

TECHNICAL SPECIAL PROVISIONS
FOR
T468 - MECHANICAL CONSTRUCTION FOR MOVABLE BRIDGES
PO NO. 225210277
COLUMBUS DRIVE BRIDGE OVER HILLSBOROUGH RIVER
BRIDGE PAINTING
(BRIDGE NO. 105504)

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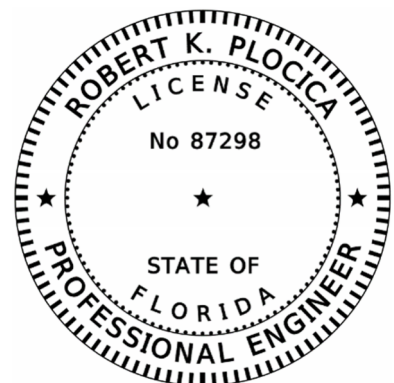


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SECTION T468

MECHANICAL CONSTRUCTION FOR MOVABLE BRIDGES

T468-1 BASIC MECHANICAL REQUIREMENTS

T468-1.1 Description

This Technical Special Provision applies to Columbus Drive Bridge. Execute mechanical work in accordance with the Contract Documents.

T468-1.1.1 General

The intent and purpose of this Technical Special Provision is to cover apparatus, material and labor required to properly detail, manufacture, ship, install, adjust, test, paint and put into approved working order all Mechanical parts of the movable bridge as shown on the Contract Plans and described here within.

Dimensions given on the plans are nominal and intended for guidance. Note any variations from nominal dimensions on the Contract Plans.

T468-1.1.2 Definitions for this Technical Special Provision.

1. Swing Span: The movable portion of the roadway and sidewalk deck and its supporting elements, including the truss, floor beams, brackets, barriers, handrails, roadway deck, sidewalk deck, bearings, and appurtenances which rotate about the center pivot axis during operation. All structural, mechanical, and electrical elements of the movable span, including the structure, and all associated bearings, machinery, power, and control systems.

2. Swing Truss: The main longitudinal load carrying members of the swing span.

3. AASHTO Movable Specifications: AASHTO LRFD Movable Highway Bridge Design Specification, 2nd Edition, (2007) with all Interim Revisions.

4. Blend: A smooth transition between surfaces with a slope less than or equal to 1:3.

5. Pivot Bearing: The theoretical axis of rotation of the swing span.

6. Tight Integration (Well Integrated): The methods, practices, techniques, standards, and procedures by which a seamless hardware, software, electrical, mechanical, and structural interfacing of electrical sub-systems, hydraulic sub-systems, mechanical sub-systems, and structural components is provided. Tight integration is determined (in part) by the Engineer through submittals, shop testing of complete systems and sub-systems, shop drawings, and incidental items as required by the Engineer. Provide a complete movable bridge system that is reliable, repeatable, and free of anomalies and intermittent operation as determined by the Engineer.

T468-1.1.3 Integration

Coordinate electrical, and mechanical equipment, systems, and sub-systems integration with structural components and disciplines.

T468-1.1.3.1 Quality Assurance - Supervisory and Technical Personnel:

Millwrights (General): Millwright: Individual who is a millwright by trade, who will conduct the alignment and installation of the machinery components and other designated components installed in the field, under the provisions of this Section and of the Contract Documents. Supervisory Millwright: Individual who is a millwright by trade, who will supervise the field alignment and installation of the machinery and other designated work to be provided under the provisions of this Section and of the Contract Documents.

a. Utilize millwright(s), with a minimum of ten years of experience in the assembly and alignment of machinery of similar size, type, and character. Millwright(s) to be present for the full duration of all field installations.

b. Supervisory Millwright: Utilize approved supervisory millwright, with a minimum of ten years of experience in the assembly and alignment of machinery of similar size, type, and character, five years in a supervisory role. For alignment and installation procedures for machinery components, have Supervisory Millwright initial all submittals.

T468-1.1.3.2 Submittals for Supervisory and Technical Personnel

Submit qualifications for supervisory and technical personnel according to the requirements of Technical Special Provisions Section T465-1.3.

T468-1.1.4 Working Plans and Shop Drawings

Provide Shop Drawings in accordance with Hillsborough County Specifications Section 01040, including but not limited to:

1. Drawing details, dimension and tolerances are detailed in accordance with the latest version of ASME Y14.100, "Engineering Drawing Practices". Reproduction of the Plans shall not be used as foundation sheets for assembly or erection drawings.

2. Detail and accurately dimension all parts as required by this Contract, indicate limits of accuracy and tolerances required for machining, surface finishes and allowances for fits. Unless otherwise called for, provide the fits and finishes in accordance with ANSI B4.1 and ANSI B46.1.

3. Provide detail and assembly drawings, together with an outline drawing, for all operating machinery and parts required by this Contract and the existing components which furnished components are to be attached to or combined with. Provide drawings that contain all information necessary for computing the strength of the machinery parts. Provide sufficiently detailed drawings to permit the duplication of the machinery parts by others, including assembly and disassembly instructions. Show the estimated weights of individual parts and total weights of all parts in the details for machinery and castings.

4. Include in submittals for each manufactured item manufacturer's descriptive literature, drawings, diagrams, performance and characteristic curves, and catalog cuts, and include the manufacturer's name, trade name, catalog model or number, nameplate data, size, certified layout dimensions, capacity, specification reference, including ASTM, ANSI, and any other applicable references, and all other information necessary to establish Contract compliance.

5. Provide complete shop bills of materials for all machinery parts furnished by this Contract.

6. State the material and material specifications for each part furnished as required by this Contract. Where ASTM Specifications or any of the Standard Specifications are used, give the designating numbers of such specification.

7. Furnish complete assembly and as-built drawings as required by this Contract. Indicate identifying marks, match marks and essential dimensions for locating each part or assembled unit with respect to the bridge or equipment foundation. Cross-reference every part to the drawing sheet on which it is detailed. Clearly show and detail marks or indentations of any type on the drawings. In general, avoid die stamping or scoring unless otherwise called for in the Contract Documents. Detail all components and assemblies separately to achieve correct fabrication, assembly, and erection. Do not use mirror image or opposite hand drawings.

8. Give each shop drawing a suitable title to describe the parts detailed therein.

9. Where equipment or materials are specified to conform to requirements of the standards of an organization such as American Society of Mechanical Engineers (ASME), Underwriters Laboratories (UL), which use a label or listing as method of indicating compliance, submit proof of such conformance for review. The label or listing of the specified organization will be acceptable evidence. In lieu of the label or listing, submit a certificate from an independent testing organization adequately equipped and competent to perform such services and approved by the Engineer, stating that the item was tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard or code.

10. As used herein, certified test reports refer to reports of tests conducted on previously manufactured materials, or equipment identical to that proposed for use.

11. As used herein, factory tests refer to tests performed on the actual materials or equipment proposed for use. Submit results of the test in accordance with provisions of the Contract Documents for laboratory test results.

T468-1.2 Construction Requirements

Construct in accordance with the Contract documents and the applicable provisions of the AASHTO Movable Specifications.

Provide, unless specified in the Contract Documents or herein, dimensions between machined surfaces have a tolerance of 0.010-inch and machined surfaces have a flatness tolerance of 0.005-inch.

Design and construct temporary members in accordance with the provisions of Hillsborough County Specifications Section 01040.

T468-1.2.1 Notification of Shop Work

Comply with Hillsborough County Specifications Section 01040.

T468-2 MISCELLANEOUS MATERIALS AND EQUIPMENT

T468-2.1 Materials

T468-2.1.1 General: Material Compatibility

Provide products that are compatible with other products of the mechanical work, and with other work that requires interface with the mechanical work, including mechanical and electrical connections and control devices.

Nameplates: Provide each piece of new mechanical equipment and apparatus with a permanent, corrosion-resisting metal nameplate stamped with the name of the manufacturer, the catalog or model number, and the rating or capacity of the equipment or apparatus.

Shop Inspection and Testing: Comply with the requirements of the Hillsborough County Standard Specifications.

Use materials that conform to the current ASTM specifications. An alternative material may be requested in writing; the request must provide complete data justifying suitability of the alternate materials and must be approved by the Engineer prior to initiating fabrication or construction.

Furnish materials and equipment that are the standard catalogued products of manufacturers regularly engaged in production of such materials or equipment and be the manufacturer's latest standard design that complies with the Contract Documents. Where two units of the same class of equipment are required, furnish products of the same manufacturer. However, the component parts of the system need not be the products of the same manufacturer.

T468-2.1.2 Pin

Fabricate pivot pin in conformance to tolerances in ASTM A276 unless otherwise indicated. Turned, ground, and polished pin straightness tolerances are to be up to 0.003 inch per foot. Accurately finish pin round, smooth, and straight. Machine the surfaces to an ANSI maximum roughness of 8 micro inches. Fabricate cold-finished pin that is the type and grade of the steel shown on the plans, test for its mechanical properties, and submit a test certificate to the Engineer. Fabricate each cold-finished shaft free from camber. Test to ensure smooth rotation of the Stop Bar. Use pin material of the grade specified where shown on the plans.

T468-2.1.3 Bronze Castings

All bronze castings must meet the requirements of ASTM B22/B22M and be Copper Alloy Unified Numbering System (UNS) No. C86300 unless otherwise indicated or approved by the Engineer.

T468-2.1.4 Forgings

Provide forgings that conform to AASHTO Specifications for Movable Bridges. All carbon and alloy steel forgings must meet the requirements of AASHTO M102M/M102 (ASTM A668/A668M) unless otherwise indicated or approved by the Engineer. Ensure all forgings are reduced to size from a single bloom or ingot until homogeneity is secured. The blooms or ingots, from which shafts or pins are to be made, must have a cross-sectional area at least three times that required after finishing. Perform all forging at no less than a red heat. Perform in the manufacturer's shop for all forgings:

A. Liquid Penetrant exams in accordance with ASTM E165 or Magnetic Particle exams in accordance with ASTM A275 and ASTM E709. Acceptance criteria of ASTM A788, Supplementary Requirements S18 and S19, shall apply.

- B. Ultrasonic exams in accordance with ASTM A388. Acceptance criteria of ASTM A788, Supplementary Requirement S20, Level BR and Level S, shall apply.
- C. Radiographic exams in accordance with ASTM E94. Submit test results to Engineer.
- D. Stress relieve dimensionally critical components that have been rough machined.

T468-2.1.5 Bushings

Provide bushings where required in the plans, and mount to the Stop Bar and weldment. Provide an ANSI B4.1 Class FN1 interference fit between bushing outside diameter and Stop Bar and weldment. Fit bores with pin to achieve an ANSI B4.1 Class RC6 running fit. Provide one-piece bronze sleeve solid bushings, where required in the Contract Documents.

T468-2.1.6 Welding

- A. Ensure all welding required or designated in the Contract Documents conforms to the appropriate AASHTO and American Welding Society (AWS) Specifications for the material being welded.
- B. Submit shop drawings that include procedures for welding with inspection requirements stipulated in the Contract Documents for approval prior to start of welding. Do not machine components until after welding and stress relieving.
- C. Include a certified copy of a test report showing the chemical composition of the specific steel piece(s) to be welded in any welding procedure involving attachment to existing steelwork. Consider this chemical composition in the welding procedure.
- D. Perform welding of steel in accordance with the ANSI/AASHTO/AWS D1.5 Bridge Welding Code.
- E. Unless otherwise shown in the Plans, connect elements of weldments by complete joint penetration welds. Do not use fillet welds where they would require machining to provide clearance for machinery, fasteners, or other attachments. Clip stiffeners to avoid overlapping stiffener welds with welds at the intersection of main plates.
- F. Groove welds to be complete joint penetration groove welds (CJP).
- G. Ensure the fitting up and welding procedure is such that distortion of the work will be minimized. If necessary to obtain this result, use suitable welding fixtures. Unless otherwise specifically stated, stress relieving is required for welded machinery parts prior to final machining.
- H. Inspect all welds utilizing non-destructive tests (i.e., via dye penetrant checks supported by Ultrasonic Testing or Radiographical Testing ASTM E164 as required by the AASHTO/AWS D1.5 Bridge Welding Code or the Contract Documents.
- I. Unless otherwise noted, herein or in the Plans, perform 100% magnetic-particle inspection of fillet welds and partial penetration welds of machinery weldments.
- J. Submit, in shop drawing form (i.e., with inspection requirements stipulated in the General Notes of the Drawing), procedures for structural welding to be permitted in the shop and field, for approval, before welding is begun.
- K. Stress relieve weldments after welding and prior to final machining. Unless otherwise shown in the Plans, finish machined surfaces of weldments to flatness as required herein and finish machinery bearing surfaces parallel to each other and to the bottom of the base plate. Machine finish the height of the weldments supporting machinery, on shims, as measured from the bottom of the base plate to the top of the bearing surface, to Plan height plus or minus 1/8-inch. Grind all exposed edges of weldments to a chamfer or radius to eliminate sharp edges and burrs. Ensure that weldment base plates, placed against concrete or grout, have 3/4-inch minimum radii on the corners.
- L. Do not paint welded components until welds are inspected and approved.

T468-2.1.7 Stop Weldment

Provide stop assembly of welded construction as shown on the plans. All mounting surfaces shall be machined as per the Contract Documents after the weldment has been stress relieved. The mounting and contact surfaces shall be machined to a 125 microinch finish when mounted to steel and to 250 microinch finish when interfacing with grout. Weldment shall be detailed to minimize accumulation of water. Where water could be trapped, weep holes should be provided to drain any accumulation. Demonstrate that the alignment between mating components has not been disturbed after installation of the machinery in the field.

T468-2.1.8 Non-Shrink Epoxy Leveling Grout

Use a Non-Shrink Epoxy Leveling Grout where required for chocking, leveling, and supporting equipment. Use a Non-Shrink Epoxy Leveling Grout that is a three-component, high strength, 100% solids, epoxy-based grouting compound manufactured for use in severe applications and to grout critically aligned machinery within very close tolerances. Use Non-Shrink Epoxy Leveling Grout manufactured for use in a thickness range shown in the Plans or detailed in approved shop drawings for each application. Use Non-Shrink Epoxy Leveling Grout having the following minimum properties:

Minimum Compressive Strength:	10,000 psi
Maximum Linear Shrinkage:	0.0004 in/in
Minimum Tensile Strength:	2,000 psi
Fire Resistance:	Self Extinguishing

Store, mix, place, and finish Non-Shrink Epoxy Leveling Grout in accordance with the Manufacturer's recommendations.

T468-2.1.9 Anchor Bolts

Provide anchor bolts conforming to ASTM F1554, Grade 55.

T468-2.1.10 Fasteners

Provide all bolts for connecting machinery parts to each other and to supporting members as shown in the Contract Documents and conform to one of the following types:

1. High-strength bolts.
2. Turned bolts, turned cap screws, and turned studs.
3. High strength turned bolts, turned cap screws, and turned studs.

Provide ASTM F3125 Grade A325 Type 1 high strength bolts. Use only high strength bolts with heavy hexagonal heads. Provide holes for high-strength bolts are no more than 1/16-inch larger than the nominal diameter of individual bolts and drilling holes to match the tolerances for each bolt. Install, wherever possible, high-strength bolts connecting machinery components to structural elements or to other machinery components comprised of different thicknesses so that the bolt head is adjacent to the connected element with the least thickness.

Furnish turned bolts, turned cap screws, and turned studs with turned shanks and cut threads. Furnish turned bolts with semi-finished, washer-faced, heavy hexagonal heads and nuts.

Provide high strength turned bolts, turned cap screws, and turned stud details that are as specified in Section C, except that the material must meet the requirements of ASTM A449.

Drill or ream-assemble all elements connected by bolts to achieve accurate alignment of the hole and accurate clearance over the entire length of the bolt within the specified limits.

Provide bolt heads, nuts, castle nuts, and hexagonal head cap screws dimensioned in accordance with ANSI B18.2.1, Hexagon Bolts and ANSI B18.2.2 Nuts.

Use nuts that conform to ASTM A563 or A194, Grade DH or 2H, heavy hex series.

Provide socket-head cap screws, socket flathead cap screws, and socket-set screws which have dimensions that conform to ANSI B18.3. Provide screws made of heat-treated alloy steel, cadmium-plated, and furnished with a self-locking nylon pellet embedded in the threaded section. Unless otherwise called for on the Plans or specified herein, provide setscrews of the headless safety type with threads of coarse thread series and cup points. Do not use setscrews to transmit torsion nor as the fastening or stop for any equipment that contributes to the stability or operation of the bridge.

Provide socket head cap screws that conform to ASTM F837 or F879 (Stainless Steel) for diameters less than 5/8" and ASTM A574 or F835 (Alloy Steel) for diameters greater than or equal to 5/8".

Spot face bolt holes square with the axis of the hole.

Unless otherwise specified, sub-drill all bolt holes in machinery parts at least 0.030 inch smaller in diameter than the bolt diameter and ream assemble for the proper fit at assembly or at erection with the steel work after the parts are correctly assembled and aligned.

Ream or drill holes in shims and fills for machinery parts to the same tolerances as that of the connected parts at final assembly.

Furnish and install positive locks, of an approved type, for all nuts except those on ASTM A325 Bolts. If double nuts are used, use them for all connections requiring occasional opening or adjustment. Provide lock washers made of tempered steel if used for securing.

Install high-Strength bolts with a hardened plain washer meeting ASTM F436 at each end.

Do not use different size bolts when connecting components (i.e., gearbox to pedestal, bearing to pedestal). If a hole is over drilled requiring a bigger bolt, then furnish all bolts of the bigger size.

T468-2.1.11 Shims

Provide ASTM A709 Grade 50, full depth shim packs, drilled for all bolts that pass through, trim to the dimensions of the assembled unit.

Unless otherwise indicated in the Plans, provide shim pack containing shims of decreasing thickness from full depth down to 1/8-inch, plus 2-1/16-inch shims. For example, a 0.5-inch shim pack would consist of the following shim thickness 1/2, 1/4, 1/8, (2) 1/16 inch for a total of (5) shims.

Submit Shop Drawings for review with full dimensions of shims, holes, and hole positions. Refer to the plans for nominal dimensions to be field verified. Do not use shims with open sided or U-shaped holes for bolts unless otherwise noted. Provide shims that have no less than two holes for bolts.

Provide full tapered shims, if required, to obtain the specified alignment tolerances, at no additional cost.

Neatly assemble shims not installed after final alignment, tag with the part number from the approved shop drawings and turn over to the County for future use.

Do not use resins in lieu of shims.

T468-2.1.12 Protection for Shipment

Clean machinery parts of dirt, chips, grit, and all other injurious materials prior to shipping and coat with corrosion-inhibiting preservative.

Coat all finished metal surfaces, not to be painted, as soon as practical after machining with a temporary protective coating that prevents oxidation. Coat non-stainless shims with a temporary protective coating that prevents oxidation prior to shipment, wipe clean before installation. Completely protect machinery parts from weather, dirt and foreign materials during manufacture and store indoors while awaiting erection. Grease exposed shaft journals or coat with the oxidation preventative coating, wrap in oil-soaked burlap and securely timber lag for shipment. Any solvent used to clean a journal prior to assembly must be completely removed from the shaft and bearing prior to assembly. Assembled units - including bearings, lock bar operators and other devices having finished mounting surfaces will have those surfaces thoroughly coated with a temporary protective coating that prevents oxidation and skid or crate for protection during handling, shipment, and storage.

Reapply any coating removed for the purpose of installation or erection of equipment as soon as practical until it is removed for the application of paint or installation into a lubricated assembly.

Coat, as soon as practical after finishing, all finished metal surfaces and unpainted metal surfaces that would be damaged by corrosion with a rust-inhibiting preservative. Except for unfinished metal surfaces inside of gear reducers, remove this coating from operation and from all surfaces prior to painting and after erection.

Coat any interface between stainless steel or aluminum and structural steel with zinc-chromate primer prior to assembly.

Coat shims with a rust-inhibiting preservative prior to shipment. Remove this coating, before erection, from the shims that are used.

Completely protect machinery parts from weather, dirt, and all other injurious conditions during manufacture, shipment, and while awaiting erection.

Mount assembled units on skids or otherwise crate for protection during handling and shipment.

Bag and crate mounting hardware and other small parts for shipment. Provide wire tags, indicating the part number, and attach to each part prior to shipment.

T468-2.2 Construction Requirements

T468-2.2.1 Description

Follow the AASHTO Standard Specifications for Movable Highway Bridges requirements for field erection, workmanship, machining, finishing, aligning, testing, and inspection, unless otherwise specified in the Contract documents.

Unless otherwise noted, construct structural steel fabrications in accordance with the provisions of FDOT Specification Section 460.

Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, furnish printed copies of these recommendations to the Engineer prior to installation. Do not install material until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

T468-2.2.2 Erection and Testing

Erect and assemble machinery in accordance with part numbers and match marks. Adjust all parts for precise alignment by means of shims and pull parts tightly against supporting members by use of clamps, temporary bolts, or other approved means before drilling and reaming holes for connecting bolts. Install all machinery within the specified tolerances and such that satisfactory operation is achieved.

Do not install machinery unless mounting surfaces are clean of dirt, paint, and other foreign materials.

Securely tighten connecting screws, bolts, and nuts to specified torque values after approval of field alignment by the Engineer.

T468-2.2.3 Fasteners

Unless otherwise indicated in the Plans, drill bolt holes in machinery parts for connection to supporting steelwork in the shop a minimum of 1/16-inch diameter smaller than the finished bolt diameter or drill from solid at assembly. Drill and ream for the required fit at final assembly.

Unless otherwise indicated in the Plans, drill bolt holes in steelwork for bolts from solid at assembly or erection after proper alignment. Do not pre-drill holes full size prior to final assembly and alignment.

Clean all contact surfaces of structural steel to be bolted together in accordance with the Technical Special Provision before bolting.

Except as noted herein or in the Plans, tension ASTM A325 and ASTM A449 bolts used for connecting steel machinery parts together or to structural steel and whose nominal threaded diameter is less than or equal to 1-1/2-inch in accordance with the applicable provisions of the Standard Specifications for high strength bolts.

Preload for High Strength SAE Bolts and Studs: Tension bolts, cap screws and other threaded fasteners as follows:

1. For permanent connections: $F_t = 1.0 \times A_t \times S_p$
2. For turned bolt connections: $F_t = 0.70 \times A_t \times S_p$

Where: F_t = fastener preload

A_t = tensile area of the fastener

S_p = fastener proof strength

3. Preload may be applied by direct hydraulic tensioning or torque. Where using torque calculate, it as follows:

$$T = K \times F_t \times d$$

Where: T = required wrench torque applied to fastener
K = constant dependent upon bolt size, material, and lubrication
d = nominal fastener diameter (unless otherwise noted)

T468-2.2.4 Painting of Machinery

Clean and paint all new and existing machinery unfinished, and existing mating surface in accordance with FDOT Specification Section 560 and 561. Clean areas of existing structural steel that interfaces with new machinery.

Do not abrasive blast clean machine polished surfaces in sliding or bearing contact. Do not apply primer to machinery rubbing surfaces.

Prepare non-contact finished surfaces, for painting with prime coat.

After erection is complete, thoroughly clean machinery surfaces in accordance with FDOT Specification Section 560 and 561 and give intermediate coats of paint to all machinery surfaces remaining exposed, except rubbing surfaces.

After completing the operating tests and acceptance of the machinery, wash with approved solvent all accumulated oil, grease, dirt, and other foreign matter from exposed machinery surfaces, except rubbing surfaces and mating surfaces. Give the exposed surfaces a final field coat.

Paint machinery surfaces with the final field coat to match existing colors. Apply field touch-up paint to shop applied coatings damaged during construction.

T468-3 SWING SPAN STOP ASSEMBLY

T468-3.1 Description

This section covers furnishing and installing the new Swing Span Breakaway Stop as shown on the plans.

T468-3.1.1 Submittals

Submit Shop Assembly and Detail Drawings

Submit Field Installation Procedure

Submit torque wrench calibration certificate.

Submit anchor bolt system catalog and technical information.

T468-3.2 Materials

Refer to T468-2 and the plans for material requirements.

T468-3.3 Construction Requirements

Adjust shims between Stop Bar and Stop Bar Shoe such that there is a gap of $\frac{3}{8}$ " $\pm$ $\frac{1}{32}$ " with the span lock bar centered in its receiver.

Stop shoe and strike plate to be parallel within 0.010" over the height of the shoe. Provide tapered shim as required, at no additional cost to the County.

T468-4 LIVE LOAD BEARING ASSEMBLY REHABILITATION

T468-4.1 Description

This section covers the reconditioning of the live load bearing assemblies as shown on the plans. Live load bearing assemblies include but is not limited to the live load guides, wedges, bearing pedestals and lubrication hardware.

T468-4.1.1 Description of Work

1. Removal of each wedge from its corresponding guide to gain access to all sliding surfaces.
2. Cleaning all corrosion from guide, wedge and bearing pedestal sliding surfaces.
3. Clean all corrosion from all grease grooves, ports and passageways.
4. Drill and tap existing components for new lubrication fittings and passageways.
5. Chase all lubrication port threads.
6. Furnish and install all new Live Load Bearing Assembly hardware.
7. Clean and paint all remaining guide, wedge and bearing pedestal surfaces.
8. Protect all machinery sliding surfaces and grease grooves while cleaning and preparing other surfaces for painting.

T468-4.1.2 Submittals

Submit fully detailed drawings of the new grease ports and passageways.
Submit disassembly, cleaning and reassembly procedure for review by the Engineer.
Submit catalog cuts of new lubrication hardware.
Submit anchor bolt system catalog and technical information.

T468-4.2 Materials

Refer to plans for materials required.

T468-4.3 Construction Requirements

Reassemble the wedges in the guides such that they are in the same position when fully driven as prior to disassembly. Measure the alignment of the swing span deck with respect to the approach spans at all four corners of the swing span, prior to construction and after reassembly of each live load bearing assembly to ensure proper positions. Perform operational testing of the swing span prior to returning it to service subjected to live load. Recondition (1) live load bearing assembly at a time, unless otherwise approved by the engineer.

T468-5 METHOD OF MEASUREMENT

Swing Span Stop Assembly: The work of furnishing and installing the Swing Span Stop Assembly, including new anchor bolts, as detailed in this Technical Special Provision and on the Plans will be paid for at the Contract lump sum unit price.

Live Load Bearing Assemblies: The work of reconditioning the Live Load Bearing Assemblies as detailed in this Technical Special Provision and on the Plans will be paid for at the Contract Lump Sum unit price. The work of replacing the existing bearing base anchor bolts to be paid for under Pay Item 460-112.

T468-6 BASIS OF PAYMENT

Price and payment will be full compensation for all work specified in this Section, including furnishing, and installing all equipment and materials. Price and payment will be full compensation for all work and costs specified under this Section except as may be specifically covered for payment under other items.

Payment will be made under:

Item No. 0465-2 160 Movable Bridge Machinery and Castings, Furnish & Install, Other Machinery Components – lump sum.

Item No. 0465-2-460 Movable Bridge Machinery and Castings, Recondition, Other Machinery Components – lump sum.