

<u>ITEM 564.73XXX025 -</u>	<u>STRUCTURAL STEEL REPLACEMENT</u>
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**1. DESCRIPTION:**

**1.01 General:**

The work consists of repairing or replacing structural steel and shall include:

- A. Removal and disposal of deteriorated existing steel.
- B. Furnishing, fabrication and erection of new structural steel shapes plates, rods & brackets.
- C. Cleaning, prime coating and painting of new steelwork and existing steel members or connections which are worked on, or where existing paint is damaged by the Contractor's operations.
- D. Galvanizing new structural steel where required on plans.
- E. Furnishing and application of sealant between existing and new steel where required by plans.
- F. Disassembly of interfering members or bridge components that must be temporarily removed to permit installation or replacement or new steel, and the reattachment by bolting or welding of those existing bridge components.
- G. Furnishing and installation of temporary support for the removal or modification of existing members.
- H. Removal of rivets and replacement with high strength bolts within to repaired areas.
- I. Field drilling of holes in existing and new steel for connecting new steel.
- J. All necessary cutting, grinding, bending, grouting, welding, drilling or bolting, etc., of new structural steel as called for on the Plans, in the Specifications and/or as directed by the Engineer.

Typical details and requirements of repair work are shown or called out on the Contract Drawings. Locations of all repairs are shown within tables, or are called out, on the Contract Drawings

**1.02 Standards:**

The latest edition of the following standards and regulations form a part of this specification:

- New York State Department of Transportation Standard Specifications for Highway Bridges (U.S. Customary Units) dated 2008.
- New York State Department of Transportation Standard Specifications Construction and Materials, U.S. Customary Unit, dated May 1, 2008, including all updates.
- New York State Steel Construction Manual, 3<sup>rd</sup> Edition dated March, 2008, including all current Addenda and additions.
- SSPC – Society for Protective Coatings: SPCC Painting Manual Volume 1, Good Painting Practices.
- SSPC – Society for Protective Coatings, SSPC Painting Manual Volume 2, "Systems and Specifications:
  - “Shop, Field and Maintenance Painting of Steel,” (SSPC – PA1)
  - “Measurement of Dry Paint Thickness with Magnetic Gauges (SSPC-PA2)
  - SSPC – Society for Protective Coatings, SSPC-SP-10, “Near White Metal Blast”
  - SSPC – Society for Protective Coatings, SSPC-SP-11, “Power Tool Cleaning to Bare Metal”
  - SSPC – Society for Protective Coatings, SSPC-SP-6, “Commercial Blast”

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## 2. MATERIALS:

### 2.01 Steel:

- A. All new steel, except as noted below, shall be [REDACTED]. Stock steel may be used. The substitution of [REDACTED] plates shall be installed so that the direction of rolling is parallel to the center line of the member being repaired. Certified copies of mill test reports shall be provided for all steel.
- B. All steel used for fabrication the following shall conform to [REDACTED]:
  - Truss gusset repair plates
  - Truss diagonal splice plates
  - Truss post splice plates
  - Bottom chord splice plates
  - End post splice plates
- C. Where indicated by (T) in the repair tables, or where otherwise required on the drawings, steel supplied for main tension members shall have Charpy V-Notch test certification [REDACTED]
- D. Where indicated by (FCM) on the drawings, these members are Fracture Critical Members. Where so indicated by (FCM), or other wise required in the various repair notes contained on applicable drawings, the structural steel, fabrication and construction of repairs shall comply with Section 9 of the NYSSCM. Girder cover plates, Floorbeam cover plates, truss diagonal main angles, truss diagonal splice plates and tie chord splice plates are the only Fracture Critical Members that need to meet the Section 9 requirements.

### 2.02 Bolts:

- A. All bolts used shall conform to [REDACTED] with heavy hex nuts conforming to [REDACTED]. Hardened washers, including beveled washers, shall conform to [REDACTED]. Beveled washers shall be used when an outer face of joint material has a slope greater than [REDACTED]
- B. Except where noted below, all threaded rods shall conform to ASTM A449 or approved equivalent. All permanent rods shall be Type II hot-dipped galvanized in accordance with [REDACTED] and Section [REDACTED] of the Standard Specifications

### 2.03 Paint:

Except where required to be galvanized, new structural steel supplied shall be pre-primed in the shop and field painted (2 coats) as follows:

- A. All new steel supplied shall be shop-primed with an inorganic zinc-rich primer selected from the list provided below (or approved equivalent).

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2. **MATERIALS:** (cont'd)

2.03 **Paint:** (cont'd)

- B. Bare surfaces of existing steel, such as welded repairs or replacement connections as well as field touch-up of prime coat shall be coated with an organic zinc-rich primer selected from the list below (or approved equivalent).
- C. The intermediate coat shall be an epoxy selected from the list below (or approved equivalent), and shall have a contrasting color from the primer and finish coats.
- D. The finish coat shall be polyurethane matching the color of the existing bridge, selected from the list below (or approved equivalent).
- E. All paints used shall be from the same manufacturer. The use of additives and thinners shall be in strict compliance with the paint manufacturer's recommendations.
- F. The following coating materials, or approved equal, shall be used:

**Sherwin-Williams, Cleveland, Ohio**

Inorganic Zinc Shop Primer	-	Zinc Clad II HS 2.0 - 3.0 mils DFT
Organic Zinc Field Touch-Up	-	Zinc Clad IV 2.0 - 5.0 mils DFT
Intermediate Coat	-	Epoxy Mastic Aluminum II (B62/B60) 4.0 - 6.0 mils DFT
Finish Coat	-	Corothane II (B65/B60) 2.0 - 4.0 mils DFT

In no case shall the total dry film thickness exceed 15 mils.

**Tnemec Company, Kansas City, Missouri**

Inorganic Zinc Shop Primer	-	90E-92 Tnemec/Zinc Primer 3.0 – 5.0 mils DFT
Organic Zinc Field Touch-Up	-	90-97 Tnemec/Zinc Primer 3.0 – 5.0 mils DFT
Intermediate Coat	-	Series 66 HI-Build Epoxoline 4.0 – 6.0 mils DFT
Finish Coat	-	Series 73 Endura-Shield Aliphatic Acrylic Polyurethane 3.0 – 5.0 mils DFT

In no case shall the total dry film thickness exceed 15 mils.

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2. **MATERIALS:** (cont'd)

2.03 **Paint:** (cont'd)

**Carboline Company, St. Louis, Missouri**

Inorganic Zinc Shop Primer	-	Carbozinc 11 HS Zinc-Rich Primer 2.0 - 3.0 mils DFT
Organic Zinc Field Touch-Up	-	Carbozinc 859 Organic Zinc-Rich Primer 3.0 - 5.0 mils DFT
Intermediate Coat	-	Carboguard 888 3.0 - 5.0 mils DFT
Finish Coat	-	Carbothane 133 HB 3.0 - 5.0 mils DFT

In no case shall the total dry film thickness exceed 15 mils.

**Devco Coatings, Rahway, New Jersey**

Inorganic Zinc Shop Primer	-	Catha-Coat 302 HA 2.0 - 3.0 mils DFT
Organic Zinc Field Touch-Up	-	Catha-Coat 315 3.0 - 4.0 mils DFT
<sup>4</sup> Intermediate Coat	-	Devran 224 HS 4.0 - 7.0 mils DFT
Finish Coat	-	Devthane 379 2.0 - 3.0 mils DFT

In no case shall the total dry film thickness exceed 15 mils.

**PPG, Pittsburgh, Pennsylvania**

Inorganic Zinc Shop Primer	-	Dimetecote 9HS 3.0 - 4.0 mils DFT
Organic Zinc Field Touch-Up	-	Amercoat 68HS 3.0 - 5.0 mils DFT
Intermediate Coat	-	Amercoat 399 4.0 - 7.0 mils DFT
Finish Coat	-	Amercoat 450H 2.0 - 5.0 mils DFT

In no case shall the total dry film thickness exceed 17 mils.

In cases where the total dry film thickness exceeds the maximum allowable, the Engineer, at his sole discretion, may require that the entire coating system be completely removed and reapplied.

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2. **MATERIALS:** (cont'd)

2.04 **Galvanizing:**

Where specifically indicated on the plans, all plates, shapes or fabricated brackets shall be [REDACTED] in accordance with [REDACTED] of the Standard Specifications.

All bolts, nuts and washers used for the connection of plates, shapes or fabricated brackets which are called out to be galvanized on the plans, shall also be [REDACTED] in accordance with [REDACTED] of the Standard Specifications.

2.05 **Caulking/Sealant:**

The Caulking/Sealant material used between plys or along the perimeter of overlapping plys shall be a paintable, high quality sealant conforming with Federal Specification [REDACTED] and shall be compatible with the paint system selected.

The data technical sheet containing the physical and chemical properties of the proposed sealant shall be submitted to the Engineer for approval prior to commencing work.

3. **CONSTRUCTION DETAILS:**

3.01 **Approvals:** The Contractor is required to review his procedure for removing existing steel and installing new steel with the Engineer prior to commencing work. Repair work shall not begin prior to the approval of work procedure and schedule.

3.02 **Shop Drawings:** Shop drawings shall be prepared and submitted in accordance with the New York State Steel Construction Manual as modified by these contract documents, and the procedure for processing engineering submittals (430-0-10) for the following items:

- Gusset Plate Repair Plates
- Hanger Gusset Plates
- Bottom Chord Cover Plates
- Diagonal Cover & Side Plates; Hanger Cover Plates; Post Cover Plates
- Diagonal, Post, Bottom Chord and End Post Splice Plates
- Stringer Web Repairs
- Fascia Stringer Web Splice Plates and Connection Brackets
- Supplemental Connection Angles for Truss Posts, Diagonals and Bottom Chords.
- All other repair locations will require shop drawings only if holes are to be pre-drilled.

All other in-kind replacement parts and strengthening plates that are field-drilled will not require formal shop drawing submission, though it is pointed out that the majority of repairs require matching existing fastener patterns, which is the responsibility of the Contractor to field verify at all locations. The Contractor may elect to submit additional shop drawings that are not required to the Engineer for review and concurrence of repair location and intent.

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### **3. CONSTRUCTION DETAILS: (cont'd)**

#### **3.03 Field Measurements:**

The Contract Drawings for this work are based on the available original bridge design drawings, shop drawings and subsequent rehabilitation drawings without field verification. Though available for the Contractor's use, no guarantee is made as to the accuracy of dimensions shown in original design plans, shop drawings or the repair plans. It is the responsibility of the Contractor to verify all existing conditions and secure any necessary measurements in the field prior to ordering required materials or initiating required fabrication. The correct fit for all repair work shall be the responsibility of the Contractor.

Where new steel is connected to existing framing through existing holes, these holes shall be field verified (or otherwise determined from original shop drawings) and shop drilled, or shall field-drilled in the new steel to match the existing hole pattern. Where possible when drilling new holes in the field on existing steel, the Contractor shall use a template or use the new steel part to match drill holes, such to match the new fastener pattern.

The Contractor shall furnish to the Engineer copies of all field measurements and make, at his own expense, all necessary changes in dimensions to satisfy existing conditions.

#### **3.04 Removal of Existing Steel:**

Methods of removal shall be approved by the Engineer. All materials designated to be removed from the existing bridge shall become the property of the Contractor, except where otherwise noted, and shall be removed and disposed of in a satisfactory manner. The removal process shall be performed so as not to impede or endanger traffic on the bridge and below the bridge.

##### **A. Fasteners:**

Fasteners shall be removed by one of the following methods:

##### **1. Bolts:**

Nuts shall be removed with wrenches, wherever possible, and the bolts driven out with a hand-held punch.

##### **2. Rivets:**

a. Shear rivet head, using a pneumatic rivet breaker, and drive out rivet shank with a pneumatic punch

or

b. Flame-cut rivet head one-sixteenth [REDACTED] above the base metal using a rivet scarfing tip, and drive out shank using a pneumatic punch.

When rivet-busting or torch cutting rivet heads, the contractor is required to protect his workers in accordance with all applicable State and Federal Regulations including the OSHA Lead Standard, (29 CFR 1926.62).

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### 3. CONSTRUCTION DETAILS: (cont'd)

#### 3.04 **Removal of Existing Steel:** (cont'd)

If, in the opinion of the Engineer, rivet shanks or bolts, cannot be removed by punching without damaging the base metal, the rivet or bolt shank shall be removed by drilling or lancing. When flame-cutting of rivet heads, special care shall be taken to ensure that the base metal of primary members is not damaged.

Where it is necessary to remove existing rivets to connect new steel or to replace existing steel, the sequence of rivet removal shall be submitted to the Engineer for his review. In general, rivets shall be removed one at a time and an erection pin inserted in the hole. In rivet groups, rivets shall be removed in a symmetric pattern to maintain the center of gravity of the group.

#### B. **Weld:**

Welds shall be removed in accordance with the following:

1. All paint covering the affected weld shall be removed.
2. The affected weld shall be removed by means of air carbon arc gouging equipment. To ensure that base metal remaining in place is not damaged, at least [REDACTED] shall be left in place.

If it is necessary to gouge into base metal to remove the weld fusion, the least critical member, as determined by the Engineer, shall be damaged. If the damaged member is to remain, it shall be repaired by procedures approved by the Engineer.

3. The weld material left in place shall be ground flush with the base metal surface. No base metal shall be removed by grinding.
4. The Engineer will perform a careful visual inspection and/or magnetic particle testing of all weld removal locations. If testing yields that pre-existing cracks, lamellar tears or other damage is encountered, he will direct the Contractor to perform remedial repairs in accordance with the requirements of the NYSSCM. Repairs will be directed by the Engineer and paid for under the force account provisions of the contract.
5. Conversely, if it is determined that damage to the remaining base metal is a direct result of the contractor's removal procedures; the Engineer shall direct the Contractor to make any necessary repairs to restore the defect. Repairs due to damage as a result of the Contractor's operations shall be at no additional cost to the Thruway.

#### 3.05 **Removal of Tack Welds**

Any work performed on the steel which is to remain as part of the structure, shall conform to the requirements of [REDACTED] - Structural Steel of the NYSDOT Standard Specifications.

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**3. CONSTRUCTION DETAILS:** (cont'd)

**3.05 Removal of Tack Welds:** (cont'd)

- A. Tack welds shall be ground flush and smooth with the adjacent base metal surface. In addition, where tack welds are removed, the heat affected zone shall also be removed by grinding approximately [REDACTED] below the adjacent base metal surface. This underground area shall be faired into the adjacent base metal at a slope not exceeding [REDACTED]. The ground surface shall meet a minimum ANSI surface roughness value of [REDACTED] and the finished grinding shall be parallel to the length of the member unless the surface roughness is less than [REDACTED].
- B. Each tack weld removal site shall be tested for soundness by the Engineer using magnetic particle (yoke technique) inspection methods. The test method will be performed in accordance with the appropriate Section of the New York State Steel Construction Manual. If the testing reveals that pre-existing cracks or discontinuities are present, they shall be repaired in accordance with a procedure approved by the Authority. All costs directly attributable to such repair shall be paid for under the force account provisions of the contract.
- C. If it is determined that the Contractor's removal operations have damaged existing steel, which is to remain in place, the damaged areas shall be repaired, or replaced, as determined by the Engineer. The Contractor shall be required to repair damage, or replace damaged material caused by his operations, at no expense to the Authority by repair procedures determined by the Engineer and approved by the Authority.

**3.06 Temporary Disconnecting of Existing Steel:** During the course of the work, it may be necessary to disconnect, support, or adjust steel which is to remain in the structure. For these situations, prior to the initiation of the work, the Contractor shall submit his proposals for disconnecting, supporting, or adjusting the steel, as necessary, to the Engineer, for examination. The Contractor's proposal shall be approved prior to the actual commencement of any disconnecting, supporting, or adjusting of steel. The cost of temporarily disconnecting and reinstalling steel that interferes with a required repair shall be included in the unit price bid for the repair.

**3.07 Integrity of Existing Structure During Repair Work:**

Temporary bracing, shoring and guy lines; or alignment pins and temporary bolts shall be provided wherever necessary during repair work to maintain the stability or integrity of the connection, and shall be left in place as long as required. The Contractor shall note specific disassembly restrictions found on the plans that are required for structure stability and/or pertain to wind restrictions or other limitations. The Engineer will assist the Contractor in determining other limitations for disassembly, and/or situations when temporary bracing or temporary alignment pins are required.

The design of temporary bracing, shoring and guys not detailed on the plans is the sole responsibility of the Contractor. The Contractor shall review his disassembly procedure and sequence with the Engineer prior to commencing work.



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### **3. CONSTRUCTION DETAILS: (cont'd)**

#### **3.07 Integrity of Existing Structure During Repair Work: (cont'd)**

Where members carrying loads are to be removed and replaced, special provisions shall be designed by the Contractor to temporarily support the structure.

Except when the existing plate or shape is intended to be used as a template, all fabrication of the replacement plate or shape shall be performed prior to removing the deteriorated member in so far as practicable in order to minimize the time in which the member is disconnected.

#### **3.08 Temporary Supporting, Disconnecting, and Relocating of Existing Utility:**

The Contractor's attention is directed to the fact that it may be necessary to temporarily disconnect, and/or support existing electrical & fiber-optic utility conduits connected to floorbeams, stringers or fascia stringers which are to remain. These conduits are mainly located along the catwalk and directly beneath the stringers on one or both sides of the catwalk on both bridges, and also midway between girders on the approach spans. There are also smaller conduits extending out from the catwalk to each light standard or navigational light. The cost of temporarily supporting and reattaching utility conduits, wherever the location and for whatever reason shall be included in the unit bid price for the applicable items of work.

#### **3.09 Connection of New and Existing Steel:**

All existing steel surfaces to be in contact with new steel shall be cleaned per SSPC-SP-11, as directed by the Engineer. The exposed faying surfaces shall be inspected by the Engineer. Where a bolted connection is used, the faying surface of the existing steel shall be coated with one coat of organic zinc-rich primer 2-4 mils DFT. The paint must dry prior to the installation of the new steel. The cure time for the zinc paint shall be that recommended by the paint manufacturer prior to application of top coat, but not less than 24 hours. If the repair plate or shape must be immediately installed after removal (it cannot wait for the paint to dry) as determined by, and/or directed by the Engineer, the organic zinc primer shall be omitted.

Where new and existing steel is connected by bolts, the joint along the perimeter of the new steel in contact with the existing steel shall be caulked with an approved sealant, unless directed otherwise by the Engineer. It is pointed out that at certain locations, where the connection is required to be of a slip-critical nature, the sealant shall be omitted, only when directed by plans or Engineer.

#### **3.10 Installation of New Steel:**

Unless directed otherwise by the plans, all bolts shall be installed with two hardened washers and shall be fully-tensioned to [REDACTED] by the turn-of-the nut method, in accordance with NYSSCM, or alternate tensioning method demonstrated to, and approved by the Engineer.

Field error, misalignments or misfit errors, or any other adjustments in fastener locations, shall not be permitted to be corrected by torch-burning or "stretching the hole", and shall be corrected in a manner satisfactory to the Engineer, or the misfit replacement part shall be rejected.

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### 3. CONSTRUCTION DETAILS: (cont'd)

#### 3.11 **Welding:**

All welding shall be performed by certified welders in accordance with Section 7 and Section 8 of the New York State Steel Construction Manual, 3<sup>rd</sup> Ed., March, 2008 including current addenda. All field welds shall be magnetic particle tested by the engineer in accordance with Section 18 of the NYSSCM. No tack welds or temporary welds can be used to attach parts during assembly or for shipment. All field welding shall be performed in accordance with welding procedures approved by the NYSTA. Preheat and inter-pass temperature for existing

There shall be no welding of "

Magnetic particle testing will be performed on all field welds by the Engineer using an independent testing agency, at no direct cost to the Contractor. Repairs to field welds made necessary as the result of indications of cracks, porosity or lack of fusion found by the testing shall be repaired in accordance with the NYSSCM at no additional cost to the Authority. The Contractor shall submit welding procedures to the Engineer for approval prior to commencing work.

#### 3.12 **Painting:**

Except where required to be galvanized, all new steel shall be shop-primed after fabrication is completed. New steel shall be abrasive blast cleaned in accordance with SSPC SP-10 "Near White Metal Blast". Except as noted in the Painting Notes on the Plans, where new material is to be bolted to existing materials, the existing surface shall be cleaned per the requirements of SSPC-SP-11 "Power Tool Cleaning to Bare Metal". All galvanized steel shall have its contact surface roughened to provide a slip-critical Type C connection. Tarps and screens are required to remain in place during paint removal operations. The bare contact surfaces shall be coated with the organic zinc-rich primer prior to installation of new material, except the requirement for organic zinc primer may be omitted by the Engineer only, in special circumstances where it is necessary to install the replacement piece immediately after removal.

See Painting Notes on the plans for locations where surface preparation is not required or where only the faying surface needs to be cleaned of paint. For the purposes of this project, the faying surface will be defined as any area within diameter from the edge of a hole on the mating side of the existing part. For fasteners circle about the center of the hole. For fasteners greater than this is a circle equal to hole diameter.

After completion of field work, exposed bare steel, and areas of damaged primer shall be touched-up and intermediate coats and finish coats shall be applied. All coatings shall be applied in a neat, workmanlike manner. Coatings shall be applied uniformly and shall be free of runs, sags, drips, or other defects. The intermediate epoxy coat and the polyurethane finish coat may be applied by brush, roller or spray. Any field application by spray of the intermediate epoxy coat or the polyurethane finish coat will require overspray protection satisfactory to the Engineer.

All coats shall be allowed to cure to manufacturer's specifications, but not less than 24 hours, with the exception of the primer coat, where under certain circumstances where existing components are disconnected, the Engineer will require that steel is reinstalled immediately when primer is dry to the touch or without being pre-primed. These locations and situations will be determined by the Engineer.

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**3. CONSTRUCTION DETAILS:** (cont'd)

**3.12 Painting:** (cont'd)

Except at overlapping plys or inaccessible areas, the vast majority of lead paint was removed from both bridges during the 1997-2001 painting project. If rivet busting, grinding, or torch cutting is performed in a location where all lead paint was not removed (i.e., overlapping plys or within inaccessible areas) the Contractor shall take all necessary measures to protect his workers in compliance with the OSHA Lead Standard 29 CFR 1926.62. Stripping of paint is not anticipated in any of these areas, but torch cutting and rivet removal is required at numerous locations.

**4. METHOD OF MEASUREMENT:**

**4.01 Structural Steel Replacement:**

Measurement will be made by one of the following, as indicated under §5. "BASIS OF PAYMENT."

- A. Each
- B. Linear Foot

"Each" shall be as defined in the Standard Specifications, Subsection 564-4.02.

"Linear Foot". The quantity to be paid for shall be the in-place, measured length of the repair in linear feet of each applicable repair installed in accordance with the Specifications.

**5. BASIS OF PAYMENT:**

**5.01 Structural Steel Replacement:**

The unit price bid shall include the cost of furnishing all labor, materials, equipment, removal and disposal of steel, field drilling of existing steel, removal of existing rivets/bolts, installation of the new steel, cleaning and prime coating, finish painting, temporary support of steelwork, utility and conduits, and all necessary cutting, grinding, sealing, bolting, welding, etc., as called for on the Plans, in the Specifications and/or as directed by the Engineer.

No payment will be made for repair of, or replacement of, damaged material which was made necessary due to the Contractor's operations.

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**5. BASIS OF PAYMENT:** (cont'd)

Payment will be made under:

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>PAY UNIT</b>
564.731010 25	STRUCTURAL STEEL REPLACEMENT - INSTALL BOTTOM CHORD COVER PLATE	LF
564.731020 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM CHORD GUSSET PLATES; INSTALL NEW OR REPLACEMENT SUPPLEMENTAL CONNECTION ANGLES	EA
564.731040 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM CHORD GUSSET PLATES; REMOVE & REPLACE EXISTING BOTTOM SPLICE PLATES AT PIERS	EA
564.731050 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM CHORD GUSSET PLATE; INSTALL GUSSET PLATE SPLICE REPAIR PLATE	EA
564.731110 25	STRUCTURAL STEEL REPLACEMENT - TOP CHORD POST TO FLOORBEAM GUSSET PLATE; INSTALL POST TO GUSSET PLATE SUPPLEMENTAL CONNECTION ANGLES	EA
564.731120 25	STRUCTURAL STEEL REPLACEMENT - TOP CHORD POST TO FLOORBEAM GUSSET PLATE; INSTALL FLOORBEAM SUPPORT SEAT BRACKET	EA
564.731130 25	STRUCTURAL STEEL REPLACEMENT - TOP CHORD POST TO FLOORBEAM GUSSET PLATE; INSTALL REPAIR PLATE TO FB OR CANTILEVER CONN. ANGLE	EA
564.731140 25	STRUCTURAL STEEL REPLACEMENT - TOP CHORD MAIN 5 MEMBER GUSSET PLATES; INSTALL MAIN GUSSET MISCELLANEOUS REPAIR PLATES	EA
564.732010 25	STRUCTURAL STEEL REPLACEMENT - INSTALL TRUSS DIAGONAL COVER PLATE	LF
564.732020 25	STRUCTURAL STEEL REPLACEMENT - INSTALL TRUSS DIAGONAL SIDE PLATE	LF
564.732030 25	STRUCTURAL STEEL REPLACEMENT - TRUSS DIAGONALS; INSTALL NEW SUPPL. CONNECTION ANGLES	EA
564.732040 25	STRUCTURAL STEEL REPLACEMENT - TRUSS DIAGONALS; INSTALL DIAGONAL TO GUSSET SPLICE PLATE	EA
564.733010 25	STRUCTURAL STEEL REPLACEMENT - INSTALL TRUSS POST COVER PLATE	LF
564.733020 25	STRUCTURAL STEEL REPLACEMENT - TRUSS POSTS; INSTALL SUPPLEMENTAL CONNECTION ANGLES	EA
564.733030 25	STRUCTURAL STEEL REPLACEMENT - TRUSS POSTS; INSTALL POST TO GUSSET SPLICE PLATE	EA
564.733040 25	STRUCTURAL STEEL REPLACEMENT - TRUSS END POSTS; REMOVE & REPLACE END POST SPLICE PLATE AT BOTTOM CHORD	EA
564.734010 25	STRUCTURAL STEEL REPLACEMENT - INSTALL TRUSS HANGER COVER PLATE	LF
564.734020 25	STRUCTURAL STEEL REPLACEMENT - REMOVE & REPLACE TRUSS HANGER GUSSET PLATE	EA
564.734030 25	STRUCTURAL STEEL REPLACEMENT - INSTALL TRUSS HANGER SPLICE TO GUSSET	EA
564.735020 25	STRUCTURAL STEEL REPLACEMENT - REPLACE EXPANSION JOINT GUTTER TROUGH MATERIAL	EA
564.737010 25	STRUCTURAL STEEL REPLACEMENT - INSTALL STRINGER WEB SPLICE REPAIR	EA
564.738030 25	STRUCTURAL STEEL REPLACEMENT - ROADWAY CANTILEVER BRACKET INSTALL WEB SPLICE REPAIR	EA

ITEM 564.73XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.74XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.76XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.77XXX025 - STRUCTURAL STEEL REPLACEMENT

ITEM NO.	DESCRIPTION	PAY UNIT
564.738050 25	STRUCTURAL STEEL REPLACEMENT - SIDEWALK CANTILEVER BRACKET; REMOVE & REPLACE BOTTOM FLANGE ANGLES	EA
564.738060 25	STRUCTURAL STEEL REPLACEMENT - SIDEWALK CANTILEVER BRACKET; INSTALL WEB PLATE EXTENSION WELDED REPAIR PLATE	EA
564.739020 25	STRUCTURAL STEEL REPLACEMENT - ROADWAY OR SIDEWALK FASCIA STRINGER; INSTALL FASCIA STRINGER WEB REPAIR PLATES	EA
564.739030 25	STRUCTURAL STEEL REPLACEMENT - ROADWAY OR SIDEWALK FASCIA STRINGER; INSTALL SUPPLEMENTAL CONNECTION ANGLES	EA
564.739040 25	STRUCTURAL STEEL REPLACEMENT - ROADWAY OR SIDEWALK FASCIA STRINGER; INSTALL FASCIA STRINGER EXPANSION SLIDER ASSEMBLY	EA
564.740010 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; REMOVE & REPLACE TOP CONNECTION PLATE	EA
564.740020 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; REMOVE & REPLACE TOP PLATE CONNECTION ANGLE	EA
564.740030 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; REMOVE & REPLACE BOTTOM CONNECTION PLATE	EA
564.740040 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; REMOVE & REPLACE MIDPOINT CONNECTION PLATE (ALL TYPES, ALL SIZES)	EA
564.740190 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; SPLICE BRACING TO TRUSS CONNECTION PLATE (ALL TYPES, ALL SIZES)	EA
564.740400 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; MISCELLANEOUS MEMBER REPLACEMENT (ALL TYPES)	LF
564.740410 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; MISCELLANEOUS SPLICE PLATES FOR BRACING MEMBERS (ALL TYPES)	LF
564.740420 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; MISCELLANEOUS ANGLE REPLACEMENTS FOR STRUTS	LF
564.740430 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; TIE PLATE REPLACEMENTS	EA
564.740440 25	STRUCTURAL STEEL REPLACEMENT - BOTTOM LATERAL BRACING; LACING BAR REPLACEMENTS	EA
564.742010 25	STRUCTURAL STEEL REPLACEMENT - DIAGONAL SWAY BRACING; REMOVE & REPLACE BRACING DIAGONAL OR STRUT	EA
564.742030 25	STRUCTURAL STEEL REPLACEMENT - DIAGONAL SWAY BRACING; REMOVE & REPLACE BENT CONNECTION PLATE TO BOTTOM CHORD	EA
564.742050 25	STRUCTURAL STEEL REPLACEMENT - DIAGONAL SWAY BRACING; REMOVE & REPLACE MID-HEIGHT CONNECTION PLATE TO DIAGONAL	EA
564.742080 25	STRUCTURAL STEEL REPLACEMENT - DIAGONAL SWAY BRACING; REMOVE & REPLACE CENTER CONNECTION PLATES (SP. 10 ONLY)	EA
564.742110 25	STRUCTURAL STEEL REPLACEMENT - DIAGONAL SWAY BRACING; INSTALL BRACING ANGLE SPLICE (SPAN 10 ONLY)	EA
564.743010 25	STRUCTURAL STEEL REPLACEMENT - VERTICAL SWAY BRACING; REMOVE & REPLACE BRACING DIAGONAL	EA
564.743020 25	STRUCTURAL STEEL REPLACEMENT - VERTICAL SWAY BRACING; REMOVE & REPLACE DOUBLE ANGLE STRUT	EA
564.743030 25	STRUCTURAL STEEL REPLACEMENT - VERTICAL SWAY BRACING; REMOVE & REPLACE BOTTOM CHORD CONNECTION PLATE	EA
564.743040 25	STRUCTURAL STEEL REPLACEMENT - VERTICAL SWAY BRACING; REMOVE & REPLACE BOTTOM CHORD CONNECTION ANGLES	EA

ITEM 564.73XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.74XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.76XXX025 - STRUCTURAL STEEL REPLACEMENT  
ITEM 564.77XXX025 - STRUCTURAL STEEL REPLACEMENT

ITEM NO.	DESCRIPTION	PAY UNIT
564.743050 25	STRUCTURAL STEEL REPLACEMENT - VERTICAL SWAY BRACING; REMOVE & REPLACE MID-HEIGHT CONNECTION PLATE	EA
564.744020 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; INSTALL BRACING ANGLE SPLICE	EA
564.744050 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; REMOVE & REPLACE BRACING CONNECTION PLATE TO BOTTOM STRUT	EA
564.744070 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; REMOVE & REPLACE MID-HEIGHT CONNECTION PLATE TO END POST	EA
564.744080 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; REMOVE & REPLACE BRACING CENTER CONNECTION PLATES	EA
564.744090 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; INSTALL BOTTOM STRUT WEB REPAIR PLATE	EA
564.744100 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; REMOVE & REPLACE LACING BARS OR LACING ANGLES	EA
564.744110 25	STRUCTURAL STEEL REPLACEMENT - PIER SWAY BRACING; INSTALL BOTTOM STRUT HORIZONTAL CONNECTION PLATE	EA
564.745010 25	STRUCTURAL STEEL REPLACEMENT - REMOVE & REPLACE PRIMARY MEMBER LACING BARS (ALL LOCATIONS)	EA
564.746010 25	STRUCTURAL STEEL REPLACEMENT - REMOVE & REPLACE PRIMARY MEMBER TIE PLATES (ALL LOCATIONS)	EA
564.747020 25	STRUCTURAL STEEL REPLACEMENT - MAIN CATWALK & NAVIGATIONAL CATWALK; REMOVE & REPLACE EXISTING CATWALK DIAPHRAGM	EA
564.747030 25	STRUCTURAL STEEL REPLACEMENT - MAIN CATWALK & NAVIGATIONAL CATWALK; REMOVE & REPLACE CATWALK BOTTOM BRACING ANGLE	EA
564.747040 25	STRUCTURAL STEEL REPLACEMENT - MAIN CATWALK & NAVIGATIONAL CATWALK; INSTALL WELDED REPAIR PLATES ON EXISTING CHANNELS	LF
564.748010 25	STRUCTURAL STEEL REPLACEMENT - SIDEWALK PANEL REPAIR; INSTALL SIDEWALK HOLD-DOWN ASSEMBLY	EA
564.761120 25	STRUCTURAL STEEL REPLACEMENT - SGIB: BOTTOM CHORD GUSSET PLATES; INSTALL NEW OR REPLACEMENT SUPPLEMENTAL CONN. ANGLES	EA
564.761150 25	STRUCTURAL STEEL REPLACEMENT - SGIB: BOTTOM CHORD GUSSET PLATE; INSTALL GUSSET PLATE SPLICE REPAIR PLATE	EA
564.762030 25	STRUCTURAL STEEL REPLACEMENT - SGIB: TRUSS DIAGONALS; INSTALL NEW SUPPLEMENTAL CONNECTION ANGLES	EA
564.763020 25	STRUCTURAL STEEL REPLACEMENT - SGIB: TRUSS POSTS; INSTALL SUPPLEMENTAL CONNECTION ANGLES	EA
564.770020 25	STRUCTURAL STEEL REPLACEMENT - SGIB: BOTTOM LATERAL BRACING; REMOVE & REPLACE TOP PLATE CONNECTION ANGLE	EA
564.772040 25	STRUCTURAL STEEL REPLACEMENT - SGIB: VERTICAL SWAY BRACING; REMOVE & REPLACE BOTTOM CHORD CONNECTION ANGLES	EA