

SECTION 01600**CONTROL OF MATERIALS****PART 1 GENERAL****1.01 SUMMARY**

- A. This Section includes requirements for the control of materials during construction including submittals; quality assurance; Manufacturer's/Supplier's written instructions; transportation and handling; storage, protection and maintenance; and salvage.

1.02 RELATED SECTIONS

- A. Section 01300 – Submittals
- B. Section 01310 - Progress Schedules

1.03 CODES AND STANDARDS

- A. American Society of Mechanical Engineers (ASME):
 - 1. B1.1-2003 (R2018) - Unified Inch Screw Threads, (UN and UNR Thread Form)
- B. American Society for Testing and Materials International (ASTM):
 - 1. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - 2. ASTM A125-96 – Standard Specification for Steel Springs, Helical, Heat-Treated
 - 3. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - 4. ASTM F3125/F3125M – Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

1.04 SUBMITTALS

- A. Submittals shall be in accordance with Section 01300 – Submittals.
- B. Proposed Manufacturers/Suppliers List: Submit to the Authority with the schedule of Shop Drawing submittals specified in Section 01300 – Submittals, Paragraph 1.04.C, a list of the names of proposed Manufacturers, materials, Suppliers and Subcontractors, obtain Authority review of this list prior to making submittals. Upon request, submit

evidence to Authority that each proposed Manufacturer has manufactured a similar product to the one specified and that it has previously been used for a like purpose for a length of time to demonstrate its satisfactory performance.

C. Furnish and install Materials and Equipment which meet the following:

1. Manufacture and fabricate in accordance with the following:

- a. Design, fabricate, and assemble in accordance with best engineering and shop practices.
- b. Manufacture like parts of duplicate units to standard sizes and gauges, and to be interchangeable.
- c. Provide two (2) or more items of same kind identical, by same Manufacturer.
- d. Provide materials and equipment suitable for service conditions.
- e. Adhere to equipment capabilities, sizes, and dimensions indicated or specified.
- f. Configure working parts readily accessible for inspection and repair, able to be duplicated and replaced.

2. Use materials or equipment only for the purpose for which they are designed or specified.

1.05 QUALITY ASSURANCE

A. Instruction Distribution: When the Contract Documents require that installation, storage, maintenance and handling of equipment and materials comply with Manufacturer's/Supplier's written instructions, obtain and distribute printed copies of such instructions to the parties involved in installation, including six (6) copies to the Authority.

1. Maintain one (1) set of complete instructions at the job site during storage and installation, and until completion of Work.

B. Manufacturer's/Supplier's Requirements: Store, maintain, handle, install, connect, clean, condition, and adjust products in accordance with Manufacturer's written instructions and in conformity with the Specifications. Do not omit preparatory steps or installation procedures.

1.06 QUALIFICATIONS (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor is responsible for the security of all materials until they are incorporated in the Work and accepted by the Authority. Repair or replace any damaged material equipment or incidentals to the satisfaction of the Authority and at no additional cost to the Authority.
- B. Coordination with Schedule: Arrange deliveries of materials and equipment in accordance with the Construction Progress Schedule specified in Section 01310 – Progress Schedules. Coordinate to avoid conflict with work and conditions at site.
 - 1. Deliver materials and equipment in undamaged condition, in Manufacturer's/Supplier's original containers or packaging, with identifying labels intact and legible.
 - 2. Protect bright machined surfaces, such as valve faces, with a heavy coat of grease prior to shipment.
 - 3. Protect painted surfaces against impact, abrasion, discoloration and other damage.
 - a. Repaint all painted surfaces which are damaged prior to acceptance, to the satisfaction of the Authority, at no additional cost to the Authority.
 - 4. Immediately upon delivery, inspect shipments to determine compliance with requirements of the Contract Documents and submittals and that materials and equipment are protected and undamaged.
 - 5. Ensure that complete packing lists and bills of materials are included with each shipment.
- C. Handling: Provide equipment and personnel to handle materials and equipment by methods recommended by the Manufacturer to prevent soiling or damage to materials and equipment or packaging.
- D. Immediately upon discovery, remove from the jobsite all damaged materials and equipment. Replace with new materials and equipment at no additional cost to the Authority.
- E. Interior Storage:
 - 1. Store materials and equipment in accordance with Manufacturer's/Supplier's instructions, with seals and labels intact and legible.

2. Store materials and equipment, subject to damage by elements, in weathertight enclosures.
 3. Maintain temperature and humidity within ranges required by Manufacturer's/Supplier's instructions.
- F. Accessible Storage: Arrange on-site and off-site storage in a manner to provide easy access for inspection and inventory. Make periodic inspections of stored materials or equipment to assure that materials or equipment are maintained under specified conditions and free from damage or deterioration.
1. Perform maintenance on stored materials of equipment in accordance with Manufacturer's/Supplier's instructions, in presence of the Authority.
 2. Submit a report of completed maintenance to the Authority with each Application for Payment.
 3. Failure to perform maintenance or to submit the maintenance report may result in rejection of materials or equipment.
- G. Surface Damage: Where structural concrete is also the finished surface, do not mark or damage surface.

1.08 PROJECT/SITE CONDITIONS (NOT USED)

1.09 DEFINITIONS (NOT USED)

1.10 TOLERANCE (NOT USED)

PART 2 PRODUCTS

2.01 MATERIALS

- A. Conform to specified referenced standards.
- B. Comply with size, type, and standard of quality specified.
- C. Use only new materials and equipment in permanent construction.
- D. The materials and equipment used on the Work shall comply with the Contract Documents, the reviewed Shop Drawings, samples or other data.

2.02 FABRICATION

- A. Design, fabricate, and assemble products in accordance with engineering and shop practices as recommended by the Manufacturer/Supplier.

- B. Do not use material or equipment for any purpose other than that for which it is designed or specified.

2.03 SPARE PARTS

- A. Provide spare parts for products as specified.
- B. Pack spare parts to protect them during storage. Tag spare parts and containers to clearly identify them in accordance with specified parts numbering system. All parts shall be cross-referenced to their applicable Specifications Sections.

2.04 SPECIAL TOOLS

- A. For each type of equipment furnished, provide a complete set of all special tools (including grease guns or other lubricating devices, and testing and calibration devices) which Manufacturer/Supplier supplies or recommends for the adjustment, operation, maintenance, and disassembly of such equipment. Tools shall be high-grade, smooth, forged, alloy, tool steel. Grease guns shall be lever type.
- B. Special tools shall be delivered at the same time as the equipment to which they pertain. Store and safeguard such special tools until Substantial Completion, at which time they shall be delivered to the Authority.

2.05 NAMEPLATES

- A. Except as specified in Paragraph 2.05.B below, each piece of equipment shall be provided with a nameplate of non-corrodible metal, fastened in place and inscribed with the Manufacturer's/Supplier's name, model or type designation, serial number, principal rated capacities, electrical or other power characteristics.
- B. This requirement shall not apply to standard, manually operated hydrants or to gate, globe, check and plug valves.
- C. Each piece of equipment shall be provided with a tag fastened in place and inscribed with an identification number.

2.06 GENERAL MATERIALS AND EQUIPMENT REQUIREMENTS

- A. Should these requirements conflict with the Manufacturer's/Supplier's recommendations the Manufacturer's/Supplier's requirements shall govern.
- B. Bolts, Anchor Rods and Nuts:
 - 1. All bolts, anchor rods, nuts, washers, plates and bolt sleeves shall be as specified herein and in other Sections.

2. Stud, tap, and machine bolts, and nuts shall conform to the requirements of ASTM F3125/F3125M – Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength. Hexagonal nuts of the same quality of metal as the bolts shall be used. All threads shall be clean cut and shall conform to ASME B1.1 for Unified Inch Screw Threads (UN and UNR Thread Form).
 3. Anchor rods shall be set using templates and where indicated. Anchor bolts shall be provided with square plates at least four (4) inch by four (4) inch by three-eighths (3/8) inch or shall have square heads and washers and be set in the concrete forms with pipe sleeves. Anchor rods shall have washers and hexagonal nuts of the type indicated on the Drawings.
 4. Anchors in existing concrete structures shall be placed by drilling and grouting or caulking without damaging the structure or finish.
- C. Concrete Inserts for Hangers:
1. Concrete inserts for hangers shall be designed to support, in the concrete that is used, the maximum load that can be imposed by the hangers used in the inserts. Inserts for hangers shall be of a type which will permit adjustment of the hangers both horizontally (in one plane) and vertically and locking of the hanger head or nut. All inserts shall be galvanized by the hot-dip process in conformity with the ASTM A123/A123M – Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products, or the ASTM A153/A153M – Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- D. Protection against Electrolysis:
1. Where dissimilar metals are in contact with one another, provide insulation between adjoining surfaces to eliminate direct contact and any resultant electrolysis. Provide bituminous insulation, heavy bituminous coatings, nonmetallic separators or washers, or impregnated felt to provide insulation.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. General:

1. Provide Manufacturer's/Supplier's field services in accordance with this subsection for those tasks specified in other Sections.

B. Installation Instruction: Provide instruction by technical representatives of equipment

manufacturers or system suppliers to resolve assembly or installation procedures which are attributable to, or associated with, the equipment furnished.

C. Installation Inspections and Adjustments:

1. Provide technical representatives of equipment manufacturers to inspect the completed installation as follows.
 - a. Verify that each piece of equipment has been checked for lubrication, rotation, or for other conditions which may cause damage.
 - b. Verify that equipment or system is installed in accordance with the Manufacturer's/Supplier's recommendations, Shop Drawings and the Contract Documents.
 - c. Verify that nothing in the installation voids any warranty.
2. Provide Manufacturer's/Supplier's representatives to perform initial equipment adjustment and calibration conforming to the Manufacturer's/Supplier's recommendations and instructions, Shop Drawings and the Contract Documents.
3. Furnish Authority with three (3) copies of the following:
 - a. Detailed report by Manufacturers'/Suppliers' representatives, for review by the Authority, of the installation and inspection of all valves performed, including:
 - i. Description of calibration and adjustments, if made.
 - ii. Description of any parts replaced and reason for replacement.
 - iii. Type, brand name, and quantity of lubrication used, if any.
 - iv. General condition of equipment.
 - v. Description of problems encountered and corrective action taken.

3.02 MAINTENANCE

- A. Maintain the specified equipment in accordance with original equipment manufacturer (OEM) requirements commencing from the time each system, or portion thereof, is successfully tested and placed into operation until Substantial Completion. Submit Maintenance Service Reports that include the date, time and description of the service(s) performed prior to Substantial Completion. The reports shall detail the as-found condition, work performed, and as-left condition, along with any additional recommendations. Each Maintenance Service Report shall be submitted within 15 working days of the date of service.

3.03 CLEANING

A. Salvage of Materials:

1. Existing materials removed, and not reused, as part of the Work shall become Contractor's property, unless otherwise specified.
2. Do not reuse existing materials and equipment in Work except where so specified or indicated.

**** END OF SECTION ****