

## SECTION 10 56 13 - METAL STORAGE SHELVING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Post-and-beam metal storage shelving.

#### 1.2 COORDINATION

- A. Coordinate sizes and locations of blocking and backing required for installation of metal storage shelving attached to wall and ceiling assemblies.
- B. Coordinate locations and installation of metal storage shelving that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, construction details, material descriptions, dimensions of individual components and profiles, and finishes for metal storage shelving.
- B. Shop Drawings: For customized metal storage shelving. Include plans, elevations, sections, details, and attachments to other work. Include installation details of connectors, lateral bracing, and special bracing.
- C. Samples for Initial Selection: For units with factory-applied color finishes. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For the following components, of size indicated below:
  1. Vertical End Panels: 12 inches (305 mm) tall.
  2. Shelves: Full size, but not more than 24 inches wide by 12 inches deep (610 mm wide by 305 mm deep).
  3. Connectors for Shelf to End Panel: Full size.
  4. Shelf-Label Holders: Full size.
- E. Product Schedule: For metal storage shelving. Shelving units will be located on drawing A04-01C.

- F. Delegated-Design Submittal: For metal storage shelving indicated to comply with performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Design Calculations: Calculate requirements for seismic restraints.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified professional engineer.
- B. Product Certificates: For each type of metal storage shelving from manufacturer.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal storage shelving to include in maintenance manuals.

#### 1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Shelves: Full-size units equal to 10 percent of amount installed for each type indicated, but no fewer than 20 shelves.
  - 2. Shelf-to-Post Connectors: Full-size units equal to 10 percent of amount installed for each type indicated, but no fewer than 10 connectors.
  - 3. Shelf-Label Holders: Full-size units equal to 10 percent of amount installed for each type indicated, but no fewer than 10 holders.

#### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain metal storage shelving from single source from single manufacturer.

#### 1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install metal storage shelving until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal storage shelving, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance for Case-Type Metal Storage Shelving: Capable of withstanding the loads indicated according to MH 28.1.

### 2.2 MATERIALS

- A. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with G60 (Z180) zinc (galvanized) or A60 (ZF180) zinc-iron-alloy (galvannealed) coating.
- B. Hardboard: ANSI A135.4.
- C. Floor Anchors: Galvanized-steel, post-installed expansion anchors. Provide number per unit recommended by manufacturer unless additional anchors are indicated in calculations.
- D. Wall Anchors: Manufacturer's standard, galvanized-steel anchors designed to secure metal storage shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall unless additional anchors are indicated in calculations.

### 2.3 CASE-TYPE METAL STORAGE SHELVING

- A. General: Factory-formed, field-assembled, freestanding, case-type metal storage shelving system, designed for shelves to span between and be supported by sheet metal end panels (without posts), with shelves adjustable over the height of shelving unit. Fabricate shelf units with end panel at each end so each unit is independent. Provide fixed top and bottom shelves, adjustable intermediate shelves, and accessories indicated.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Borroughs Corporation or comparable product by one of the following:
    - a. Adjustable Shelving Products; a division of Karp Associates, Inc.
    - b. Equipto.
    - c. Lyon Workspace Products, LLC.
    - d. Tenssco.
- B. Load-Carrying Capacity per Shelf: 200 lb (91 kg).
- C. End Panels: Fabricated from cold-rolled steel sheet, with concealed perforations at front and back edges at 1 inch (25 mm) o.c. for receiving adjustable shelf clips.

1. Steel-Sheet Thickness, Nominal: As required for load-carrying capacity per shelf and number of shelves.
  2. Adjustable Shelf Clips: Fabricated from 0.036-inch- (0.91-mm-) nominal thickness, cold-rolled steel; with projections designed to engage at least two perforations in end panels.
- D. Back Panel: One piece, fabricated from cold-rolled steel sheet.
1. Steel-Sheet Thickness, Nominal: As required for load-carrying capacity per shelf.
- E. Shelves: Fabricated from cold-rolled steel sheet, with slots or holes at 2 inches (51 mm) o.c. for shelf dividers. Fabricate shelves with vertical front that is flanged and returned.
1. Steel-Sheet Thickness, Nominal: As required for load-carrying capacity per shelf and number of shelves.
- F. Shelf Quantity: Six shelves per shelving unit in addition to top and bottom shelf.
- G. Base: Closed front, with base strips fabricated from same material and with same finish as end panels.
- H. Overall Unit Width: 36 inches (914 mm).
- I. Overall Unit Depth: 12 inches (305 mm).
- J. Overall Unit Height: 72 inches (1829 mm).
- K. Accessories:
1. Finished End Panels: Fabricated as solid full-height panels from same material and with same finish as end panels, with trim for a finished appearance along edges abutting end panels and top shelf.
  2. Shelf Dividers: Fabricated from same material and with same finish as shelves; full-height type.
  3. Bins: Fabricated from same material and with same finish as shelves; size to match shelf length and width.
  4. Shelf-Label Holders: Clear plastic, designed to clip onto front edge of shelf.
- L. Finish: Baked enamel.
1. Color and Gloss: As selected by Architect from manufacturer's full range.

## 2.4 FABRICATION

- A. Shop Fabrication: Prefabricate shelving components in shop to greatest extent possible to minimize field fabrication; temporarily preassemble shelving components where necessary to ensure that field-assembled components fit together properly. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Fabricate metal storage shelving square and rigid, with posts plumb and true and shelves flat and free of dents or distortion. Fabricate connections to form a rigid structure, free of buckling and warping.
  - 1. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
  - 2. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
  - 3. Build in straps, plates, brackets, and other reinforcements as needed to support shelf loading.
  - 4. Cut, reinforce, drill, and tap metal fabrications to receive hardware, fasteners, and similar items.
- C. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work. Form backs of shelving units up to 48 inches (1219 mm) wide from one piece.
- D. Form edges and corners free of sharp edges or rough areas. Fold back and crimp exposed edges of unsupported sheet metal to form a 1/2-inch- (13-mm-) wide hem on the concealed side; ease edges of metal plate to radius of approximately 1/32 inch (0.8 mm). Shear and punch metals cleanly and accurately. Remove burrs.
- E. Weld corners and seams continuously to develop strength, minimize distortion, and maintain the corrosion resistance of base metals. At exposed locations, finish welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces before finishing.

## 2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.6 METALLIC-COATED STEEL-SHEET FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint, complying with SSPC-Paint 20, to comply with ASTM A 780.
- B. Baked-Enamel: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry thickness.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine floors for suitable conditions where metal storage shelving will be installed.
- C. Examine walls and ceilings to which metal storage shelving will be attached for properly located blocking, grounds, or other solid backing for attachment of support fasteners.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Vacuum finished floor and wet mop flooring over which metal storage shelving is to be installed.

### 3.3 INSTALLATION

- A. Install metal storage shelving level, plumb, square, rigid, true, and with shelves flat and free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
  - 1. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  - 2. Install braces, straps, plates, brackets, and other reinforcements as needed to support shelf loading and as required for stability.
  - 3. Anchor shelving units to floor with floor anchors through floor plate. Shim floor plate to achieve level and plumb installation.

4. Connect side-to-side and back-to-back shelving units together.
5. Install shelves in each shelving unit at spacing indicated on Drawings or, if not indicated, at equal spacing.
  - a. Case-Type Metal Storage Shelving: Install adjustable shelf clips at front and back of each shelf.

B. Accessories:

1. Install finished end panels and trim at exposed ends of shelving units.
2. Shelf Dividers: Install 2 sliding dividers per shelf.
3. Bins: Install 2 per shelf.
4. Shelf-Label Holders: Install one on each shelf, centered within each shelving unit.
5. Record Box Support Rails: Provide two for each record storage box.
6. Shelf Inlays: Install one per shelf.
7. Storage Baskets: Install 2 per shelf.
8. Back Ledges: Install one per shelf.
9. Side Ledges: Install on each side of each shelf.

3.4 ERECTION TOLERANCES

- A. Erect case-type metal storage shelving to a maximum tolerance from vertical of 1/2 inch (13 mm) in up to 10 feet (3 m) of height, not exceeding 1 inch (25 mm) for heights taller than 10 feet (3 m).

3.5 ADJUSTING

- A. Adjust metal storage shelving so that connectors and other components engage accurately and securely.
- B. Adjust and lubricate operable components to operate smoothly and easily, without binding or warping. Check and readjust operating hardware.
- C. Touch up marred finishes or replace metal storage shelving that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal storage shelving manufacturer.
- D. Replace metal storage shelving that has been damaged or has deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

Maine Medical Center  
Bean 2 Roof Addition  
For Construction  
**Issued for Permit**

PERKINS+WILL  
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END OF SECTION