

ITEM 564.1160XX25 –  
ITEM 564.7030XX25 –  
ITEM 564.70990125 –

STRUCTURAL STEEL REPLACEMENT (KILOGRAM/POUND)  
STRUCTURAL STEEL REPLACEMENT (EACH)  
STRUCTURAL STEEL REPLACEMENT UNDEFINED (LUMP SUM)

**1. DESCRIPTION:**

1.01 **General:** The work consists of repairing structural steel and shall include:

- A. Removal and disposal of deteriorated existing steel.
- B. Furnishing, fabrication and erection of new structural steel.
- 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. Furnishing and application of sealant between existing and new steel.
- E. Furnishing and installation of temporary supports for the removal or modification of existing members.
- F. Removal of rivets and replacement with high strength bolts in repaired areas.
- G. Field drilling of holes in existing and new steel for connecting new steel.
- H. All necessary cutting, grinding, bending, 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 of repair work are shown, or called out, in the Contract Documents.

1.02 **Structural Steel Replacement Undefined:** This work shall consist of repairing structural steel components that were not included in the Contract Documents, but deemed necessary for repair by the Engineer as follows:

- A. The exposure of unseen repair areas as a direct result from performing specified repairs.
- B. Increases in the repair size of the standard structural steel repair items.

1.03 **Standards:** Unless noted otherwise in this specification, 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 dated June, 1996.
- ◆ New York State Department of Transportation Standard Specifications Construction and Materials dated January 2, 2002, and as amended by NYSTA Addendum TA No. (03), and all Special Notes and Errata contained in this contract's Proposal Documents.
- ◆ New York State Steel Construction Manual dated March 2008 with all current Addenda.
- ◆ SSPC – Society for Protective Coatings, SSPC 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 or in contract plans, shall be [REDACTED] Stock steel may be used. Repair plates shall be installed so that the direction of rolling is parallel to the centerline of the member being repaired. Certified copies of mill test reports shall be provided for all steel. The substitution of [REDACTED] steel shall be permitted if availability dictates, at no additional payment.
- B. All steel used shall have the additional requirement of Charpy V-Notch test certification to [REDACTED]

**2.02 Bolts:** 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]

**2.03 Paint:** Except where otherwise required, all 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 an approved equivalent).
- 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 an approved equivalent).
- C. The intermediate coat shall be an epoxy selected from the list below (or an 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 an 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 an approved equal, shall be used:

**Sherwin Williams, Cleveland Ohio**

Inorganic Zinc Shop Primer	-	Zinc Clad II HS 50 – 75 microns (2.0 – 3.0 mils) DFT
Organic Zinc Field Touch-Up	-	Zinc Clad IV Epoxy Zinc Rich Primer 50 – 125 microns (2.0 – 5.0 mils) DFT

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

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

Intermediate Coat	-	Epoxy Mastic Aluminum II (B62/B60) 100 – 150 microns (4.0 - 6.0 mils) DFT
Finish Coat	-	Acrolon 218 HS 75 – 125 microns (3.0 – 5.0 mils) DFT

In no case shall the total dry film thickness exceed 381 microns (15 mils).

**Tnemec Company, Kansas City, Missouri**

Inorganic Zinc Shop Primer	-	90E-92 Tnemec/Zinc Primer 75 – 125 microns (3.0 – 5.0 mils) DFT
Organic Zinc Field Touch-Up	-	90-97 Tnemec /Zinc Primer 75 – 125 microns (3.0 – 5.0 mils) DFT
Intermediate Coat	-	Series N69 HI-Build Epoxoline II 100 – 150 microns (4.0 - 6.0 mils) DFT
Finish Coat	-	Series 1075 Endura-Shield Aliphatic Acrylic Polyurethane 75 – 125 microns (3.0 – 5.0 mils) DFT

In no case shall the total dry film thickness exceed 406 microns (16 mils).

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

Inorganic Zinc Shop Primer	-	Carbozinc 11HS Zinc-Rich Primer 50 – 125 microns (2.0 – 3.0 mils) DFT
Organic Zinc Field Touch-Up	-	Carbozinc 859 Organic Zinc-Rich Primer 75 – 125 microns (3.0 – 5.0 mils) DFT
Intermediate Coat	-	Carboguard 888 75 – 125 microns (3.0 - 5.0 mils) DFT
Finish Coat	-	Carbothane 133 LH 75 – 125 microns (3.0 – 5.0 mils) DFT

In no case shall the total dry film thickness exceed 381 microns (15 mils).

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

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

**Devco Coatings, Rahway, New Jersey**

Inorganic Zinc Shop Primer	-	Catha-Coat 302 HA 50 – 75 microns (2.0 – 3.0 mils) DFT
Organic Zinc Field Touch-Up	-	Catha –Coat 315 75 – 100 microns (3.0 – 4.0 mils) DFT
Intermediate Coat	-	Devran 224 HS 100 – 175 microns (4.0 - 7.0 mils) DFT
Finish Coat	-	Devthane 379 50 – 75 microns (2.0 – 3.0 mils) DFT

In no case shall the total dry film thickness exceed 356 microns (14 mils).

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

- 2.04 **Caulking/Sealant:** Caulking/Sealant material shall conform to Federal Specification TT-S-0023-C, Type II, Class A, and shall be compatible with the paint system selected.

3. **CONSTRUCTION DETAILS:**

- 3.01 **Approvals:** The Contractor is required to submit his procedure for removing existing steel and installing new steel to the Engineer for review 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 except as modified by the Contract Documents, the Procedure for Processing Engineering Submittals (430-0-10), and the Schedule of Submittals Form (TA-4010).
- 3.03 **Field Measurement:** The Contract Drawings for this work are based on the original bridge design drawings, shop drawings and subsequent rehabilitation drawings with no field verification for accuracy of dimensions. It is the responsibility of the Contractor to verify all existing conditions and secure all measurements in the field prior to ordering required materials or initiating required fabrication. Correct fit for all work shall be the responsibility of the Contractor. The Contractor shall make all necessary changes in dimensions to satisfy existing conditions, and furnish all field measurements to the Engineer.

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

**3.04 Localized Cleaning of Existing Steel:**

**A. Definitions for localized cleaning of existing steel:**

1. *Existing Paint and Paint Chips:* Be advised that all existing paint and paint chips may contain lead, unless specifically stated otherwise in the Contract documents. The Tappan Zee Bridge is a large quantities generator of hazardous waste as described in the Resource and Conservation Recovery Act (RCRA). The following regulations shall apply as appropriate.
  - a. Federal regulations for transport, treatment and disposal of hazardous waste include 40CFR 263, 264, 265 and 268.
  - b. New York State regulations for transport, treatment and disposal of hazardous waste include 6NYCRR, 364, 370 through 374 and 376.

Documentation of Employee Hazardous Waste training must be submitted to the Engineer. The Thruway Authority will provide a copy of the Tappan Zee Bridge contingency plan for Hazardous waste management.

2. *Hazardous waste materials* shall include existing paint, old paint chips, corrosion residue, and spent abrasives that result from blasting, power tool cleaning, and other cleaning and coating operations performed in the field, unless stated otherwise in the Contract documents.
  3. *Commercial blast cleaning* shall mean that all surfaces must be cleaned in accordance with standards and specifications for Commercial Blast Cleaning, SSPC-SP 6, as published by the Steel Structures Painting Council.
- B.** The Contractor must conform to all Federal, State and local laws, rules and regulations during performance of the work.
- C.** All equipment to be used in the work must be in good operating condition and must be approved by the Engineer prior to placing it in service.
- D.** All paint, dirt, corrosion, oil, grease and other foreign material must be removed within 152 mm (6 inches) of steel designated to be repaired or replaced, as identified in the Contract documents, by commercial blast cleaning or other approved means prior to beginning the repair work.
1. The cleaning method must be dry abrasive blasting using a closed cycle, recirculating, abrasive system with compressed air blast nozzle and abrasive, with a vacuum for dust, paint waste and abrasive recovery. Commercial blast cleaned surfaces must conform to SSPC-SP 6/ SSPC Vis. 1-89 specifications. Alternately, vacuum power tool may be used in lieu of the dry abrasive blast system, providing the cleaned surfaces conform to SSPC-SP 11/SSPC Vis. 3 Specifications for Power Tool Cleaning to Bare Metal.

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

3.04 **Localized Cleaning of Existing Steel:** (cont'd)

2. All abrasives shall be free of corrosion producing contaminants, oil, grease, soluble salts, or other deleterious contaminants. Silica sand will not be allowed for blast cleaning purposes. The abrasive must be of such size as to produce a uniform surface profile that is suitable for the application of the specified paint. The abrasive may be recycled a maximum of five (5) times.
3. The Contractor may select the type of abrasive material providing all of the above requirements are met.
4. The vacuum blast cleaning must remove all existing coatings; capture a minimum of 95% of the abrasive; recycle the abrasive; produce a clean surface in accordance with this specification; and meet current EPA regulations.
5. Potential hazardous waste generated during cleaning operations shall be collected and stored in re-sealable, 250 liter (55 gallon) barrels. The barrels shall be properly labeled indicating "Possible Lead Content" in accordance with Federal DOT regulations. Once filled, the Contractor shall transport the filled barrels to the Tarrytown storage facility established by the Thruway Authority. The Contractor shall notify the Engineer once a barrel is full or if no more waste will be added to a barrel. The Contractor shall officially record the amount of waste generated. The Thruway Authority will arrange for transportation and disposal of the waste from that location under the provisions of a separate contract.

3.05 **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, whenever possible, and the bolts driven out with a hand-held punch.
2. **Rivets:**
  - a. Shear rivet head, using pneumatic rivet breaker, and drive out rivet shank with a pneumatic punch.
  - or
  - b. Flame-cut rivet head 1.7 mm (1/16") above the base metal, using a rivet scarfing tip, and drive out shank using a pneumatic punch.

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

3.05 **Removal of Existing Steel:** (cont'd)

A. **Fasteners:** (cont'd)

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.

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. 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 rivets 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] of weld material 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 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 Authority.

- 3.06 **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] of the NYSDOT Standard Specifications.

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

3.06 **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 be removed by grinding approximately [REDACTED] below the adjacent base metal surface. This under ground area shall be faired into the adjacent base metal at a slope not exceeding [REDACTED]. The ground surface shall meet a minimum [REDACTED] 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] surface roughness value of [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. After tack welds are removed from existing [REDACTED], hardness tests shall be performed at each weld removal site. Localized areas found harder than [REDACTED] shall be removed by grinding to a depth not exceeding [REDACTED]. Additional grinding and/or repair shall be as determined by the Chief Engineer and shall be paid for under the provisions of Subsection 109-05 of the Standard Specifications.
- D. If the Contractor's operations damage existing steel that 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 approved by the Chief Engineer.

3.07 **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 re-installing steel that interferes with a required repair shall be included in the unit price bid for the repair.

3.08 **Integrity of Existing Structure during Repair Work:** Temporary bracing, shoring and guy lines shall be provided whenever necessary during repair work 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 limitations. The Engineer will assist the Contractor in determining limitations for disassembly and/or when temporary bracing is required.



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

**3.08 Integrity of Existing Structure during Repair Work:** (cont'd)

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

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 practical in order to minimize the time in which the member is disconnected.

**3.09 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 utility conduits, which are to remain. The cost of temporarily disconnecting, supporting and re-attaching utility conduits shall be included in the unit bid price for the applicable items of work.

**3.10 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 with a Dry Film thickness of 50 – 100 microns (2.0 – 4.0 mils). 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, as directed by the Engineer, the organic zinc primer shall be omitted.

Bolt holes in new and existing steel shall be made as follows:

- A. All bolts holes in new structural steel that are to match existing holes shall be sub-drilled in the shop to a template prepared from field measurements and ream assembled in the field, or shall be drilled from the solid using the existing holes as a template. New holes in existing steel shall be drilled using the shop-drill component as a template. See Section 613 of the New York State Steel Construction Manual.
- B. As an alternate to the provisions of the New York State Steel Construction Manual, full sized bolt holes may be drilled using one component as a template providing all of the following criteria are met:
  - 1. All holes must be drilled with Hougen or Jancy bits, twist drills will not be allowed.
  - 2. All components of an assembly must be drilled as a group and match marked, or match drilled using one component of the match marked assembled as a template.

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

3.10 **Connection of New and Existing Steel:** (cont'd)

- a. When matching holes in the field, those existing holes must be the template.
- b. When making new holes in the field, one component of the matched marked assembly must be used as the template.
- c. No tack weld will be allowed to join components of an assembly or to join an assembly to the existing steel.

Where new and existing steel are 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 the plans or Engineer.

- 3.11 **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 the NYSSCM, or alternate tensioning method demonstrated to, and approved by the Engineer.

Field errors and alignment or misfit errors, or any other adjustments in fastener locations, shall not be corrected by burning and shall be performed in a manner satisfactory to the Engineer, or the misfit replacement part shall be rejected

- 3.12 **Welding:** All welding shall be performed by certified welders in accordance with [REDACTED], including current Addenda. All field welds shall be magnetic particle tested by the Engineer in accordance with Section 18 of the New York State Steel Construction Manual. No tack welds or temporary welds can be used to attach parts during assembly or for shipment. All field welding shall be done in accordance with welding procedures approved by the NYSTA. Preheat and inter-pass temperature for existing [REDACTED] [REDACTED] There shall be no welding of "silicon steel".

Magnetic particle testing may 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.

- 3.13 **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 surfaces shall be roughened to provide a slip critical Type C connection. Tarps and screens are required to remain in place during paint removal operation. The bare contact surfaces shall be coated with the organic zinc-rich primer prior to installation of new material. 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.

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

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

After completion of fieldwork, exposed bare steel and areas of damaged primer shall be touched-up and intermediate and finish coats shall be applied. All coatings shall be applied in a neat, uniform workmanlike manner, and shall be free of runs, sags, drips, or any 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. Under certain circumstances where existing components are disconnected, the Engineer will require that steel is re-installed immediately when primer is dry to the touch or without being pre-primed. These locations and situations will be determined by the Engineer.

The vast majority of lead paint has been removed from the designated work locations during the on-going painting project. If rivet busting, grinding, or torch cutting is performed in a location where all lead paint was not removed (i.e., within any truss span) 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 area, but torch cutting and rivet removal is required at some locations.

4. **METHOD OF MEASUREMENT:**

- 4.01 **Structural Steel Replacement (Kilogram):** Measurement shall be kilogram as defined in Standard Specifications subsection 564-4.01.
- 4.02 **Structural Steel Replacement (Each):** Measurement shall be each as defined in Standard Specifications subsection 564-4.02.
- 4.03 **Structural Steel Replacement (Undefined):** The lump sum of money shown in the itemized proposal for this work will be considered the price bid even though payment will be made only for actual work performed. The lump sum figure is not to be altered in any manner by the Bidder. Should the bidder alter the amount shown, the altered figure will be disregarded, and the original price will be used to determine the total amount bid for the contract.

5. **BASIS OF PAYMENT:**

5.01 **General:**

- A. The price bid shall include the cost furnishing all labor, materials, equipment; removal and disposal of steel; field drilling of existing steel; removal of existing rivets/bolts; installation of new steel; cleaning and prime coating; finish painting; caulking; 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.

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

**5.01 General:** (cont'd)

For the purpose of payment; castings, forgings, fasteners, anchor bolts for other than bridge bearing installation, cables and other metal parts used in the construction, will be considered to be structural steel, even if made of other materials.

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

Partial payment will be made for Structural Steel in accordance with Subsection 109-04 – Partial Payments.

**B. Structural Steel Replacement Undefined:** No payment will be made to the Contractor for this item unless approved by the Engineer. If the work is approved by the Engineer, payment will be made in accordance with Subsection 109-05 of the Standard Specifications.

**5.02 Additional Work:** For items that are included in the price bid and are the Contractor's responsibility, see Standard Specifications Subsection 564-5.02.

Payment will be made under:

<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>UNIT OF MEASURE</b>
564.11600125	Floorbeam Bearing Post Bearing Plate Repair	LBS
564.11600225	Floorbeam Bearing Post Flange Repair	LBS
564.11500325	Main Truss Bottom Chord and Diagonal Member Bottom Flange Repair	LBS
564.11600425	Main Truss Bottom Chord Bottom Flange Repair at Splice	LBS
564.11600525	Main Truss Vertical Web Plate Repair	LBS
564.11500625	Catwalk Bracing Connection Bent Plate Replacement	LBS
564.11600725	Catwalk Channel Top Flange Repair	LBS
564.11600825	Catwalk Channel Web Repair	LBS
564.11600925	Catwalk Bracing Diagonal Angle Replacement	LBS
564.11601025	Catwalk Intermediate Railing Repair	LBS
564.11601125	Wind Bracing Channel Web and Bottom Flange Repair	LBS
564.11601225	Deck Truss Diaphragm Beam Welded Repair on Web	LBS
564.11601325	Deck Truss Diaphragm Beam Repair on Web at Stringer Connection	LBS
564.11601425	Deck Truss Diaphragm Beam Repair on Web at Fascia Connection	LBS
564.11601525	Deck Truss Diaphragm Beam Replacement	LBS
564.11601625	Deck Truss Diaphragm Beam Replacement at Light Standard Supporting Channels	LBS

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**ITEM 564.70990125 –**

**STRUCTURAL STEEL REPLACEMENT (KILOGRAM/POUND)**  
**STRUCTURAL STEEL REPLACEMENT (EACH)**  
**STRUCTURAL STEEL REPLACEMENT UNDEFINED (LUMP SUM)**

ITEM NO.	DESCRIPTION	UNIT OF MEASURE
564.11601725	Deck Truss Diaphragm Beam Replacement at Lamp Post	LBS
564.11601825	Deck Truss Diaphragm Beam Web and Bottom Flange Repair	LBS
564.11601925	Deck Truss Diaphragm Beam Web and top Flange Repair	LBS
564.11602025	Floorbeam Diagonal Member Bent Flange Repair	LBS
564.11602125	Floorbeam Diagonal Member Bent Gusset Plate Repair	LBS
564.11602225	Floorbeam Diagonal Member Flange Repair	LBS
564.11602325	Diagonal Member Gusset Plate Repair	LBS
564.11602425	Diagonal Member Gusset Plate Repair at Location L2 or L14	LBS
564.11602525	Diagonal Member Gusset Plate Repair at Location L3 or L15	LBS
564.11602625	Diagonal Member Gusset Plate Special Repair at Location L3 or L15	LBS
564.11602725	Diagonal Member gusset Plate Repair at Location L3 to L15 Near Vertical Connection Angle	LBS
564.11602825	Floorbeam Diagonal Member Bolted Web Repair	LBS
564.11602925	Floorbeam Diagonal Member Web Splice Plate Replacement	LBS
564.11603025	Floorbeam Diagonal Member Welded Web Repair	LBS
564.11603125	Floorbeam Diagonal Member Bolted Web Repair with Splice Plate	LBS
564.11603225	Floorbeam Diagonal Member Web and Flange Repair	LBS
564.11603325	Floorbeam Gusset Plate Replacement at Location U0 or U16	LBS
564.11603425	Floorbeam Bottom Chord Bottom Tie Plate Replacement	LBS
564.11603525	Floorbeam Bottom Chord Bottom Flange Repair	LBS
564.11603625	Floorbeam Bottom Chord Top Flange Repair	LBS
564.11603725	Floorbeam Bottom Chord Top Tie Plate Replacement	LBS
564.11603825	Floorbeam Bottom Chord Web Repair	LBS
564.11603925	Floorbeam Bottom Chord Web Repair (Welded Plate)	LBS
564.11604025	Floorbeam Bottom Chord Wide Flange Diaphragm Replacement	LBS
564.11604125	Floorbeam Column Batten Plate Repair	LBS
564.11604225	Floorbeam Top Chord Bottom Flange Repair	LBS
564.11604325	Floorbeam Top Chord Bottom Tie Plate Replacement	LBS
564.11604425	Floorbeam Top Chord Connection Angle Repair at Main Truss	LBS
564.11604525	Floorbeam Top Chord Top Flange Repair	LBS
564.11604625	Floorbeam Top Chord Top Flange Splice Plate Replacement	LBS
564.11604725	Floorbeam Top Chord Top Tie Plate Replacement	LBS
564.11604825	Floorbeam Top Chord Web Repair	LBS
564.11604925	Fascia Girder Vertical Stiffener Angle Repair	LBS
564.11605025	Fascia Girder Vertical Stiffener Angle Repair at Floorbeam	LBS
564.11605125	Fascia Girder Horizontal Stiffener Angle Repair	LBS
564.11605225	Fascia Girder Bottom Flange Angle Repair (L5X3 ½)	LBS
564.11605325	Fascia Girder Web Repair with Splice	LBS
564.11605425	Fascia Girder Web Repair at Floorbeam Connection	LBS
564.11605525	Fascia Girder Web Repair at Intermediate Locations	LBS
564.11605625	Fascia Girder Web Repair at Exterior Top Panel	LBS
564.11605725	Lacing Bar Replacement	LBS
564.11605825	Lamp Post Supporting Bracket Repair	LBS
564.11605925	Stringer bottom Flange Repair	LBS
564.11606025	Stringer Bent Bottom Flange Repair	LBS

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**STRUCTURAL STEEL REPLACEMENT (KILOGRAM/POUND)**  
**STRUCTURAL STEEL REPLACEMENT (EACH)**  
**STRUCTURAL STEEL REPLACEMENT UNDEFINED (LUMP SUM)**

ITEM NO.	DESCRIPTION	UNIT OF MEASURE
564.11606125	Stringer Web and Bottom Flange Repair at FB3 or FB7	LBS
564.11606225	Stringer Web and Bottom Flange Repair	LBS
564.11606325	Stringer Web and Top Flange Repair	LBS
564.11606425	Stringer Web Repair at Diaphragm	LBS
564.11606525	Main Truss Horizontal Stiffener Replacement	LBS
564.11606625	Main Truss Bottom Chord and Diagonal Member Top Flange Repair	LBS
564.11606725	Main Truss Bottom Chord Top Flange Splice Plate Repair	LBS
564.11606825	Main Truss Top Chord Top Flange Repair	LBS
564.11606925	Bottom Bracing gusset Plate Replacement at Connection to Main Truss	LBS
564.11607025	Bottom Bracing Gusset Plate Repair Near Catwalk	LBS
564.11607125	Main Truss Gusset Plate Repair at Upper Chord	LBS
564.11607225	Main Truss Gusset Plate Repair at Bottom Chord and Vertical	LBS
564.11607325	Main Truss Gusset Plate Repair at Bottom Chord and Vertical at Inside Face	LBS
564.11607425	Main Truss Gusset Plate and Web Repair at Bottom Chord and Vertical	LBS
564.11607525	Main Truss Gusset Plate Repair at Panel Point L2 or L8	LBS
564.11607625	Main Truss Gusset Plate Repair at Panel Point L4 or L6 Diagonal Connection	LBS
564.11607725	Main Truss Gusset Plate Repair at Panel Point L4 or L6	LBS
564.11607825	Main Truss Bottom Chord and Diagonal Member Web Repair	LBS
564.11607925	Main Truss Bottom Chord and Diagonal Member Web Repair Near Gusset Plate	LBS
564.11608025	Main Truss Member Web Repair Near Gusset Plate	LBS
564.11608125	Wide Flange Member Web Repair	LBS
564.70300125	Rivet or Bolt Replaced With Same Size of High Strength Bolt	EA
564.70300225	U-Bolt for Conduit Support at Catwalk	EA
564.70300325	Stool Retrofitting – Type I	EA
564.70300425	Stool Retrofitting – Type II	EA
564.70990125	Structural Steel Replacement Undefined	Lump Sum