

**SECTION 10 56 13 - HIGH BAY SHELVING**

\* ALL FIELDS IN [ ] MUST BE EDITED.

**PART 1 - GENERAL**

1.1. RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Related Specifications Sections, apply to this Section.

1.2. SUMMARY

- A. This section includes the following:
  - 1. High bay shelving units, fabrication and installation including leveling.
- B. Related Work, Not Furnished:
  - 1. Structural floor system capable of supporting loads required by prevailing building codes, including loads of storage units to be installed.
  - 2. Manufacturer will recommend anchors according to their own design, it is the client's responsibility to ensure the floor and site conditions can accommodate the suggested anchors
  - 3. Due to shelving heights, verifications must be made according to floor levelness. Provide floor slab FF and FL data to manufacturer to be advised.
  - 4. Fire suppression system is by others
- C. Related Sections:
- D. Allowances:
- E. Alternates

1.3. PERFORMANCE REQUIREMENTS

- A. Due to the user's preference and requirements for safety, performance, and flexibility, all following specification line items are mandatory.
- B. Design Requirements: All shelving elevations as [per attached drawings] or [described in the specifications].
- C. Color Samples: Provide sample for each exposed product and for each color required.
- D. Selection Samples: For selection of colors, submit manufacturer's color charts consisting of actual product samples, showing full range of colors available. Vendors must provide a minimum of 6 color selections in powder coat paint finish.
- E. Installer Qualifications: Engage an experienced installer who is the manufacturer's authorized and certified representative.
  - 1. Manufacturer Certification: Required by manufacturer on manufacturer's letterhead required at time of bid. Certifications by sales representatives, dealers, or distributors are unacceptable. Qualification must include resume of certified installation supervisor.
  - 2. Provide support within 24 hours for service call.

## DIVISION 10 - SPECIALTIES

- F. Warranty: Submit a written warranty, executed by the contractor, installer and manufacturer, agreeing to repair or replace units that fail in materials or workmanship within the specified warranty period. This warranty shall be in addition to, no limitations of other rights the owner may have against the contractor under contract documents.

Lifetime Limited Warranty: The entire shelving installation will be warranted against defects in materials for the life of the installation from the date of acceptance by the Owner.

- G. LEED Data: Provide complete environmental data including recycled material content, VOC data, and other product related information. Describe all manufacturing processes or policies that contribute to environmental sustainability
- H. Project Schedule: Provide a project achievement plan detailing all critical elements necessary to plan, manufacture, ship, and install shelving product. Include critical project milestones and risk mitigation plan.
- I. Manufacturer Qualifications:
  - 1. ISO 9001:2008: Engage an experienced manufacturer who is ISO 9001:2008 certified for the design, production, installation and service of powered mobile systems. Submit manufacturer's ISO 9001:2008 quality system registration certificate.
  - 2. ISO 14001:2004: Engage an experienced manufacturer who is ISO 14001:2004 certified. This international standard defines a process for monitoring and improving an organization's environmental performance. This process minimizes adverse impacts on the environment caused by the activities of the enterprise and helps to continually improve the environmental performance of the organization. Submit manufacturer's ISO 14001:2004 registration certificate, certifying the environmental performance of manufacturer.

### 1.4. SUBMITTALS

- A. Product Data: Submit manufacturer's product literature, schematics, testing data, and other items as described in this specification. Include data substantiating that products to be furnished comply completely with requirements of the contract documents and specifications. Include installed weight, load criteria, furnished specialties, and accessories.
- B. Shop Drawings: Prepared and detailing fabrication, assembly, and installation of storage shelving, as well as procedures and diagrams. Include details of layout and installation, as well as clearances, spacing, relation to adjacent construction in plan, elevation, and section, components, assemblies, connections, attachments, reinforcements, and anchorage. Furnish floor layouts, technical, and installation manuals for every unit shipment.

### 1.5. QUALITY ASSURANCE (Submittals due from all bidding contractors at time of bid, failure to do so shall be cause for disqualification.)

- A. Manufacturer Certifications: Provide written certification by manufacturer on manufacturer's letterhead at time of bid required stating compliance with all specifications of shelving systems. Shelving certifications must confirm compliance with all shelf sizes and gauges as noted in these specifications.

### 1.6. PROJECT CONDITIONS

- A. Field Measurements: Verify shelving unit location by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating shelving units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

## DIVISION 10 - SPECIALTIES

- B. Delivery, Storage, & Handling: Comply with instructions and recommendations of manufacturer for special delivery, storage and handling requirements.
- C. Sequence & Scheduling: Sequence storage shelving system installation with other work to minimize possibility of damage and soiling during remainder of construction period.
- D. Pre-installation Conference: Conduct conference at project site. Review methods and procedures related to installation of fixed storage units including, but not limited to, the following:
  - 1. Inspect and discuss condition and levelness of flooring and other preparatory work performed under other contracts.
  - 2. In addition to the Contractor and the installer, arrange for the attendance of the following :
    - a. Other installers affected by the work of this section.
    - b. The Owner's representative.
    - c. The [Architect] [Architect/Engineer] [Engineer/Architect] [Engineer] [Designer].
    - d. Manufacturer's representative.

### PART 2 - PRODUCTS

#### 2.1. MANUFACTURERS

- A. General: Products are based on fixed shelving units products manufactured by Montel Inc. Contingent on meeting all specification requirements, other acceptable manufacturers may be included.

#### 2.2. MANUFACTURED COMPONENTS – HIGH BAY SHELVING

- A. 2in (51mm) Upright frame: The 2in (51mm) upright frame is made of 2 posts, cross-members, braces and a foot-plate welded together.
  - 1. Posts: Each post shall be an assembly of 2 C-shaped channels made of 16 gauge cold roll steel (1.52mm) with open faces welded together to create a 2in (50.8mm) x 2.637in (67mm) enclosed post. The post shall be slotted at every 1in (25.4mm) on lateral faces. The side perforations are 0.195in (4.7mm) wide x 5/8in (16mm) long, and shall be designed to accommodate full shelves or any kind of cantilever or four-post accessory.
  - 2. Cross members: Cross members shall be the horizontal link between two posts. A cross member shall be 1 3/8 in (35mm) thick by 3 1/2 in (89mm) high U-shaped channel made of 16 gauge (1.52mm) steel.
  - 3. Brace: A brace shall be a 1 in (25.4mm) by 1 1/8 in (28.6mm) U shaped channel made of 16-gauge (1.52mm) steel. Braces are placed in diagonal, between two cross members to reinforce the upright frame. Each brace shall be placed in alternating directions.
  - 4. Footplate: The footplate shall be formed of a 3/16 in (4.7mm) thick steel base plate, welded to a 3/16 in (4.7mm) thick U-channel that is inserted into the post, then factory welded.
- B. 3in (76mm) Upright frame: The 3in (76mm) upright frame is made of 2 posts, cross-members, braces and a footplate welded together.
  - 1. Posts: Each post shall be a 3 in (73mm) x 3 in (76mm) enclosed post made of 14 gauge cold roll steel (1.90mm). The post shall be slotted at every 1 in (25.4mm) on lateral faces. The side perforations are 0.195 in (4.7mm) wide x 5/8 in (16mm) long, and shall be

designed to accommodate full shelves or any kind of cantilever or four-post accessory.

2. Cross members: Cross members shall be the horizontal link between two posts. Cross members shall minimally be located at top and bottom of the frame, and there may be additional units depending of the frame's height. A cross member shall be 1 7/16 in (36.5mm) thick by 3 in (76mm) high U-shaped channel made of 14 gauge (1.90mm) steel.
  3. Brace: A brace shall be a 1 7/16 in (36.5mm) thick by 2 in (50.8mm) high U-shaped channel made of 14-gauge (1.90mm) steel. Braces are placed in diagonal, between two cross members to reinforce the upright frame. Each brace shall be placed in alternating directions.
  4. Footplate: The footplate shall be formed of a 3/16 in (4.7mm) thick steel base plate, welded to a 3/16 in (4.7mm) thick U-channel that is inserted into the post, then factory welded.
- C. Sway brace: 1 1/8 in (28.5mm) wide sway braces are made of two 16-gauge (1.52mm) steel bars, assembled with a rivet. Sway braces are connected to the posts by means of mechanical rivet or dowel pins. They shall be placed at every unit.
- D. Anchorage: [Size and type TBD according to site conditions] anchors shall be provided to fix the units to the floor.
- E. [(Optional) Front panel: Decorative front panels made of 20-gauge (0.91mm) shall be provided with shelving units. The panels are hung to the upright frames.]
- F. Full shelf kit: The full shelf kit shall be made of 1 plain shelf supported by 2 lateral shelf supports. 1 or 2 reinforcement tubing pieces can be added under the shelf to reach higher loading requirements. The full shelf height can be adjusted at every 1 in (25.4mm) increment, and does not require any tools. Optional accessories can be added to the assembly: backstop for full shelf.
1. Full shelf: All shelves shall be 1 in (25.4mm) thick and constructed of 18-gauge (1.21mm) steel with edges having four bends. To be used with shelf supports.
  2. Shelf support: Shall be one-piece L-shaped bracket made of 16-gauge (1.52mm) or 14-gauge (1.90mm) steel, according to the load required. The supports are 3 1/2 in (89mm) high x 1 3/4 in (44.5mm) wide and are hooked in the side post perforations. The base lip has guides to keep the reinforcements in place, if applicable. At least one of the bracket hooks shall feature an anti-drop or safety lug device.
  3. Reinforcement: In order to reach higher load requirements, separate reinforcements can be added under the shelf. It rests on shelf supports and it shall consist in a 1 in (25mm) x 1 in (25mm) x 1/8 in (3mm) thick piece of tubing. [(Optional) Reinforcement can be welded upon request]
  4. [(Optional) Backstop for shelf: Shall be a J-shaped one-piece steel plate located at the back of the full shelf to prevent stored material from being pushed too far or falling. The backstop is made of 18-gauge (1.21mm) steel and extends 2.425 in (61.5mm) above the shelf surface. It is designed to be safely clipped into the shelf support.]

### 2.3. FINISH SPECIFICATIONS

- A. Shall be the finest of their respective kinds and those best adapted to the construction for which they are employed to meet ISO 9001:2008 quality standards. All steel shall be superior quality mild free from scale and buckle. All gauges are U.S. standard. The design of all parts shall be such that the completed installation shall present a neat and finished appearance and shall be free from exposed sharp edges or projections. All other special materials shall be as hereinafter specified.
- B. All components shall be painted with an electrostatically applied powder coat finish. All steel parts

shall be machined smooth and thoroughly cleaned by a process of spraying with a phosphatizing solution to insure removal of oil, grease or other foreign material which in any way would interfere with the adhesion of the priming coat. Following the cleaning process, all parts shall be coated and confirming every part is thoroughly and completely covered with fine powder coat, and baked to the paint manufacturer's recommendation. The finish for powder coat shall be medium gloss, giving a reading of 35 to 65 degrees on a standard gloss meter and must be capable of withstanding severe hammer and bending tests without flaking. The finish for epoxy-polyester hybrid powder coat shall be a minimum 1.2 mil thickness capable of resisting methyl ethyl ketone, salt spray, abrasion and printing, and all normal usage resistant requirements of a good finish. In addition, powder coat shall not be off gassing to prevent deterioration of collection and other stored materials.

### **PART 3 - EXECUTION**

#### **3.1. EXAMINATION**

- A. Examine subfloor surfaces, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fixed storage units.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of fixed storage units.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2. INSTALLATION**

- A. Maximum variation from plumb: erect four-post metal storage shelving to a maximum tolerance from vertical of 1/2 inch in up to 20 feet of height.
- B. Install components and accessories after finishing operations, including painting, have been completed. Install shelving units to comply with final layout drawings, in strict compliance with manufacturer's printed instructions and structural calculations. Position unit's level and plumb at proper location relative to adjoining units and related work
- C. Field Quality Control: Remove and replace components that are chipped, scratched, or otherwise damaged and which do not match adjoining work. Provide new matching units, installed as specified and in manner to eliminate evidence of replacement.
- D. Adjust: Adjust components and accessories to provide smoothly operating, visually acceptable installation.
- E. Cleaning: Immediately upon completion of installation, clear components and surfaces. Remove surplus materials, rubbish and debris resulting from installation upon completion of work and leave areas of installation in neat, clean condition.
- F. Protection: Protect system against damage during remainder of construction period. Advise Owner of additional protection required to ensure shelving units will be without damage or deterioration at time of substantial completion.

#### **3.3. DEMONSTRATION/CUSTOMER TRAINING**

- A. Provide complete training to end-user's staff. Training shall include general safety and operation instructions, and basic preventative maintenance procedures.

**END OF SECTION**