INTRODUCTION

The Steel Wall System by MSSI is a complete pre-fabricated steel interlocking wall system for use in maximum or medium security applications.

The advantage of this system over other wall systems is the patent pending interlock. With the MSSI wall system, each panel has an overlapped interlock that does not need welding or caulking. MSSI uses a right angle interlock (See Drawing). This system eliminates at least 64 linear feet of caulking at the channel per cell, and approximately 48 linear feet at vertical seams, compared to our competitors. Since our wall system is powder coated at the factory, it needs no finish or touch up in the field if the panels are installed correctly.

This equates to a savings of at least$2.00 per linear foot of security caulk and $.65 square foot of painting. On top of this is the savings from approximately 80 linear feet of wall seams that will not require welding or grinding and painting.

IMPACT TEST

The ASTM F2322-03 impact test provides a measure of a panel system's ability to withstand the treatment it can receive under riot conditions. For this test a two-panel wall system (8'x8') is mounted in a test frame with the entire assembly in the vertical position. The panels are then subjected to a series of impact loads from a pendulum ram. The repetitive impact load specified in this standard was established by experimentation that determined what a person with a sledgehammer or several persons with a battering ram could develop in the way of impact energy per blow. From consultations with prison officials the time usually required to restore order in a major riot situation was ascertained. It was assumed that a person or persons could assault a wall system throughout this period of time and based on this assumption the total number of impacts to which the wall would be subjected would be determined. Upon completion of the impact testing it is required that no breach large enough be created to allow means of escape. This is indeed a rigorous test and one which when added to the bullet resistance test gives a good indication as to the performance which can be expected of a wall panel system under riot conditions.

BULLET RESISTANCE TEST

The bullet resistance test is conducted in accordance with UL standard 752. In this test a super power rated handgun is used. A rifle, which is more powerful than a handgun is not used because the possibility of an inmate obtaining a rifle is very remote considering the security precautions taken with rifles by prison officials. The term "bullet-resisting" as used in the UL standard signifies protection against complete penetration, passage of fragments of projectiles, or spalling (fragmentation) of the protective material to the degree that injury would be caused to a person standing directly behind the bullet-resisting barrier.

WALL DELAMINATION TEST

The steel wall system relies on a double-skinned hollow metal panel to provide the finished wall for each of two adjacent spaces or cells. The Separation Test provides two important functions.

First, it demonstrates the integrity of the panel system. In the unlikely event that an inmate succeeded in breaching the first, heavy skin of the system, the construction should pose significant obstacles to removing that skin. In other words, effective performance on the Delamination Test demonstrates that the panel is one integrated structure, not simply two adjacent, independently stiffened, steel plates. The second purpose of the Separation Test is to preclude any possibility of bulging of the panel structures under the load of grouting.

STATIC LOAD TEST FOR CELL FURNISHINGS

This test simulates the panel system's resistance to loads applied to cell furniture when attached to the Steel Wall System.

ACOUSTIC TESTING

Acoustic testing is performed to measure the sound transmission from one side of a panel wall to the other. For these purposes, the intention is to provide an appropriate environment for staff and inmates. A minimum STC rating (sound transmission class) at least appropriate to that normally required for adjacent dwelling units (exceeding 45) ensures appropriate sound control

DIVISION 11
SECTION 11194-PREFABRICATED STEEL WALL PANELS

PART 1-GENERAL

1.1 SCOPE

This specification covers the requirements, including labor, materials, services and equipment for th manufacturing, and delivering of pre-engineered, prefabricated Steel Wall System.

1.2 RELATED DOCUMENTS

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

Other divisions specified by related include: (*as applicable*)

a. Division 3 – Concrete: Slab Quality
b. Division 4 – Masonry: Brick Ties
c. Division 10 – Toilet Accessories
d. Division 11 – Security Hardware
   Security Accessories
   Security Hollow Metal
   Security-Detention Electronics
   Systems
e. Division 15 – Plumbing
   Sprinklers
   HVAC
f. Division 16 – Electrical

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 basis designation only.

ASTM A366/A366M-Specification for Steel,Sheet,Carbon,Cold-Rolled,Commercial Quality
ASTM A569/A569M-Specification for Steel,Carbon(0.15 Maximum), Hot Rolled Sheet and Strip Commercial Quality
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
ASTM D3359 – Test Methods for Measuring Adhesion by Tape Test
ASTM D2240 – Test Method for Film Hardness by Shor D
ASTM F1450 – Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities
ANSI/AWSD1.1 – Structural Welding Code Steel
ANSI/AWSD1.3 – Structural Welding Code – Sheet Metal
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 ASD/LRFD Design Specification for Cold-Formed Steel Structural Members
SSPC-SP1 – Solvent Cleaning
SSPC-SP6- Commercial Blast Cleaning

1.4 SUMMARY

The Manufacturer (MFG) shall provide the following and as indicated in Part 5- DIVISIOIN OF RESPONSIBILITY, (per design requirements)

1. *Security Doors and Frames*
2. *Chase Doors and Frames*
3. *Electrical and Lighting*
4. *Intercommunication Station*
5. *Video Surveillance Camera*
6. *Plumbing Fixtures*
7. *HVAC Grilles*
8. *Furnishings*
9. *Installation*

1.5 APPROVED MANUFACTURERS

1. Only **PREQUALIFIED** manufacturers are allowed to bid this section. The substitution of other Manufacturers will not be acceptable. Manufacturers who have met the minimum pre-qualification requirements are:

   A. MSSI, Inc. 205-668-0418
   B. Qualifications of other manufacturers by pre-owned alternate only:
      Firms wishing to be pre-qualified must submit in writing, no later than twenty (20) business days before the bid, the pre-qualification package must include the following:

      a. A notarized statement from the Owner or the company's President, listing those products that will be used. NO exceptions to this bill of materials shall be accepted after the awarding of the contract. Multiple selections are not acceptable. State in writing your intent to "comply fully with the requirements of this specification and to hold harmless the Architect, Engineer, and the owner from omissions of a casual nature that would be considered to be an implied requirement for a fully operational modular cell system." Provide a list of compliance to and non-compliance for each section of this specification. Compliance/Non-Compliance must be a formal listing of each section and subsection of this specification and an explanation of compliance/non-compliance for each section and subsection.

      b. A list of all outstanding or past judgments or lawsuits against the company Owners, under their current name, or any previous name or business entity.

      c. Design Engineering Capability:
         1. The manufacturer must have current design engineering capability to provide the final engineered structural design for modular steel cells and associated items and their integration into the building construction.
         2. Submit a list of the engineering design staff, listing the name, title, discipline, degree, registration, licenses, and years of experience designing detention structures.
         3. Submit a list of technical support personal collaborating with the design engineers.
         4. Submit samples of design engineering systems (or samples of previous projects) in either AutoCad or DXF format.

      d. In-House production engineering capability:
         1. The manufacturer must have current, in-house production management, with at least three (3) years of cell experience, capable of understanding design engineering documentation and managing the fabrication and erection process to produce the steel cells as engineered.

2. Submit a list of key in-house production management staff giving name, credentials, number of years experience, years with company, and title.

e. Production Capacity:
   1. The Manufacturer must have the production capacity required to produce a minimum of ten (10) cells per day or fifty (50) cells per week with sufficient manpower and financial resources to produce the required number of cells within the time period specified in the contract construction schedule.
   2. Submit name, location and historic production rate and annual production capacity of the plant, crew and equipment proposed.
   3. Submit the estimated quantity of work under contract and either scheduled or anticipated for the production facilities proposed for the time period of this project. List the projects and estimated production dates.

f. Upon receipt of the pre-qualification package, the Architect/Engineer will review the package for compliance/non-compliance with the specified requirements. Compliance with all of the pre-qualification requirements will be strictly enforced. Approval of all pre-approved alternates will be issued in an addendum prior to the bid date. The determination of acceptance and non-acceptance is the sole discretion of the Architect/Engineer. All decisions are final.

1.6 SUBMITTALS

1. General:
   Submit the following according to conditions of Contract and Division 1 Specifications Sections.

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, 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 dimension 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 drawings of recommended bearing pads and/or special anchoring devices.

PART 2 – PRODUCTS

2.1 ENGINEERING AND DESIGN

The manufacturer shall provide Professional certification for the design of the manufactured steel wall system to support superimposed dead loads and live loads as indicated on the contract drawings. The manufacturer shall certify the design for compliance with applicable governing requirements.

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.

2.2 WORKMANSHIP

1. All panels shall be tightly fitted and securely fastened with no through seams or cracks. Minimum of 12 Ga. Thick (A-569) Carbon Steel.

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. Joints to be welded shall be cleaned and prepared as necessary to assure quality welds.

5. Welding shall be controlled and sequenced to reduce warpage and distortion.

6. All welds shall be free of deleterious porosity, pinholes, and cracks.

7. Finished welds shall be smooth, and weld spatter and flux shall be removed.

2.3 DOORS, WINDOWS, AND FRAMES

1. Materials

    a. Interior security and cell doors: Face sheets shall be 0.067 in. (1.7mm) minimum thickness conforming to ASTM [A366/A366M][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 0.083 in. (2.3mm) minimum thickness conforming to ASTM A653/A653M (A60,G60/Z180,ZF180) steel.

    c. Door and window frames shall be 0.093 in. (2.3mm) minimum thickness. Doors, Windows, and Frames shall be those equal in design and quality of those manufactured by approved door manufacturer.

2. Glass and glazing

    a. All glass utilized in the modular steel cell windows shall be as scheduled in the door and window schedule.

2.4 HVAC

1. Each Steel Detention Cell shall be designed, manufactured and equipped to receive the required HVAC fixtures specified in other divisions of this specification.

2. The manufacturer shall provide the HVAC grilles. The grilles shall be pre-punched perforated panel in compliance with the specified CFM requirement. A flange suitable for the attachment of the HVAC duct shall also be provided.

2.5 THERMAL AND ACOUSTICAL INSULATION *(if applicable)*

1. Insulation Material: Materials shall be approved by the applicable codes of NFPA and governing authorities to provide a fire resistance classification as required.

2. Thermal Insulation: Walls, floors, and ceilings shall be insulated to R-values as indicated on the contract drawings.

3. Acoustical Insulation: The walls between cells and adjacent rooms shall have a Sound Transmission Classification of 45(STC-45).

4. As manufactured by ThermoCon Spray Acoustic Insulation, 2500 Jackson Street, Monroe, Louisiana 71202 (800) 854-1907, or approved equal.

2.6 AUTOMATIC FIRE PROTECTION SYSTEMS *(as applicable)*

1. The manufacturer shall provide a prepared location for the installation of the sprinkler head by the fire protection contractor.

2. The manufacturer and fire protection contractor shall coordinate to confirm the type and location of the sprinkler head to ensure the proper interface of work.

2.7 FINISH

1. All exposed painted surfaces shall be cleaned and finished in accordance with SSPC-SPI,SSPC-SP6 or SSPC-SP7 as specified by the paint manufacturer.

2. Painting: All steel wall and ceiling assemblies shall be coated with a rust inhibitor on all steel surfaces and top-coated with a finish coat on all exposed surfaces. The coatings shall meet this criterion as a minimum.

    a. Corrosion Resistance: Meets ASTM B117, for 1000 hours.

    b. Impact Resistance: Meets ASTM D2794, impact force of 160 in-lb.

    c. Abrasion Resistance: Meets ASTM D4060, for 75 mg loss.

    d. Adhesion Resistance: Meets ASTM D4541, for 2000psi.

    e. Hardness: Meets ASTM D2240, for 5H

3. 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. *(additive option shall be noted on the contract drawings)*

2.8 MEZZANINES, RAILINGS, AND STAIRS

1. Mezzanine walkways, hand-railings, and stairs shall be primed painted only and shipped to site and installed by others, (Optional).

2. Manufacturer and Fabricator shall coordinate in order to ensure proper interface of work.

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 scheduler and manufacturer 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.

2. Manufacturer 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 the cells from damage from the weather or vandalism. Protective measures shall remain throughout the construction period. Unloading and handling of the cell units shall be the responsibility of the installer.

3.2 SITE INSPECTION

The installer of the steel wall panels shall examine areas and conditions under which the structural steel cells are to be installed. The installer is to notify the 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 or manufacturer under a separate contract shall install or provide a qualified installer to install the steel wall panels. The manufacturer shall provide a qualified on-site representative for initial cell installation to verify proper cell offloading and installation procedures.

2. The General Contractor shall provide adequate access for the manufacturer's tractor-trailer transport trucks. This access shall be suitable enough so that the trucks will have the needed room to maneuver under their own power.

3. Steel wall sheets shall be set in a place by the installer and shall be checked for correct alignment and level. Shims shall be installed as necessary and securely fastened to the foundation. Complete all connections, trim and touch up, meeting the acceptable industry standards and manufacturer's recommendations.

4. The General Contractor shall provide for the protection of the cells from the weather and vandalism once the cells are delivered and installed.

5. Filling between the bottom of the cells walls and the floor with security caulk shall be provided by the General Contractor.

PART 4 – WARRANTIES

Provide special project warranty signed by the manufacturer, 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 normal use of the cells. Abuse and misuse or damage during a riot is not considered normal use. The Warranty shall be for a period of one (1) year from the date of acceptance by the Architect and/or Owner's representative.