For work involving replacement of the sealing element, use a sealing element conforming to §705-08 Preformed Closed-Cell Foam Material, 705-09 Preformed Elastic Bridge Joint Sealer, or Preformed Seals from the Approved Materials List category Joint Materials, Structural.

For work involving partial replacement of the joint system, use an elastomeric concrete appearing on the approved list and one of the following sealing elements: a sealing element conforming to §705-08 Preformed Closed-Cell Foam Material, 705-09 Preformed Elastic Bridge Joint Sealer, or Preformed Seals from the Approved Materials List category Joint Materials, Structural.

For full joint replacement, use joint components appearing on the Approved List or conforming to the appropriate Materials Subsection of the Standard Specifications. Sealing elements, adhesives, and elastomeric concrete shall be products included in the selected approved joint system appearing in the Departments Approved List of Materials and Equipment, Joint Materials, Structural, Armorless Joint Systems (§705-04). Substitutions are not allowed. Miscellaneous materials required for the system are selected by the joint manufacturer or as permitted by the manufacturer’s representative.

CONSTRUCTION DETAILS
General. The construction details shall be as required for the various approved joint systems as shown on the Approved Materials Detail Sheets and the following:

Manufacturer's Representative. A manufacturer’s representative shall be present at the first installation of each type of seal or each configuration of joint in the Contract and shall be present until the installation is competently installed by the contractor as determined by the EIC.
representative shall be fully conversant with the proper joint system installation methods. The representative will advise both the Engineer and the Contractor about proper installation methods and will certify that proper methods were followed for the joint installations he observes. The representative will document, in writing, any deviations from the Materials Detail Sheets that are recommended.

**Preparation of Concrete and Steel Surfaces.** Minimum cleaning standards are:

- **Steel:** Commercial blast cleaned surface as defined by SSPC-SP6 and SSPC Vis 1-89 pictorial references BSa2 and CSa2.

- **Elastomeric and Portland Cement Concretes:** Remove all surface contaminates and provide a roughened surface with no evidence of gloss.

- **Both:** Clean the joint recess to remove all loose or foreign matter prior to installation of the elastomeric concrete by vacuuming.

**Removal of Existing Joints.** Saw cut to a minimum depth of 1 inch into the deck. Do not cut existing reinforcing unless required by the plans. Remove the joint and required concrete using lightweight chipping hammers meeting §580-3.02.

**Repairing Headers.** Saw cut the concrete perimeter of header(s) to a minimum depth of 1 inch. Saw cut areas of the deck adjacent to but beyond the concrete perimeter of header(s) that are spalled or deteriorated areas to a minimum depth of 1 inch. The perimeters of the localized repairs shall be as approximately delineated in the plans and as set by the EIC. Use lightweight chipping hammers meeting §580-3.02 to remove concrete to a minimum depth of 1 inch. Remove concrete to sound concrete as ordered by the Engineer. Place elastomeric concrete per the directions below.

**Placement of Elastomeric Concrete.** Install the material in strict accordance with the installation instructions included in the Materials Details and the recommendations of the Manufacturer's representative. In the event of a conflict, the Engineer will contact the Director, Materials Bureau, prior to the placement of any elastomeric concrete material. All resolutions made by the Director, Materials Bureau are final and binding.

Unless the Materials Details Sheets require more thorough cleaning, abrasive blast clean surfaces that will come in contact with elastomeric concrete.

Elastomeric concretes have stiff consistencies and are fast setting. Care and speed are needed to prevent voids in the material. It is essential to the performance of the joint that the elastomeric concrete completely fills the space under the armoring angles to provide a watertight joint and the necessary structural support.

**Removal of Joint Seal.** Cut and scrape the existing joint seal from the header or armoring angle. Do not rely on blast cleaning to remove the bulk of the material.
Preparation for Seal Installation. Blast clean the surfaces that will receive the new seal elements on the same day as the seal is installed. Clean the joint recess by vacuuming to remove all loose or foreign matter prior to installation of the seal concrete. Follow the manufacturer’s cleaning requirements for the joint systems if they are more stringent than those listed above.

Seal Installation. Install the seal before any rusting of steel surfaces occurs. Re-blast clean any steel surface that exhibits rust, including minor flash rust, or if more than 12 hours has elapsed since blast cleaning. Install the seal per the manufacturer’s instructions, making sure the joint recess is thoroughly coated with adhesive.

Watertight Integrity Test. Follow §567-3.01 H except that testing may be performed the day after the joint is installed.

METHOD OF MEASUREMENT
Measurement of linear items will be in feet to the nearest tenth of a foot. Measurement of items by volume will be in cubic feet to the nearest tenth of a cubic foot.

Replace Sealing Element: The quantity for payment will be the number of feet measured along the longitudinal axis of the joint at all horizontal and vertical surfaces based on a joint width at 68°F measured perpendicular to the end of slab as shown in the contract documents. For example, this would include measurement along the vertical face of a curb.

Replace Partial Joint with an Armorless Joint System: The quantity for payment will be the number of cubic feet of elastomeric concrete installed.

Replace Full Joint with an Armorless Joint System: The quantity for payment will be the number of cubic feet of elastomeric concrete installed.

The words “completely installed” mean the joint system, in place, with the following operations completed (where applicable):
1. Elastomeric concrete placed and finished, and adjacent areas free of excess elastomeric concrete.
2. All sealing elements in proper position.
3. Watertight integrity tests successfully conducted.

BASIS OF PAYMENT
The unit prices bid for all items shall include all labor, materials and equipment necessary to complete the work.

The Replace Partial Joint and Replace Full Joint items shall include the cost of the sealing element.

No additional payment will be made for work done by the Contractor to stop water leakage evidenced by any watertight integrity test.
**ITEM 588.0201XX09 - REHABILITATION OF BRIDGE JOINT SYSTEMS - REPAIR TYPE XX**

Payment will be made under:

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<th>Item No.</th>
<th>Description</th>
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<td>Rehabilitation of Bridge Joint System – Replace Sealing Element</td>
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<td>Rehabilitation of Bridge Joint System – Replace full joint with an armorless joint system</td>
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