

**SECTION 105613 (10675) – METAL STORAGE SHELVING (Four-Post)**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawing and general provisions of the contract, including general and supplementary conditions and related specification sections, apply to this section.

**1.2 SUMMARY**

- A. This section includes the following:  
Four-Post Wide-Span Metal Shelving

**1.3 REFERENCES**

- A. American National Standards Institute (ANSI) Standards
- B. American Society for Testing and Materials (ASTM) Standards

**1.4 DESCRIPTION**

- A. General: Four-Post Wide Span Metal Shelving
- B. Finishes:  
Metal Components and Accessories: All shelving components including accessories shall be finished with an electrostatically applied Gloss-Tek™ powder coat as outlined in Section 2.5 A and B.
- C. Sizes: Per manufacturer's standard offering as outlined in Section 1.5.

**1.5 PERFORMANCE REQUIREMENTS**

- A. Design Requirements:
  - 1. A minimum of \_\_\_\_\_ linear storage inches must be provided. Consult drawing for plan view and elevation details.
  - 2. Available in standard heights of 40-1/4 inches (1022 mm), 64-1/4 inches (1632 mm), 76-1/4 inches (1937 mm), 85-1/4 inches (2165 mm), 88-1/4 inches (2242 mm), 97-1/4 inches (2474 mm), 100-1/4 inches (2546 mm), and 121-1/4 inches (3080 mm). Other heights shall be available variable on 1-1/2 inch (38 mm) increments as required to meet application needs.
  - 3. Available in nominal widths of 54 inches, 60 inches, 66 inches, 72 inches, 78 inches, 84 inches, 90 inches and 96 inches
  - 4. Available in nominal depths of 15 inches (381 mm), 18 inches (457 mm), 24 inches (610 mm), 26 inches (660 mm), 30 inches (762 mm), 32 inches (813 mm), and 36 inches (914 mm).
- B. Seismic Performance: Provide four-post metal shelving capable of withstanding the effects of earthquake motion as required by applicable building codes.

**1.6 SUBMITTALS**

## DIVISION 10 - SPECIALTIES

- A. **Product Data:** Submit manufacturer's product literature and installation instructions.
- B. **Drawings:** Provide layout of shelving including notations and descriptions. Provide dimensional drawings of all shelving quoted.
- C. **Initial Selection Samples:** For initial selection of colors and textures, submit manufacturer's color chart(s) showing full range of colors and textures available.
- D. **Samples:** Provide minimum 3 inch (76 mm) square sample of each color and texture selected.
- E. **Warranty:** Submit a copy of manufacturer's warranty.
- F. **Maintenance Data:** Provide manufacturer's instructions for care and cleaning of the finish. Provide manufacturer's instructions for shelf relocation and/or spacing adjustments.
- G. **Reference List:** Provide list of recently installed similar type of shelving projects.

### 1.7 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Engage an experienced manufacturer who has been manufacturing this type of shelving continuously at the same location for a period of not less than 50 years.
- B. **Manufacturing Qualifications:** Engage an experienced manufacturer whose internal processes meet or exceed ISO 9001 requirements.
- C. **Installer Qualifications:** Engage an experienced installer who is authorized by the manufacturer to install four-post shelving and who has done so for a minimum of one year.

### 1.8 DELIVERY, STORAGE AND HANDLING

- A. Follow manufacturer's instructions and recommendations for delivery, storage and handling requirements.

### 1.9 PROJECT CONDITIONS

- A. **Field Measurements:** Verify quantities of four-post shelving units before fabrication. Indicate verified measurements on shop drawings. Coordinate fabrication and delivery to ensure no delay in progress of the work.
- B. **Established Dimensions:** Where field measurements cannot be made without delaying the work, establish dimensions and proceed with fabricating four-post shelving units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

### 1.10 SEQUENCING AND SCHEDULING

- A. Sequence four-post shelving units with adjoining work to minimize possibility of damage and soiling during remainder of construction period.
- B. Schedule installation of specified four-post shelving after finishing operations; including painting have been completed.

DIVISION 10 - SPECIALTIES

- C. **Delivery, Storage, and Handling:** Comply with all instructions and recommendations made by manufacturer or manufacturer's representative for delivery, storage, and handling requirements.
- D. **Pre-installation Conference:** Schedule and conduct conference on project site to review methods, procedures, and logistic details for installing four-post shelving units.

Recommend attendees:

1. Owner's Representative
2. Prime Contractor or representative
3. Architect, Engineer, or person responsible for the layout design
4. Manufacturer's representative
5. Subcontractors or installers whose work may affect, or be affected by the installation of this shelving

1.11 WARRANTY

- A. Provide a written warranty, executed by Contractor, Installer, and Manufacturer, agreeing to repair or replace units, which fail in materials or workmanship within the established warranty period. This warranty shall be in addition to, and not a limitation of, other rights the owner may have under general conditions provisions of the contract documents.
- B. **Limited Lifetime warranty:** Subject to the terms in the written warranty, warrant the original purchaser exclusively that the shelving manufactured by it will be free from defects in materials and workmanship for the lifetime of the four-post shelving.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. **General:** Products are based upon Quik-Lok™ four-post shelving manufactured by Aurora Storage Products, Inc.

2.2 BASIC MATERIALS

- A. General: Provide materials and quality of workmanship, which meet or exceed established industry standards for products specified. Material thickness/gauges are manufacturer's option unless indicated otherwise.

2.3 MANUFACTURED COMPONENTS

A. Design:

- 1. Four post type consisting of closed uprights, wide-span shelving deck segments in 12 inch (305 mm) or 18 inch (457 mm) widths to make up overall width span, 3 inch (76.2 mm) beam and stabilizer packages and lower beam package designed to be assembled without fasteners or clips. Shelving deck segments can be positioned on stabilizer beams with no tools, or can be bolted together at the bottom flanges to make one entire shelf deck. Shelf deck and upright posts shall have no holes on any exposed surface faces. Shelf deck fronts and backs shall be flush with the top of the beam. Design shall permit shelf deck adjustment or removal anywhere along the entire height of the shelving unit when beams and stabilizers are also adjusted.

B. Materials and Workmanship:

- 1. Fabricate units from ASTM Class 1, cold-rolled commercial grade sheet or coil steel with all bends and radiuses consistent and true. There shall be no sharp edges and shelving shall exhibit no irregular seams, oil-canning, dents or distortion in any manner.

C. Closed Uprights:

- 1. Formed from steel sheet to tubular "T" (tee) shape posts for intermediate supports and tubular "L" (angle) shape posts for end supports. Posts shall have keyhole slots on inner wall only and shall have either a full size sheet steel panel forming an upright. Upright quantities, sizes, and types are to be determined by plan view and elevations.

2. Closed Uprights:

- a. Single unit (starter) and/or row end uprights on a range of shelving shall consist of two 1 inch (25 mm) wide 18 gauge cold rolled steel posts roll-formed into a tubular "L" formation. Keyhole slots shall be punched on the inner wall only located on 1-1/2 inch (38 mm) centers. There shall be no holes in the outside face surface of the posts. The front and back posts shall be joined by welding a full height 24 gauge closure sheet to provide the required upright depth and structural rigidity. Closed "L" (angle) uprights to be manufactured to heights specified.
- b. Intermediate (adder) uprights located between and linking shelf sections within a range of shelving shall consist of two 2 inch (51 mm) wide 18 gauge cold rolled steel posts roll-formed into a tubular "T" formation. "T" uprights shall be used as a common upright between units. Keyhole slots shall be punched on the inner wall only located on 1-1/2 inch (38 mm) centers. There shall be no holes in the outside face surface of the posts. The front and back posts shall be joined by welding a full height 24 gauge closure sheet to

provide the required upright depth and structural rigidity. Closed "T" (tee) uprights to be manufactured to heights specified.

**D. Shelf Deck**

1. Shelf deck shall be manufactured in 12 inch (305 mm) or 18 inch (457 mm) segments formed from 18 gauge cold rolled sheet steel with 3/4 inch (19 mm) flanges front and back and 5/8 inch (16 mm) side flanges.. Entire shelf deck width shall be independently adjustable on 1-1/2 inch (38 mm) centers

**E. Beam and Stabilizer Package**

Formed from heavy gauge sheet steel, beam packages in 54 inches (1371.6 mm), 60 inches (1524 mm) , 66 inches (1676.mm), 72 inches (1829 mm), 78 inches (1981 mm), 84 inches (2133.6 mm) 90 inches (2286 mm) and 96 inches (2438.mm) shall be formed of 16 gauge cold rolled steel to a height of 3 inches (76.2 mm) and width of 1.25 inches (31.75 mm) with return flanges to form a structural channel. A separate flange is spot welded onto the end of each, and each flange consists of 3 rivets for intermediate beam packages and 2 rivets for lower beam packages. Rivets shall be 7/16 inch (11 mm) diameter at the head, solid steel, and spaced to interlock into keyhole slots on the inner wall of upright post.

Stabilizers run front to back and shall be formed of 16 gauge cold rolled steel in depths of 15 inches (381 mm), 18 inches (457 mm), 24 inches (610 mm), 26 inches (660 mm), 30 inches (762 mm), 32 inches (813 mm), and 36 inches (914 mm) in a height of 2-1/4 inches (57.15 mm) and bottom width of 1-1/4 inches (31.75 mm). Stabilizers shall be notched front and back, and top and bottom to rest internally in the beams.

**F. Nominal Shelf Deck Dimensions:**

1. Overall Width: As indicated on the drawing(s) decking segments are 12 inches (305 mm) or 18 inches (457 mm). to create overall widths of 54 inches (1371.6 mm), 60 inches (1524 mm) , 66 inches (1676.mm), 72 inches (1829 mm), 78 inches (1981 mm), 84 inches (2133.6 mm) 90 inches (2286 mm) and 96 inches (2438.mm) as required to best meet available room area and media dimensions.
2. Depth: As indicated on the drawing(s). 15 inches (381 mm), 18 inches (457 mm), 24 inches (610 mm), 26 inches (660 mm), 30 inches (762 mm), 32 inches (813 mm), and 36 inches (914 mm).
3. Shelf Edge Vertical Profile: 3/4 inch (19 mm) maximum.
4. Vertical Adjustment increment: 1-1/2 inches (38 mm)
5. Width of Intermediate uprights: 2 inches (51 mm)
6. Clearance Between Uprights: Nominal beam section width minus 2 inches (51 mm)
7. Levelness of Completed Shelf Units: Maximum of 1/8 inch (3.2 mm) top to bottom, measured at any upright.

- 8. Number of Vertical Shelf Spaces: As indicated on the drawings.
  - 9. Vertical Shelf-To-Shelf Spacing: As indicated on the drawings.
- G. Load Carrying Capabilities:

There shall be two series of wide span available to be loaded manually and uniformly with steel decking widths capable of supporting 510 lbs to 1800 lbs in standard duty and 1100 lbs to 1800 lbs in heavy duty. Reference weight load charts below.

**Standard Duty**

	Depth of Unit						
Width	15"	18"	24"	26"	30"	32"	36"
54"	1275 LBS	1025 LBS	775 LBS	710 LBS	610 LBS	575 LBS	510 LBS
60"	1275 LBS	1025 LBS	775 LBS	710 LBS	610 LBS	575 LBS	510 LBS
66"	1275 LBS	1025 LBS	775 LBS	710 LBS	610 LBS	575 LBS	510 LBS
72"	1275 LBS	1025 LBS	775 LBS	710 LBS	610 LBS	575 LBS	510 LBS
78"	1600 LBS	1300 LBS	950 LBS	875 LBS	750 LBS	715 LBS	625 LBS
84"	1600 LBS	1300 LBS	950 LBS	875 LBS	750 LBS	715 LBS	625 LBS
90"	1600 LBS	1300 LBS	950 LBS	875 LBS	750 LBS	715 LBS	625 LBS
96"	1800 LBS	1500 LBS	1100 LBS	1100 LBS	925 LBS	850 LBS	775 LBS

**Heavy Duty**

	Depth of Unit				
Width	24"	26"	30"	32"	36"
54"	1800 LBS	1800 LBS	1800 LBS	1800 LBS	1600 LBS
60"	1600 LBS	1600 LBS	1600 LBS	1600 LBS	1600 LBS
66"	1600 LBS	1600 LBS	1600 LBS	1600 LBS	1600 LBS
72"	1400 LBS	1400 LBS	1400 LBS	1400 LBS	1400 LBS
78"	1400 LBS	1400 LBS	1400 LBS	1400 LBS	1400 LBS
84"	1200 LBS	1200 LBS	1200 LBS	1200 LBS	1200 LBS
90"	1200 LBS	1200 LBS	1200 LBS	1200 LBS	1200 LBS
96"	1100 LBS	1100 LBS	1100 LBS	1100 LBS	1100 LBS

- H. Accessories: (optional)
- 1. Provide manufacturer's standard. Location and quantity as indicated on the drawings.

## DIVISION 10 - SPECIALTIES

- a. Aisle Ties
- b. Wall Ties
- c. Floor Anchors
- d. Touch-Up Paint

### 2.4 FABRICATION

- A. General: Coordinate all parties to ensure timely execution of this project and to related work.

### 2.5 FINISHES

- A. Colors:
  - 1. To be selected from manufacturer's standard available colors. A minimum of 29 standard manufacturer's colors shall be offered at no additional charge and a minimum of 3 standard metallic colors shall be provided at an additional charge not to exceed 15%. Available custom color matching is optional. All components shall be finished with an electrostatically applied powder coat.
- B. Powder Coat Finish:
  - 1. Provide electrostatically applied Gloss-Tek™ powder coat. Finish shall consist of a non-glare raised surface that provides fingerprint resistance. Finish shall be a non-VOC emitting hybrid powder coat which meets or exceeds ASTM test criteria for adhesion, flexibility, hardness, and humidity resistance.
  - 2. (optional) An antimicrobial powder coat finish which shall hinder the growth of gram positive and gram negative bacteria. This shall also include molds and yeasts. The antimicrobial properties shall be present and fully active for the life of the finish. All other Gloss-Tek™ powder coat characteristics shall apply.
  - 3. An ESD powder coat finish which shall dissipate an electrostatic charge. The electrostatic dissipation properties shall be present and fully active for the life of the finish. Availability shall be limited to black or granite colors. All other Gloss-Tek™ powder coat characteristics shall apply.

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. For stationary shelving installations, with installer present, examine floor surfaces where shelving will be located for compliance with manufacturer's requirements for fixed shelving.
- B. For mobile shelving installations, with installer present, examine mobile carriages for proper sizing, proper placements of support members for the shelving, and to ensure that mounting surface is square and level.

DIVISION 10 - SPECIALTIES

- C. For all installations it shall be the installer's responsibility to know and to execute all phases of the installation in compliance with local building codes.

3.2 INSTALLATION

- A. General: Follow manufacturer's documented instructions and procedures.

3.3 FIELD QUALITY CONTROL

- A. Verify all uprights, shelves, components and accessories are plumb and level. Correct if necessary.
- B. Replace components that are scratched, dented, or damaged in any manner with new items from the manufacturer. Surface scratches may be touched up but repair must be complete and undistinguishable.

3.4 ADJUSTING

- A. Adjust all components and accessories to provide smooth operation and proper alignment.

3.5 CLEANING

- A. Upon completion of installation, clean all components and surfaces. Remove all packaging material, rubbish and debris resulting from installation immediately upon completion of work and leave area(s) of installation in neat, clean condition.

3.6 DEMONSTRATION/TRAINING

- A. Schedule and conduct demonstration of case-type shelf adjustment by manufacturer or dealer authorized representative. Review features and proper operation of accessory items with owner's personnel.
- B. Schedule and conduct maintenance training with owner's maintenance personnel. Training session should include demonstration of four-post shelf adjustment and proper surface cleaning and preservation procedures that end user personnel would normally perform.

3.7 PROTECTION

- A. Protect system against damage during remainder of construction period. Advise owner of additional protection needed to ensure that system will be without damage for remainder of work within the area.

END OF SECTION