

# DIVISION ELEVEN – EQUIPMENT

## DETENTION MODULAR STEEL CELLS      SECTION 11198

### PART 1 – GENERAL

#### 1.1 SCOPE

This specification covers the requirements, including labor, materials, services, and equipment for the manufacturing, delivering and installing of pre-engineered, prefabricated Steel Detention Cells.

#### 1.2 RELATED DOCUMENTS

Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 specification sections, apply to work of this section.

#### 1.3 REFERENCES

The publications listed in this section form a part of this specification to the extent referenced. The publications are referenced herein by basic designation only.

ASTM A336M – Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality  
ASTM A569/A569M – Specification for Steel, Carbon (015 Maximum, Percent), Hot-rolled Sheet and Strip Commercial Quality  
ASTM A653/A653M – Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip process  
ASTM A666 – Specification for Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar  
ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Testing Apparatus  
ASTM D2794 – Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)  
ASTM D3359 – Test Methods for Measuring Adhesion by Tape Test  
ASTM D3363 – Test Methods for Film Hardness by Pencil Test  
ASTM F1450 – Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities  
ANSI/NAAMM HMMA 863 – Guide Specifications for Detention Security Hollow Metal Doors and Frames  
ANSI/AWS D1.1 – Structural Welding Code – Steel  
ANSI/AWS D1.3 – Structural Welding Code – Sheet Steel  
AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings  
AISC Load and Resistance Factor Design Specification for Structural Steel Buildings  
AISI ASDLRFD Design Specification for Cold-Formed Steel Structural Members  
SSPC-SP1 – Solvent Cleaning  
SSPC-SP6 – Commercial Blast Cleaning  
SSPC-SP7 – Brush-off Blast Cleaning  
IBC Label approved – (Industrialized Building Commission) – inspected and applied to individual cells as required

#### 1.4 SUMMARY

The Steel Detention Cell Manufacturer (DCM) shall provide the following as applicable and indicated on the Architectural plans.

1. Security Doors and Frames
2. Chase Doors and Frames
3. All Door Hardware and Locks
4. Windows
5. Glass and glazing
6. Furnishings
7. Plumbing Equipment and Fixtures
8. Electrical, Lighting, and wiring terminated at chase
9. HVAC Duct and Grilles, with Attachment Neck
10. Mezzanines
11. Installation

## **1.5 APPROVED MANUFACTURERS**

1. Sweeper Metal Fabricators Corp., Drumright, OK 918-352-9180.
2. Any other manufacturers of Steel Detention Cells wishing to submit a sub-bid to the General Contractor shall evidence to the Architect, in writing, fourteen (14) days prior to the Bid Date, that their firm has 10 years prior experience in the design, manufacturing, equipping, delivery, installation, and contract bonding/financial capabilities of steel detention cells as shown on the applicable Drawings and Specifications. All approvals granted on this basis shall be by Addendum prior to the Bid Date.
3. Grounds for disqualifications shall exist if the above requested data is submitted inaccurately, or in the opinion of the Architect, does not satisfy the requirements set forth.

## **1.6 SUBMITTALS**

1. General: Submit the following according to conditions of Contract and Division.
2. Product data and instructions for manufactured materials and products. Include manufacturer's certifications and laboratory test reports as required.
3. Shop drawings prepared by or under supervision of a qualified licensed professional Engineer, showing complete information for fabrication and installation of Steel Detention Cell units. Indicate member dimensions and cross-section; location, size and type of reinforcement, including special reinforcement; and lifting devices necessary for handling and erection. Coordinate shop drawings with other trades to ensure compatibility of required service connections.
4. Provide catalog data with full performance criteria and dimensions for components purchased from outside sources.
5. Submit color samples for review and selection by the Owner. Submit samples of the cell finish, color and texture.
6. Submit samples of recommended bearing pads and/or special anchoring devices.
7. Provide shipping, lifting, and handling diagrams indicating point loads and net and gross loads.

## **PART 2 – PRODUCTS**

### **2.1 CONSTRUCTION**

Units shall be constructed of 3/16" steel plate walls, ceiling, and floor (if steel floor is applicable). Mechanical fastening of joints and seams is not allowed. In order to limit contraband and tampering, the maximum number of full height vertical seams inside of the cell, at a typical 80 square foot cell, shall not exceed 5 at a rear chase cell. One additional full height vertical seam is permitted at an 80 square foot typical front chase cell. This count includes seams at walls and corners. Each wall shall be constructed as a single panel, so that when welded together, the prefabricated assembly will have 2 vertical tubes at each corner. Each corner tube shall be 3" X 3" X 3/16". Wall, ceiling, and floor (if applicable) shall be reinforced with 2" X 2" X 1/8" structural angles at a maximum spacing of 2'-1" on center, except at areas that are cut away for a combo toilet unit. Additional channel stiffeners of a C3 X 4.1 shall be required at all cantilevered furniture locations. This channel shall be welded continuously at top and bottom on the outside of the wall and skip welded to meet testing requirements. The light fixture shall be built into the wall or ceiling construction so that there are not any parts that are removable from within the cell. The natural light opening (if applicable) shall be constructed so that there are not any exposed removable parts, or seams other than between the cell wall skin and glazing. All fabrication and assembly of sheet metal and structural components shall be performed by the approved manufacturer. Sub-contracting of cell framing, wall panels, furniture, detention light framing, windows, door frames and doors will not be allowed.

### **2.2 ENGINEERING AND DESIGN**

Professional certification shall be provided by the DCM for the design of the manufactured Steel Detention Cells to support superimposed dead loads and live loads as indicated on the contract drawings. The DCM shall certify the design for compliance with governing Code requirements; with the ability to stack four high (if required).

The design shall include integration of Steel Detention Cells into the physical floor plan sections, elevations and structural design of the facility and shall assure that all systems specified in the contract documents are interfaced completely with Steel Detention Cells for a fully installed, fully working facility.

### **2.3 WORKMANSHIP**

1. All units shall be tightly fitted and securely fastened with no through seams or cracks.
2. All panels and assemblies shall be inspected for correct dimensions, joint configuration, straightness, fairness, and squareness.
3. All exposed edges shall be chamfered or bent for finger contact.
4. Out-to-out length, width and height dimensions of individual cell units shall be to a tolerance of +/- 1/4 in. (6.4 mm). The cumulative tolerance in any direction shall not exceed the available horizontal or vertical dimension for the entire assembly of cell units.
5. Where cells are placed on a finished concrete slab, all floor joints shall be filled with high strength detention epoxy caulk.
6. Joints to be welded shall be cleaned and prepared as necessary to assure quality welds.
7. Welding shall be controlled and sequenced to reduce warpage and distortion.
8. All welds shall be free of deleterious porosity, pinholes and cracks.

9. Finished welds shall be smooth and weld spatter and flux shall be removed.
10. Applicable, up to date, welding certification shall be provided, if requested.

## **2.4 STRUCTURAL COMPONENTS**

1. Framing, floors, walls and ceilings, as required, shall be constructed of steel shapes, tubing, stiffened plates, cold-formed sections and/or sheets stiffened with formed sections from steels conforming to design requirements to provide adequate structural strength including the ability to support loading as specified.
2. Structural steel shall be designed to AISC – Specification for the Design, Fabrication and Erection of Structural Steel for Buildings or ASIC – Load and Resistance Factor Design Specification for Structural Steel Buildings. Cold-formed steel shall be designed to AISI – Specification for the Design of Cold-Formed Steel Structural Members.
3. Welding shall be in conformance with ANSE/WAS D1.1, Structural Welding Code-Steel and/or ANSE/AWA #1.3, Structural Welding Code – Sheet Steel, is applicable.
4. Bolts or nuts used in panel assembly shall not be accessible from the interior of the cell.
5. Tamper resistant fasteners shall be used for all exposed fasteners where required for accessories.
6. Mounting and bearing pads, anchorages, spacers and alignment devices, except those shown to be field installed, shall be furnished and attached.
7. Fire Resistance Rated Steel Units: Where units are shown or scheduled as requiring fire resistance classification, provide units of design or assemblies or construction materials.
8. Walls must satisfy the following performance requirements:

Wall load test: Test wall panels using test standard ASTM F 1450 Door Assembly Impact Test with the following modifications. Damage that enables forcible egress constitutes failure. Duplicate 8 ft. (2438 mm) high by min. 7 ft (2134 mm) wide cells wall panels supported four sides in each half of the wall frame illustrated in ASTM F1450 Figure 1. Deliver the following series of impacts:

- a. Test Wall-Solid half (center vertical joint where applicable): Deliver 400 blows 200 ft-lbf at mid-height on the vertical joint (where applicable), and 400 blows at 200 ft-lbf mid-height in the center of one panel.
- b. Test Wall-Half with Exterior Window: Deliver 400 blows at 200 ft-lbf center of window frame sill.
- c. Test Wall Corner Joint Test: Deliver 400 blows at 200 ft-lbf within 6 inches of the corner joint at a midpoint height.

## **2.5 DOORS, WINDOWS AND FRAMES**

1. All door, window and frame construction shall be in accordance with ANSE/NAAMM HMMA 863.
2. Materials:

- a. Interior security and cell doors: Face sheets shall be 0.093 in. (2.3 mm) minimum thickness conforming to ASTM (A569/A569M) steel.  
For interior areas subject to corrosive conditions, specify ASTM A653/a653W (A60, G60/Z180, ZF180).
- b. Exterior doors: Face sheets shall be 0.093 in. (2.3 mm) minimum thickness conforming to ASTM A653/A63M (A60, G60, Z80, ZF180) Steel.  
For both exterior and interior doors subjected to severely corrosive conditions and/or where specified on individual openings, specify ASTM A666, Type 304, stainless steel
- c. Door and window frames shall be 0.093 in. (2.3 mm) minimum thickness

## **2.6 ELECTRICAL**

1. Each Steel Detention Cell shall be designed, manufactured, and equipped to receive required electrical fixtures specified in other divisions of this specification.
2. The DCM shall provide, when specified in Part 5, electrical distribution conduit, wiring, fixtures, switches, receptacles, and other devices of this specification.
3. All electrical materials and equipment shall be new and conform to the applicable specification and national electrical standards.

## **2.7 PLUMBING**

1. Each Steel Detention Cell shall be designed, manufactured and equipped to receive required plumbing fixtures specified in other divisions of this specification.
2. The DCM shall provide, when specified in Part 5, plumbing piping, equipment, fixtures, devices and accessories as required.
3. All plumbing materials and equipment shall be new and conform to the applicable specification.

## **2.8 HVAC**

1. Each Steel Detention Cell shall be designed, manufactured, and equipped to receive required HVAC fixtures specified in other divisions of the specification.
2. The DCM shall provide, when specified in Part 5, HVAC ducts, grilles, diffusers, and accessories. The grille shall be an integral part of the wall.
3. All HVAC materials and equipment shall be new and conform to the applicable specification.

## **2.9 THERMAL AND ACOUSTICAL INSULATION**

1. Insulation Material: Materials shall be approved by the applicable codes of NFPA and governing authorities, and shall have a 3-hour fire rating.
2. Thermal Insulation: Walls, floors, and ceilings shall be insulated to R-values as indicated on contract drawing.

3. Acoustical Insulation: The walls between cells and adjacent rooms shall have a minimum Sound Transmission Classification of 56 (STC-56).

## 2. 10 EQUIPMENT, FURNISHINGS, AND ACCESSORIES

1. Steel Cell Furniture: Where shown on the contract drawings as cell furniture to be so provided, the DCM shall provide and install wall mounted bunks, tables, stools, mirror, shelf and stainless steel ball and spring suicide proof clothes hooks. Bunks, tables, shelf, and stools shall be 0.123 in. (3.1 mm) minimum thickness and of the sizes shown. Manufacturer shall include drawings, which detail materials, construction, and attachment. These drawings shall be a part of the submittals as outlined in Section 1.5 herein. Fabrication of these items shall not begin prior to the Architect's approval.
2. Fixtures, Furnishings and Accessories Load and Impact Test: Reinforce walls, stiffen furnishings, and provide connections as required to support dead loads plus single point (concentrated) static live loads as indicated, at maximum distance on each from wall and from supports for each of the following:
  - a. Wall mounted desk Top – 9500 lbf
  - b. Grab bars – 600 lbf
  - c. Shelf – 400 blows at 200 ft-lbf
  - d. Wall Mounted Bunk – 6200 lbf
  - e. Wall Mounted Desk Seat – 14,000 lbf
  - f. Bunk – 400 blows at 200 ft-lbf
  - g. Desk seat – 300 blows at 200 ft-lbf
  - h. Desktop – 400 blows at 200 ft-lbf
3. Provide independent test reports on actual equipment. Theoretical engineers report **will not be acceptable.**

## 2. 11 FINISH

1. The Society for Protective Coatings Specifications of blast cleaning SSPCSP5 Blast Cleaning of white metal" is utilized for interior of cell, cleaning prior to paint applied. Shot or sand blasting is the required means of obtaining a clean surface suitable for painting.
2. Painting: All steel wall and ceiling assemblies shall be painted with a rust inhibitive primer coating on all steel surfaces and top-coated with a finish coat on all exposed interior surfaces. The coatings shall meet this criteria as a minimum:
  - a. Corrosion Resistance: Meets ASTM B117 test requirements for corrosion resistance to 500 hours.
  - b. Impact Resistance: In accordance with ASTM D2794, applying an impact force of 160 in-lb (18 Nm), no failure of coating in terms of cracks or chipping is observed during deformation of substrate.
  - c. Abrasion Resistance: Resistant to abrasion and wear with a minimum film hardness of 2H (gage) at 30 days cure when tested in accordance with ASTM D3363.
  - d. Adhesion not less than 4 at 7 days cure, when tested in accordance with ASTM D3359, Method B (average of 3 trials).
3. Exposed surfaces intended for exterior use shall receive a compatible urethane enamel or similar approved topcoat designed for weather exposure. Paint shall be capable of maintaining no less than 80% of its original gloss after 18 months of weather exposure.
4. Cells shall be of a single color as selected by the Owner from samples submitted by the manufacturer. As an additive option, doors furnished with cells may be a second color as

selected by the Owner. Available colors shall be included with cell product data submittals. Exterior of cells shall be field painted by others.

## **PART 3 – DELIVERY AND INSTALLATION**

### **3.1 DELIVERY SEQUENCING AND SCHEDULING**

1. Manufacturer shall coordinate with the scheduling of delivery to the project site. A mutually approved schedule shall be determined by the project schedule and DCM at the pre-construction meeting. The sequencing of the cell units shall conform to this schedule to properly interface the delivery and installation of cells at the proper time during the construction period. A factory representative shall be present for setting of the cells. An authorized factory representative shall be present for completing all installation of locks, sliders or any other equipment that is to be site installed by DCM.
2. DCM shall deliver cell units, to a designated project site, properly protected from shipping damage. The General Contractor shall provide suitable protective coverings, devices or such methods and procedures to protect cells from damage or vandalism. Protective measures shall remain throughout the construction period. Unloading and handling of the cell units shall be the responsibility of the DCM.

### **3.2 SITE INSPECTION**

Installer of the structural steel cell units shall examine areas and conditions under which structural steel cells are to be installed. Notify contractor in writing of conditions detrimental to proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

### **3.3 INSTALLATION**

1. The General Contractor shall provide a proper area for staging. The DCM shall provide lifting equipment for the installation of the cells. The DCM shall provide qualified personnel on the project site to perform the proper method of receiving and installation of the cell units.
2. Steel cell units shall be set in place by the installer and shall be checked for correct alignment and level. Shims shall be installed as necessary and securely welded to embeds in the foundation. When properly secured, apply caulk to seal gap between cell and finished concrete floor (if applicable). Complete all connections, trim, and touch up, meeting the acceptable industry standards and manufacturers recommendations. Gaps at cell to concrete floor larger than 1/4" shall be ground or grouted by the concrete subcontractor.

## **PART 4 – WARRANTIES**

Provide special project warranty signed by the DCM, installer, and Contractor agreeing to repair defective materials and workmanship of the steel cell, installation, and related work. The cell warranty shall be conditional upon the normal use of the institution. Abuse such as riots is not considered normal use. The Warranty shall be for a period of one (1) year after substantial completion.

## **PART 5 – DIVISION OF RESPONSIBILITY**

### **SAMPLE**

#### **1. INSTALLATION (ITEMS EXCLUDED BY DCM)**

1. Foundation Shimming and Grouting.
2. On-site Mechanical Plumbing and Electrical Connections at cell to underground, cell to cell and cell to overhead.
3. Interim Jobsite Weather Protection.
4. Installation of On-site Detention Equipment.
5. Water Piping
6. Waste, Vent, Drain Piping.
7. HVAC Duct

#### **2. INSTALLATION ITEMS (FURNISHED BY DCM)**

1. Cell Off-Load and erection
2. Shim Packs for Leveling Cells to Foundations on Floor Slabs
3. Lifting Eyes on Cells.
4. Spreader Beams and Rigging for Cell Off Loading or Installation Diagrams for same.
5. Installation of On-site Detention Equipment

#### **3. FURNISHINGS PROVIDED BY DCM (WITHIN CELL) as applicable and indicated on the Architectural plans.**

1. Security mirror
2. Sink and toilet combo
3. Plumbing fixtures
4. Light Fixtures
5. Security supply grille
6. Security return grille
7. Wall mounted stools
8. Wall mounted desk
9. Book shelf
10. Suicide resistant clothes hooks
11. 1 to 2 bunks
12. Interior finish paint
13. Industrialized Buildings Commission (IBC) Labels (*where required by applicable building codes*)
14. Door Locks and Hardware
15. HVAC Grilles

GC and DCM should make final coordination of responsibility prior to bidding to ensure no exceptions or qualifications exist in proposal relationship.

END OF SECTION.