

- B. Touch up factory-applied finishes to restore damaged or soiled areas.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 101200

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SECTION 102600 - WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Corner guards.

- B. Related Sections include the following:

- 1. Division 09 Section 092900 "Gypsum Board".

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Handrails: Provide handrails capable of withstanding the following structural loads without exceeding the allowable design working stress of materials for handrails, anchors, and connections:

- 1. Concentrated load of 200 lbf applied at any point and in any direction.

- 2. Uniform load of 50 lbf/ft. applied in any direction.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes for each impact-resistant wall-protection unit.

- 1. Include statement indicating costs for each certified wood product.

- B. Qualification Data: For Installer.

- C. Material Test Reports: For each impact-resistant plastic material.

- D. Material Certificates: For each impact-resistant plastic material, signed by manufacturer.
- E. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain impact-resistant wall-protection units through one source from a single manufacturer.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install impact-resistant wall-protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F for not less than 72 hours before beginning installation and for the remainder of the construction period.
- B. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with impact-resistant wall-protection units by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall-protection units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of plastic and other materials beyond normal use.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 MATERIALS

- A. Extruded Rigid Plastic: ASTM D 1784, Class 1, textured, chemical- and stain-resistant, high-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout; thickness as indicated.
 1. Impact Resistance: Minimum 25.4 ft-lbf/in. < of notch when tested according to ASTM D 256, Test Method A.
 2. Flame-Spread Index: 25 or less.
 3. Smoke-Developed Index: 450 or less.
- B. Polycarbonate Plastic Sheet: ASTM D 6098, S-PC01, Class 1 or 2, abrasion resistant; with a minimum impact-resistance rating of 15 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.
- C. Aluminum Extrusions: Alloy and temper recommended by manufacturer for type of use and finish indicated but with not less than strength and durability properties specified in ASTM B 221 for Alloy 6063-T5.
- D. Brass: ASTM B 249/B 249M for extruded shapes and ASTM B 36/B 36 M for sheet.
- E. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- F. Adhesive: Type recommended by manufacturer for use with material being adhered to substrate indicated.
 1. Use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Gypsum Board and Panel Adhesives: 50 g/L.
 - b. Multipurpose Construction Adhesives: 70 g/L.
 - c. Contact Adhesive: 80 g/L.

2.3 CORNER GUARDS

A. Surface-Mounted, Resilient, Plastic Corner Guards: Assembly consisting of snap-on plastic cover installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.

1. Available Manufacturers:

- a. American Floor Products Co., Inc.
- b. ARDEN Architectural Specialties, Inc.
- c. IPC Door and Wall Protection Systems; Division of InPro Corporation.
- d. Pawling Corporation.

2. Cover: Extruded rigid plastic, minimum 0.078-inch.

- a. Color and Texture: As selected by Architect from manufacturer's full range.

3. Retainer: Minimum 0.060-inch- thick, 1-piece, extruded aluminum.

4. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.

B. Flush-Mounted, Resilient, Plastic Corner Guards. Assembly consisting of snap-on plastic cover that is flush with adjacent wall surface, installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition; full wall height.

1. Available Manufacturers:

- a. American Floor Products Co., Inc.
- b. Construction Specialties, Inc.
- c. IPC Door and Wall Protection Systems; Division of InPro Corporation.
- d. Pawling Corporation.

2.4 FABRICATION

- A. Fabricate impact-resistant wall-protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.
- B. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of work.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing impact-resistant wall-protection system components.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

- A. General: Install impact-resistant wall-protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
 - 1. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.

- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 102600

SECTION 104413 - FIRE EXTINGUISHER CABINETS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes fire protection cabinets for fire extinguishers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Fire-Rated, Fire Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.
- B. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- C. Coordinate sizes and locations of fire protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 - 1. Sheet: ASTM B 209.

2. Extruded Shapes: ASTM B 221.

C. Stainless-Steel Sheet: ASTM A 666, Type 304.

D. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class (clear).

2.2 FIRE PROTECTION CABINET A-126 10lb Extinguishers

A. Cabinet Type: Suitable for fire1-A:10B:C extinguisher.

1. Products: Subject to compliance with requirements provide one of the following:

a. J. L. Industries, Inc., a Division of Activar Construction Products Group.

b. Kidde Residential and Commercial Division, Subsidiary of Kidde plc; .

c. Larsen's Manufacturing Company; .

d. Potter Roemer LLC;.

B. Cabinet Construction: 1-hour fire rated

1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch-thick, fire-barrier material. Provide factory-drilled mounting holes.

C. Cabinet Material: Aluminum sheet.

D. Surface Mounted Cabinet: Cabinet box secured to walls to suit style of cabinet.

1. Trimless: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame

E. Semirecessed Cabinet: Cabinet box partially recessed in walls of sufficient depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend). Provide where walls are of insufficient depth for recessed cabinets but are of sufficient depth to accommodate semirecessed cabinet installation.

1. Rolled-Edge Trim: 2-1/2-inch backbend depth.

- F. Cabinet Trim Material: Aluminum sheet Same material and finish as door.
- G. Door Material: Aluminum sheet
- H. Door Style: Fully glazed panel with frame.
- I. Door Glazing: Tempered float glass (clear.
- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
- K. Accessories:
 - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
 - 2. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle .
 - 3. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location, as directed by Architect.
 - a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER":
 - 1) Location: Applied to cabinet glazing.
 - 2) Application Process: Decals Pressure-sensitive vinyl letters.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
- L. Finishes:
 - 1. Aluminum: Clear anodic.
 - a. Color: As selected by Architect from full range of industry colors and color densities.

2.3 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub), with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Miter and weld joints and grind smooth.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide Five File Cabinets. Final locations per directed of Architect and as shown on Drawings.
- B. Examine walls and partitions for suitable framing depth and blocking where recessed semirecessed cabinets will be installed and prepare recesses as required by type and size of cabinet and trim style.
- C. Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
- D. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.
- E. Identification: Apply decals vinyl lettering at locations indicated.
- F. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- G. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 104413

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SECTION 104416 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Operation and maintenance data.
- C. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
- C. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet. Reference Section 104413 "Fire Extinguisher Cabinet."
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Amerex Corporation.
 - b. J. L. Industries, Inc.; a division of Activar Construction Products Group.
 - c. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
 - d. Larsen's Manufacturing Company.
 - e. Moon-American.
 2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
- B. Multipurpose Dry-Chemical Type 1-A10-B: C UL-rated 10 pound nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide Five Extinguishers: Locations per drawings or as directed by Architect.
- B. Examine fire extinguishers for proper charging and tagging.
 1. Remove and replace damaged, defective, or undercharged fire extinguishers.

- C. Install fire extinguishers in locations indicated and in compliance with requirements of authorities having jurisdiction.

- 1. Mounting: 54 inches (1372 mm) above finished floor to top of fire extinguisher.

- D. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

- Item 011010-01 Western Facility Operations Building—per lump sum

- Item 011010-02 Western Facility Police Building—per lump sum

- Item 011010-03 Western Facility Fuel Island—per lump sum

- Item 011010-04 Western Facility Salt Dome—per lump sum

- Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 104416

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SECTION 105113 - METAL LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Standard metal lockers.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker
- B. Shop Drawings: For metal lockers. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Show locker trim and accessories.
 - 2. Include locker identification system and numbering sequence.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.
- E. Warranty: Sample of special warranty.

1.4 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 lockers and accessories from single source from single manufacturer.
- C. Regulatory Requirements: Where metal lockers indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities".

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.
- B. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.6 COORDINATION

- A. Coordinate sizes and locations of concrete bases for metal lockers.
- B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation of latches and other door hardware.
 - 2. Damage from deliberate destruction and vandalism is excluded.
 - 3. Warranty Period for All-Welded Metal Lockers 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- B. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated.
- C. Steel Tube: ASTM A 500, cold rolled.
- D. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.
- E. Anchors: Material, type, and size required for secure anchorage to each substrate.
 - 1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls, for corrosion resistance.
 - 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.2 STANDARD METAL LOCKERS

- A. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Marquis Student Quiet KD Lockers.
 - 2. Lyon Workspace Products, LLC; Standard Lockers.
 - 3. Penco Products, Inc.; Vanguard Lockers.
 - 4. Republic Storage Systems Company; Quiets.
- B. Locker Arrangement: Single person, as indicated on Drawings. Material: Cold-rolled steel sheet.
- C. Body: Assembled by riveting or bolting body components together. Fabricate from unperforated steel sheet as follows:
 - 1. Tops, Bottoms, and Intermediate Dividers: 0.024-inch nominal thickness, with single bend at sides.

2. Backs and Sides: 0.024-inch nominal thickness, with full-height, double-flanged connections.
 3. Shelves: 0.024-inch nominal thickness, with double bend at front and single bend at sides and back.
- D. Frames: Channel formed; fabricated from 0.060-inch nominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral door strike full height on vertical main frames.
1. Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.
 2. Frame Vents: Fabricate face frames with vents.
- E. Doors: One piece; fabricated from 0.060-inch nominal-thickness steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.
1. Doors less than 12 inches wide may be fabricated from 0.048-inch nominal-thickness steel sheet.
 2. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
 3. Stiffeners: Manufacturer's standard full-height stiffener fabricated from 0.048-inch nominal-thickness steel sheet; welded to inner face of doors.
 4. Sound-Dampening Panels: Manufacturer's standard, designed to stiffen doors and reduce sound levels when doors are closed, of die-formed metal with full perimeter flange and sound-dampening material; welded to inner face of doors.
 5. Door Style: Vented panel as follows:
 - a. Security Vents: Manufacturer's standard, stamped horizontal or vertical.
 - b. Concealed Vents: Slotted perforations in top and bottom horizontal return flanges of doors.

- F. Hinges: Welded to door and attached to door frame with no fewer than two factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees .
1. Continuous Hinges: Manufacturer's standard, steel, full height.
- G. Projecting Door Handle and Latch: Finger-lift latch control designed for use with either built-in combination locks or padlocks; positive automatic latching, chromium plated; pry and vandal resistant.
1. Latch Hooks: Equip doors 48 inches and higher with two latch hooks; fabricated from 0.105-inch nominal-thickness steel sheet; welded or riveted to full-height door strikes; with resilient silencer on each latch hook.
 2. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact, and incorporating a prelocking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.
- H. Equipment: Equip each metal locker with identification plate and the following unless otherwise indicated:
1. Single-Unit One double-prong ceiling hook and two single-prong wall hooks.
 2. Continuous Zee Base: Fabricated from 0.060-inch nominal-thickness steel sheet.
 - a. Height: 6 inches.
 3. Continuous Sloping Tops: Fabricated from 0.036-inch nominal-thickness steel sheet.
 - a. Closures: Hipped-end type.
 - b. Sloping-top corner fillers, mitered.
 4. Recess Trim: Fabricated from 0.048-inch nominal-thickness steel sheet.
 5. Filler Panels: Fabricated from 0.036-inch nominal-thickness steel sheet.
 6. Boxed End Panels: Fabricated from 0.060-inch nominal-thickness steel sheet.

7. Finished End Panels: Fabricated from 0.024-inch nominal-thickness steel sheet.
8. Center Dividers: Fabricated from 0.024-inch nominal-thickness steel sheet.

I. Finish: Baked enamel.

1. Color(s): As selected by Architect from manufacturer's full range. As indicated on drawings.

2.3 FABRICATION

- A. Fabricate metal lockers square, rigid, and without warp and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
 1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
 2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.
- B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments. Factory weld frame members of each metal locker together to form a rigid, one-piece assembly.
- C. Knocked-Down Construction: Fabricate metal lockers using nuts, bolts, screws, or rivets for nominal assembly at Project site.
- D. All-Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds flush.
- E. Accessible Lockers: Fabricate as follows:
 1. Locate bottom shelf no lower than 15 inches above the floor.
 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.
- F. Hooks: Manufacturer's standard ball-pointed type, aluminum or steel; zinc plated.

- G. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.
- H. Continuous Base: Formed into channel or zee profile for stiffness, and fabricated in lengths as long as practical to enclose base and base ends of metal lockers; finished to match lockers.
- I. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.
 - 1. Sloping-top corner fillers, mitered.
- J. Recess Trim: Fabricated with minimum 2-1/2-inch face width and in lengths as long as practical; finished to match lockers.
- K. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.
- L. Boxed End Panels: Fabricated with 1-inch- wide edge dimension, and designed for concealing fasteners and holes at exposed ends of nonrecessed metal lockers; finished to match lockers.
 - 1. Provide one-piece panels for double-row (back-to-back) locker ends.
- M. Finished End Panels: Designed for concealing unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of nonrecessed metal lockers; finished to match lockers.
 - 1. Provide one-piece panels for double-row (back-to-back) locker ends.
- N. Center Dividers: Full-depth, vertical partitions between bottom and shelf; finished to match lockers.

2.4 STEEL SHEET FINISHES

- A. Factory finish steel surfaces and accessories except stainless-steel and chrome-plated surfaces.
- B. Baked-Enamel Finish: Immediately after cleaning, pretreating, and phosphatizing, apply manufacturer's standard thermosetting baked-enamel finish. Comply with paint manufacturer's written instructions for application, baking, and minimum dry film thickness.

- C. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard, baked-polymer, thermosetting powder finish. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls, floors, and support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install level, plumb, and true; shim as required, using concealed shims.
 - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top and bottom of lockers.
- B. All-Welded Metal Lockers: Connect groups together with standard fasteners, with no exposed fasteners on face frames.
- C. Equipment and Accessories: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach hooks with at least two fasteners.
 - 2. Attach door locks on doors using security-type fasteners.

3. Identification Plates: Identify metal lockers sequential numbering identification.
 - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
4. Attach recess trim to recessed metal lockers with concealed clips.
5. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
6. Attach sloping-top units to metal lockers, with closures at exposed ends.
7. Attach boxed end panels with concealed fasteners to conceal exposed ends of nonrecessed metal lockers.
8. Attach finished end panels with fasteners only at perimeter to conceal exposed ends of nonrecessed metal lockers.

3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding..
- B. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- C. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 -- PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building--per lump sum

Item 011010-02 Western Facility Police Building--per lump sum

Item 011010-03 Western Facility Fuel Island--per lump sum

Item 011010-04 Western Facility Salt Dome--per lump sum

Item 011010-05 Western Facility Storage Building--per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 105113

SECTION 107313 - AWNINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Fixed awnings (canopy) at Police Building.
- B. Related Sections include the following:
 - 1. Division 06 Section "Rough Carpentry" for blocking, nailers, shims, reinforcing, framing, and furring for connecting to awning frame and anchorage.

1.3 DEFINITIONS

- A. Awning: An architectural projection that provides weather protection, identity, or decoration and is wholly supported by the building to which it is attached. An awning is comprised of a lightweight, rigid skeleton structure over which a rigid covering is attached.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Design, fabricate, and install awnings to withstand loads from gravity, wind snow, ponding, drift and structural movement, including thermally induced movement; and to resist, without failure, other conditions of in-service use, including exposure to weather.
- B. Structural Performance: Provide awnings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Uniform pressure of 25 lbf/sq. ft. acting upward or downward.

- C. Seismic Performance: Provide awnings capable of withstanding the effects of earthquake motions determined according to IBC requirements for project geographical zone.
- D. Thermal Movements: Provide awnings that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, tearing of fabric, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

1.5 SUBMITTALS

- A. Product Data: Include styles, material descriptions, construction details, fabrication details, dimensions of individual components and profiles, hardware, fittings, mounting accessories, features, finishes, and operating instructions for awnings.
- B. Shop Drawings: Show location and extent of awnings. Include elevations, sections, and details not shown in Product Data. Show materials, fabrication, dimensions, mounting heights, connections, anchorages, installation details, attachments to other work, operational clearances, and relationship to adjoining work. Show colors and graphic layout and content.
 - 1. Show locations for blocking, reinforcement, and supplementary structural support.
 - 2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Calculate requirements for supporting awnings and for seismic restraint. Verify capacity of members and connections to support loads and verify loads, point reactions, and locations for attachment of awnings to structure with those indicated on Drawings.
 - 3. Graphics: Show text message, font, character sizes, and other graphic forms, character spacing, word spacing, line spacing, margin widths, position of copy, and other information related to graphic design. Graphic lettering is on both canopies

- C. Samples for Initial Selection: For each colored or finished component of each type of awning indicated.
 - 1. Include Samples of graphics on fabric.
 - 2. Include similar Samples of accessories involving color selection.

- D. Samples for Verification: For each of the following products and for the full range of color, texture, and pattern variations required, prepared on Samples of size indicated below. If finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.
 - 1. Awning Fabric: 12-inch- square section of fabric from dye lot to be used for the Work, with specified treatments applied. Mark face of fabric.
 - 2. Graphics: Not less than 12-inch- square section showing graphics application method.
 - 3. Seam, Edge, and Corner Condition: Not less than 12-inch- long section showing seam, edge, and corner treatment.
 - 4. Frame Finish: Not less than 6-inch lengths.
 - 5. Frame Corner and Three-Way Truss Intersection: Not less than 12-inch sections showing finished joint construction and fabric attachment to awning frame.

- E. Awning Schedule: Use designations individual to each location.

- F. Product Certificates: For each type of awning fabric, signed by product manufacturer.

- G. Qualification Data: For Installer, fabricator and professional engineer.

- H. Maintenance Data: For awnings to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining awning fabrics and finishes.
 - 2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.

- I. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of awnings.
- B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - 1. Fabricator's responsibilities include fabricating awnings and providing professional engineering services needed to assume engineering responsibility.
- C. Source Limitations: Obtain awnings through one source from a single manufacturer.
- D. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code--Steel."
 - 2. AWS D1.2, "Structural Welding Code--Aluminum."
- E. Fire-Test-Response Characteristics: Provide awning fabrics with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Flame-Resistance Ratings: Passes NFPA 701.
 - 2. Permanently attach label to each awning fabric indicating whether fabric is inherently and permanently flame resistant, or treated with flame-retardant chemicals, and whether it will require retreatment after designated time period or cleaning.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of awnings in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Where awning installation is indicated to fit to other work, verify dimensions of other work by field measurements before fabrication and indicate

measurements on Shop Drawings. Allow clearances for fenestration operation throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer and fabricator agree to repair or replace components of awnings that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures including framework.
 - b. Deterioration of fabric including seam failure.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Awning Warranty Period: Five years from date of Substantial Completion.
3. Fabric Warranty Period: Five years from date of Substantial Completion.
4. Graphics Warranty Period: Outdoor durability not less than five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering awnings that may be incorporated into the Work include, but are not limited to, the following:
1. Carroll Awning Company
 2. Sundance Manufacturing
 3. Eide Industries

2.2 AWNING FABRICS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Dickson Elberton "Eradi-Lite" or a comparable product. by one of the following:
 - 1. Baer Fabrics
 - 2. John Boyle and Company
 - 3. Weblon Inc
 - 4. Glen Raven Custom Fabrics.
- B. Fabric Fiber Content: Vinyl-laminated polyester
- C. Style:
 - 1. Fabric Weight: 20.5 oz per square foot
 - 2. Bottom Hem: Straight
 - 3. Color: As selected by Architect from manufacturer's full range (Blue).
 - 4. Applied Treatment: Stain resistant, Mildew resistant, Polymer, flame resistant
Water repellent
 - 5. Performance Characteristics: As follows:
 - a. Mildew Resistance: Showing no growth when tested per ASTM G 21.
- D. Graphic Application: Silk-screen printing on each awning
 - 1. Text Message: POLICE
 - a. Text Font: Selected from full range of manufacturer's offering>.
 - b. Character Size: Minimum 28 inches.
 - c. Character Colors: Selected from full range of manufacturer's offering

2.3 AWNING FRAME

- A. Aluminum Frames: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability properties of alloy and temper required by structural loads.
1. Aluminum Plate and Sheet: ASTM B 209.
 2. Aluminum Extrusions: ASTM B 221.
 3. Extruded Structural Pipe and Round Tubing: ASTM B 429, standard weight (Schedule 40) unless another weight is indicated or required by structural loads.
 4. Drawn Seamless Tubing: ASTM B 210.
 5. Aluminum Finish: Mill finish complying with finish manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.
- B. Anchors, Fasteners, Fittings, Hardware, and Installation Accessories: Complying with performance requirements indicated and suitable for exposure conditions, supporting structure, anchoring substrates, and installation methods indicated. Corrosion-resistant or noncorrodible units; weather-resistant,]compatible, nonstaining materials. Provide as required for awning assembly, mounting, and secure attachment. Number as needed to comply with performance requirements and to maximize appearance; evenly spaced. Where exposed to view, with finish and color as selected by Architect from manufacturer's full range.
1. Wood Screws: ASME B18.6.1.
 2. Lag Bolts: ASME B18.2.1..
 3. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
 4. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - a. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

5. Adhesive-Bonded Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 1512 conducted by a qualified independent testing and inspecting agency.

a. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 AWNING FABRICATION

A. Fabrics: Reinforce wear points and hardware attachment points nonwoven webbing.

1. Fabric Edges and Seams: Fold and stitch selvedge, and cut fabric edges.
2. Fabric Edges and Seams: Hot cut and sealed.
3. Fabric Edges and Seams: Manufacturer's standard hemming and seaming methods.

B. Frames: Preassemble awning frames in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

1. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
2. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Fabricate slip-fit connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
4. Weld corners and connections continuously. Obtain fusion without undercut or overlap. Remove welding flux immediately. At exposed corners and connections, finish exposed welds and surfaces smooth and blended so no

roughness shows after finishing and contour of welded surface matches that of adjacent surface.

5. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications in place and to properly transfer loads.
- C. Colors of Metal and Plastic Components Exposed to View: Matching or coordinating with awning fabric color

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, accurate locations of connections to building electrical system, lighting, and other conditions affecting performance.
 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Install awnings at locations and in position indicated, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.
- B. Install awnings after other finishing operations, including joint sealing and painting, have been completed.
- C. Attach fabric to frames as recommended by fabricator, using lacing method as required to conceal ends of lacing] and using fabric hem pockets to ensure tight, wrinkle-free fit of fabric to frame.
- D. Weld frame connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
 1. Field Welding: Comply with the following requirements:
 - a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

- b. Obtain fusion without undercut or overlap.
 - c. Remove welding flux immediately.
 - d. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- E. Anchoring to In-Place Construction: Use anchors, fasteners, fittings, hardware, and installation accessories where necessary for securing awnings to structural support and for properly transferring load to in-place construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.
- G. Coordinate awning installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed exterior wall and roof assemblies.

3.3 CLEANING AND PROTECTION

- A. Clean awning surfaces after installation, according to manufacturer's written instructions.
- B. Touchup Painting: Immediately after erection, clean field welds, connections, and abraded areas. Paint uncoated and abraded areas with same or compatible material as used for shop-applied finish painting.
- 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- C. Galvanized Surfaces: Clean field welds, connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- D. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that awnings are without damage or deterioration at time of Substantial Completion.
- E. Replace damaged awnings that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-02 Western Facility Police Building–per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 107313

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SECTION 107353 -- PRE-ENGINEERED FUEL ISLAND METAL CANOPY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. CAD Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes all engineering, materials, fabrication, and installation for a freestanding, pre-engineered metal canopy with integral concrete foundation, complete primary and secondary structural framing, metal roof, roof drains including gutters and downspouts, vertical fascia including trim, flashing, weather sealing materials, fasteners, metal ceiling and lighting.
- B. Related Sections include the following:
 - 1. Division 03, Section "Cast-in-Place Concrete".
 - 2. Division 05, Section "Metal Fabrications".
 - 3. Division 26, Sections for electrical wiring and connections.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide a pre-engineered metal canopy capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. Uniform pressure of 25 lbf/sq. ft., acting inward or outward.
 - 2. Snow Loads: 30 lbf/sq. ft.
- B. Seismic Performance: Provide pre-engineered metal canopy capable of withstanding the effects of earthquake motions determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."
- C. Thermal Movements: Provide pre-engineered metal canopy that allows for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental

effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for pre-engineered metal canopy.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Contractor to furnish complete canopy and foundation CAD drawings signed and sealed by a professional engineer licensed in the state of Maryland.
- C. Samples for Initial Selection: For pre-engineered metal canopy with factory-applied color finishes.
- D. Submit 6 sets of full size prints of shop drawings including Cad files on CD Rom.
- E. The contractor shall also submit Cad Files on CD Rom of as-built drawings after the final acceptance of the canopy structure by the owner.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain pre-engineered metal canopy through one source from a single manufacturer who will manufacture and install the canopy and provide both post-installation inspection and installation inspection report.
- B. Product Options: CAD Drawings indicate size, profiles, and dimensional requirements of pre-engineered metal canopy and shall be based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
 1. Do not modify intended aesthetic effects, as judged solely by the Architect/Engineer, except with Architect/Engineers approval. If modifications shall be proposed, submit comprehensive explanatory data to the Architect/Engineer for review.
- C. Welding: Qualify procedures and personnel according to the following:
 1. All welding shall be in accordance with ANSI/AWS D1.1, "Structural Welding Code—Steel" with E70XX Electrodes.
 2. All structural shop welding shall be done by the certified welders.
 3. Steel shop connections will be welded and field connections shall be bolted.

4. All slag shall be cleaned from all welds and inspected. Steel to be shop painted with rust inhibitive primer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01.

1.6 PROJECT CONDITIONS

- A. Field Measurements: The General Contractor shall verify actual locations of existing construction including underground utilities contiguous with pre-engineered metal canopy by field measurements before fabrication and indicate these measurements on the Shop Drawings.

1.7 COORDINATION

- A. The Contractor shall prepare and pour the concrete footings for the pre-engineered metal canopy. Manufacturer shall furnish recommended footing CAD drawings including rebar details anchor bolt templates and the anchor bolts. Such items shall be delivered to the project site in time for installation.

1.8 WARRANTY

The Canopy manufacturer shall provide 5-year warranty on products of its manufacture to be free of defects in materials, leaks, and workmanship for 5-year from date of substantial completion. In addition, the canopy manufacturer shall provide a 10-year limited warranty on anodized Aluminum surfaces against oxidation, a 20-year limited warranty against peeling, flaking, and chipping of deck and fascia when properly maintained by owner, and 5-year manufacturer's warranty on all accessory items such as, but not limited to lights. The Owner shall not be responsible for damage caused by installation or handling.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 1. Manufacturers: Subject to compliance with requirements. Manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Austin Mohawk and Company, Inc. 1-800-765-3110

- b. McGee Corporation 1-800-526-5589
- c. Centurion Industries Inc. 888-832-4466
- d. Superior Canopy Corporation 888-988-4065

2.2 MATERIALS

A. Structural Steel:

- 1. All material and work shall conform to the latest AISC Specifications for Design, Fabrication, and Erection of Structural Steel for Buildings.
- 2. All steel shall conform to ASTM A572 GR.50, Fy= 50 ksi. or ASTM A36, Fy= 36 ksi.
- 3. Square and rectangular tubing: Shall conform to ASTM A500, Grade B, Fy= 46 ksi.
- 4. Plate Steel: Shall Conform to ASTM A36, Fy= 36 ksi
- 5. All structural steel shall be painted with a rust inhibitive primer.
- 6. Anchor and Foundation Bolts.

B. Sheet Metal:

- 1. Decking: 3" X 16" X 20 gauge smooth white, ASTM A653 GR40, Fy= 40 ksi, galvanized steel with baked enamel finish.
- 2. Center and Tapered Gutter: 24 gauge hot dipped galvanized steel baked enamel finish.
- 3. Perimeter Gutter: 20 gauge hot dipped galvanized steel baked enamel finish.
- 4. External downspouts: 3" x 4" x 24 gauge hot-dipped galvanized steel with baked enamel finish.
- 5. Manufacturer shall be capable of providing seamless gutter profiles up to 40' in length.

2.3 PRE-ENGINEERED METAL CANOPY, GENERAL

- A. General: Provide a complete, integrated set of manufacturer's standard, mutually dependent components that form a completely pre-engineered canopy, ready for construction on Project site. Pre-engineered metal canopy shall be capable of withstanding structural and other loads indicated, thermally induced movement, and exposure to weather without failure or infiltration of water.

2.4 PRE-ENGINEERED METAL CANOPY

A. Canopy Fascia:

- a. 2-inch Laminated Foam Core Fascia: Panel face shall be 24 gauge hot-dipped galvanized steel with a baked enamel finish. All finishes shall be warranted against cracking, checking, peeling or adhesion failure. The foam core shall be 2"- 1# expanded virgin polystyrene. The backing shall be 24 gauge galvanized steel.

2.5 FINISHES

- A. Comply with National Association of Architectural Metal Manufacturers (NAAMM) "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces shall be acceptable if they shall be within one-half of the range of approved Samples. Noticeable variations in the same piece shall be not acceptable. Variations in appearance of other components shall be acceptable if they shall be within the range of approved Samples and shall be assembled or installed to minimize contrast.
- C. Paint all structural steel with primer and two finish coats.

2.6 LIGHTING

- A. Metal Halide Fixtures in number shown on Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install Concrete Foundations.
- B. Set pre-engineered metal canopy plumb and aligned. Level base plates true to plane with full bearing on concrete bases.
- C. Fasten pre-engineered metal canopy columns to foundation bolts.
- D. Foundation Bolts:
 1. Foundation bolts shall be set by the Contractor in accordance with approved canopy shop drawings. They shall not vary from the size and dimensions shown on the approved shop drawings. Use plywood template. Remove template prior to column erection.

2. Foundation bolts shall conform to ASTM A307; and shall have a minimum of 7-inches of exposed thread and a 6-inch bottom hook.
 3. Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, aggregate grout, non-corrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.
- E. Bolted Connections:
1. All structural erection bolts to conform to ASTM A325
 2. A minimum diameter of $\frac{3}{4}$ inch erection bolts shall be used for all connections.
 3. All drilled holes in structural steel shall be deburred.
 4. Flat structural washers (minimum of one) shall be used on all bolted connections.
 5. All bolts shall be tightened using AISC turn-of-the-nut method.
- F. Screws:
1. Fastening shall be performed per installation prints provided by the manufacturer.
 2. Installation screws shall be furnished with electrode deposited cadmium coating.
 3. Self-drilling and self-tapping screws shall have a sufficient cut point and a $\frac{1}{2}$ -inch O.D. dished tapping metal backed neoprene washer.
- G. Provide pedestrian protection and warnings during construction which comply with all local, federal and OSHA/MOSH codes.
- H. Prior to steel erection of any kind, the Contractor shall grade, back-fill and otherwise prepare the job site to allow for rolling scaffold and ensure safe working conditions including the removal or relocation of overhead power lines. All site safety is the responsibility of the Contractor.
- I. Any grade or elevation situations which deviate from the approved manufacturer's plans shall be coordinated with the manufacturer and his engineer prior to fabrication.
- J. All anchor bolts and/ or leveling plates shall be set within $\frac{1}{4}$ -inch tolerance on layout and grade level.
- K. Connect electrical power service to power distribution system according to requirements specified in Division 26.

3.2 ADJUSTING AND CLEANING

- A. After completing installation, inspect exposed finishes and repair damaged finishes.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01	Western Facility Operations Building—per lump sum
Item 011010-02	Western Facility Police Building—per lump sum
Item 011010-03	Western Facility Fuel Island—per lump sum
Item 011010-04	Western Facility Salt Dome—per lump sum
Item 011010-05	Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 107353

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SECTION 107500 - FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes ground-mounted aluminum flagpoles.

1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand the effects of gravity loads, and the following loads and stresses within limits and under conditions indicated according to the following design criteria:

1. Wind Loads: 25 lbf/sq ft according to NAAMM FP 1001, "Guide Specifications for Design of Metal Flagpoles.
2. Base flagpole design on polyester flags of maximum standard size suitable for use with flagpole.

- B. Related Sections:

1. Division 07 Section "Joint Sealants."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Delegated-Design Submittal: For flagpole assemblies indicated to comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.
 1. Include loads, point reactions, and locations for attachment of flagpoles to building's structure.
- C. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. American Flagpole; a Kearney-National Inc. company.
 2. Baartol Company.
 3. Ewing Flagpoles.
 4. U.S. Flag & Flagpole Supply, LP.
 5. USS Manufacturing Inc.

2.2 FLAGPOLES

- A. Exposed Height: 24 feet.
- B. Aluminum Flagpoles: Provide cone tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of 3/16 inch.
- C. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, not less than 0.064-inch- nominal wall thickness. Provide with 3/16-inch steel bottom plate and support plate; 3/4-inch- diameter, steel ground spike; and steel centering wedges welded together. Galvanize steel after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole. Provide flashing collar of same material and finish as flagpole.
- D. Cast-Metal Shoe Base: For anchor-bolt mounting; provide with anchor bolts.
- E. Finial Eagle for U.S. Flagpole: Manufacturer's standard cast Eagle on ball, sized as standard to match flagpole size indicated. Fabricate from aluminum, finish with gold anodic finish.
- F. Final Bottony for Maryland State Flagpole: Manufacturer's standard cast bottony 0.1 ball sized as standard to match flagpole. Fabricate from aluminum, finish with gold anodic finish.

- G. Internal Halyard, Winch System: Manually operated winch with control stop device and removable handle, stainless-steel cable halyard, and concealed revolving truck assembly with plastic-coated counterweight and sling. Provide flush access door secured with cylinder lock. Finish truck assembly to match flagpole.
- H. Halyard Flag Snaps: Provide two swivel snap hooks per halyard.
 - 1. Provide with neoprene or vinyl covers.

2.3 MISCELLANEOUS MATERIALS

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.
- B. Sand: ASTM C 33, fine aggregate.
- C. Elastomeric Joint Sealant: Joint sealant complying with requirements in Division 07 Section "Joint Sealants."

2.4 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where shown and according to Shop Drawings and manufacturer's written instructions.
- B. Ground Set: Place foundation tube, center, and brace to prevent displacement during concreting. Install flagpole, plumb, in foundation tube. Place tube seated on bottom plate between steel centering wedges and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch layer of elastomeric joint sealant and cover with flashing collar.
- C. Baseplate: Cast anchor bolts in concrete foundation. Install baseplate on washers placed over leveling nuts on anchor bolts and adjust until flagpole is plumb. After flagpole is plumb, tighten retaining nuts and fill space under baseplate solidly with nonshrink, nonmetallic grout. Finish exposed grout surfaces smooth and slope 45 degrees away from edges of baseplate.

- D. Mounting Brackets and Bases: Anchor brackets and bases securely through to structural support with fasteners as indicated on Shop Drawings.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 107500

SECTION 113100 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Cooking equipment including microwave ovens.
2. Refrigerator/freezers.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each exposed finish.
- C. Appliance Schedule: Use same designations indicated on Drawings.
- D. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Residential Appliances: Comply with NAECA standards.
- D. Energy Ratings: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer of each appliance specified agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
 - 1. Microwave Oven: Five-year limited warranty for in-home service on defects in the magnetron tube.
 - 2. Refrigerator/Freezer: Five-year limited warranty for in-home service on the sealed refrigeration system.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.
 - 3. Basis-of-Design Product: The design for each residential appliance is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 COOKING APPLIANCES

- A. Microwave Oven:
 - 1. Available products:
 - a. Amana Appliances;
 - b. General Electric Company;
 - c. Hotpoint;

- d. KitchenAid;
- e. Maytag;
2. Basis-of-Design Product: General Electric, Model JE 1660 WB.
3. Oven Capacity: 1.5 cu. ft.

2.3 REFRIGERATION APPLIANCES

A. Refrigerator/Freezer:

1. Available Products:
 - a. Amana Appliances;
 - b. General Electric Company;
 - c. Hotpoint;
 - d. KitchenAid;
 - e. Maytag;
 - f. Whirlpool Corporation;
2. Type: Freestanding frost-free, two-door freezer compartment on top
3. Basis of Design:: General Electric; GTS 22 IBM WW.
4. Storage Capacity:
 - a. Fresh Food Compartment Volume: 15.6 cu. ft..
 - b. Freezer Volume: 5.13 cu. ft..
5. Front Panel: Manufacturer's standard .
6. Ice Maker: Manufacturer's Standard Built-in Unit..

B. Ice Maker:

1. Products:
 - a. Scotsman NME 1854AS-3A.
2. Type: Air-cooled 208 Volt, 3 phase, 1-1/2 Hp compressor producing not less than 2,000 lbs of cubes or nuggets of ice per day at 70 degrees F.
3. Features: Automatic shut-off to prevent over filling ice bin.

C. Ice Storage Bin:

1. Products:
 - a. Scotsman BH 800.
2. Features:
 - a. Stainless steel cabinet with stainless steel lift up insulated door.
 - b. Polyethylene bin liner, NSF approved.
 - c. Foamed-in-place polyurethane insulation.
 - d. 580 pound capacity.
 - e. 6-inch legs with leveling feet.
 - f. Pipe drain to floor drain.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- B. Utilities: Refer to Divisions 22 and 26 for plumbing and electrical requirements.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 113100

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SECTION 122113 - HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Horizontal louver blinds with aluminum slats.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for horizontal louver blinds.
- C. Samples: For each exposed finish.
- D. Product certificates test reports.
- E. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide horizontal louver blinds with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 1. Flame-Resistance Ratings: Passes NFPA 701.
- B. Product Standard: Provide horizontal louver blinds complying with WCSC A 100.1.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
1. Hunter Douglas;
 2. Levolor, a Newell Rubbermaid Company;.
 3. Springs Window Fashions Division, Inc.;
- B. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radiused corners.
1. Width: 2 Inches.
 2. Finish: As indicated.
 - a. Ionized Coating: Antistatic, dust-repellent, baked polyester finish.
 - b. Reflective Coating: Manufacturer's special coating enhancing the reflection of solar energy on the outside-facing slat surface.
 3. Color: As selected by Architect from full range of colors.
- C. Headrail: Formed steel or extruded aluminum; long edges returned or rolled; fully enclosing operating mechanisms on three sides and end plugs.
- D. Bottom Rail: Formed-steel or extruded-aluminum tube, with plastic or metal capped ends.
- E. Ladders: Evenly spaced to prevent long-term slat sag.
1. For Blinds with Nominal Slat Width 1 Inch or Less: Braided string.
 2. Manufacturer's Standard-width Cloth Tapes: For 2 Inch Blinds.
 - a. Tape Color, Texture, and Pattern: Color, texture, and pattern as selected by Architect from manufacturer's full range.

- F. Lift Cords: Manufacturer's standard.
- G. Tilt Control: Enclosed worm-gear mechanism, linkage rod.
- H. Lift Operation: Manual.
- I. Valance Manufacturer's standard.
- J. Mounting: Wall mounting.
- K. Hold-Down Brackets and Hooks or Pins: Manufacturer's standard.
- L. Side Channels and Perimeter Light Gap Seals: Manufacturer's standard.

2.2 HORIZONTAL LOUVER BLIND FABRICATION

- A. Concealed Components: Noncorrodible or corrosion-resistant-coated materials.
 - 1. Lift-and-Tilt Mechanisms: With permanently lubricated moving parts.
- B. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows:
 - 1. Blind Units Installed between (inside) Jambs: Width equal to 1/4 inch per side or 1/2 inch total, plus or minus 1/8 inch, less than jamb-to-jamb dimension of opening in which each blind is installed. Length equal to 1/4 inch, plus or minus 1/8 inch, less than head-to-sill dimension of opening in which each blind is installed.
 - 2. Blind Units Installed outside Jambs: Width and length as indicated, with terminations between blinds of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Installation Brackets: Designed for easy removal and reinstallation of blind, for supporting headrail, valance, and operating hardware, and for hardware position and blind mounting method indicated.
- D. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to blind hardware and adjoining construction; type designed for securing to supporting substrate; and supporting blinds and accessories under conditions of normal use.

- E. Color-Coated Finish:
 - 1. Metal: For components exposed to view, apply manufacturer's standard baked finish.
- F. Component Color: Provide rails, cords, ladders, and exposed-to-view metal and plastic matching or coordinating with slat color, unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install horizontal louver blinds level and plumb and aligned with adjacent units according to manufacturer's written instructions, and located so exterior slat edges in any position are not closer than 1 inch to interior face of glass. Install intermediate support as required to prevent deflection in headrail. Allow clearances between adjacent blinds and for operating glazed opening's operation hardware if any.
- B. Flush Mounted: Install horizontal louver blinds with slat edges flush with finish face of opening if slats are tilted open.
- C. Jamb Mounted: Install headrail flush with face of opening jamb and head.
- D. Head Mounted: Install headrail on face of opening head.
- E. Recessed: Install headrail concealed within blind pocket.
- F. Adjust horizontal louver blinds to operate smoothly, easily, safely, and free of binding or malfunction throughout entire operational range.
- G. Clean horizontal louver blind surfaces after installation, according to manufacturer's written instructions.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building—per lump sum

Item 011010-02 Western Facility Police Building—per lump sum

Item 011010-03 Western Facility Fuel Island—per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 122113

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SECTION 124813 - ENTRANCE FLOOR MATS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Roll-up mats.

1.2 SUBMITTALS

A. Product Data: For each type of floor mat.

B. Shop Drawings: Show the following:

1. Divisions between mat sections.
2. Perimeter floor moldings.
3. Custom Graphics: Scale drawing indicating colors.

C. Samples: For each floor mat.

D. Maintenance data.

1.3 QUALITY ASSURANCE

A. Accessibility Requirements: Provide installed floor mats that comply with Section 4.5 in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG

PART 2 - PRODUCTS

2.1 ROLL-UP MATS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. American Floor Products Company, Inc.
2. ARDEN Architectural Specialties, Inc.
3. J. L. Industries, Inc.
4. Pawling Corporation; Architectural Products Division.
5. Reese Enterprises, Inc.

B. Roll Up Cut Pile Rubber Back: 4' x 6' at two entry doors.

1. Colors: Selected from manufacturer's full range by Architect.

2.2 FABRICATION

- A. Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated. Unless otherwise indicated, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install surface-type units at entrance locations.

PART 4 - MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 - PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

- Item 011010-01 Western Facility Operations Building—per lump sum
- Item 011010-02 Western Facility Police Building—per lump sum
- Item 011010-03 Western Facility Fuel Island—per lump sum
- Item 011010-04 Western Facility Salt Dome—per lump sum
- Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 124813

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SECTION 131200 – PRE-ENGINEERED SALT STORAGE BUILDING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the design, engineering and construction of a 90 foot diameter wood framed salt storage dome including foundation, retaining walls, floor slabs, wood framed dome structure, exterior sheathing, fiberglass shingles, fabric coiling door, ventilation fan, lighting and power.
- B. Related Sections include the following:
 - 1. Special Provisions Section 32 12 16 for asphalt floor slab.
 - 2. Division 03 Section "Cast-in-Place Concrete" for concrete foundations, and retaining walls
 - 3. Division 07 Section "Roof Accessories" for installation of roof curbs for ventilators.
 - 4. Division 09 painting Sections for finish painting.
 - 5. Division 23 Mechanical Sections for installation of power ventilators
 - 6. Division 26 Electrical Sections for installation of power for door operators and lighting and lighting fixtures.

1.2 SYSTEM DESCRIPTION

- A. General: Provide a complete, integrated set of building system manufacturer's standard mutually dependent components and assemblies that form a building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
 - 1. The dome shall be 90-feet in diameter self supporting clear span pre-engineered wood dome structure with concrete retaining (base) wall capable of storing a minimum of 3,942 tons of salt.
 - 2. The foundation shall be a floating mat foundation and be designed and constructed on compacted stone base.

3. Retaining walls shall be engineered by manufacturer and shall extend not less than 8'-0" above the floor of the building.
4. The floor slab shall not less than two coursed of asphalt paving material, a base course and a fine aggregate top course.
5. Entrance opening shall be not less than 15 feet in width and 20 feet in height with a wing wall extending not less than 3'-6" into the dome. Exposed corners shall receive steel angle corner guards full height. Opening shall be equipped with an overhead coiling fabric door.
6. Dome shall be equipped with motorized ventilation fan.
7. Dome shall be illuminated on the interior and exterior on the opening side.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide building systems capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 1. Live Loads: Include vertical loads induced by the building occupancy indicated. Include loads induced by maintenance workers, materials, and equipment for roof live loads.
 - a. Building Occupancy: Building shall be designed to contain approximately 3,942 tons of salt.
 2. Roof Snow Loads: Include vertical loads induced by the weight of snow, as determined by 50-year, mean-recurrence-interval ground snow load at Project site of 30 PSF minimum. Allow for unbalanced and drift loads.
 3. Wind Loads: Include horizontal loads induced by a basic wind speed corresponding to a 50-year, mean-recurrence interval at Project site of 90 mph minimum.
 4. Auxiliary Loads: Include dynamic live loads, such as those generated by cranes and materials-handling equipment indicated on Drawings.
 5. Design secondary framing system to accommodate deflection of primary building structure and construction tolerances, and to maintain clearances at openings.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of the following building system components:
1. Structural-framing system.
 2. Wood panel system.
 3. Fiberglass Shingles
 4. Flashing and trim.
 5. Doors.
 6. Accessories.
- B. Shop Drawings: For the following building system components. Include plans, elevations, sections, details, and attachments to other work.
1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer licensed in the State of Maryland responsible for their preparation.
 2. Accessory Drawings: Include details of the following items:
 - a. Flashing and trim.
 - b. Overhead coiling fabric doors
 - c. Ventilation Fans.
 - d. Light fixtures
 - e. Electrical panels, conduits, conductors and devices.

- C. Samples for Initial Selection: For each type of building component with factory-applied color finish for Engineer selection of color.
1. Asphalt Shingles: To be same manufacturer and color as main building.
 2. Paint.
- D. Product Certificates: For each type of metal building system, signed by product manufacturer.
1. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
 - a. Name and location of Project.
 - b. Order number.
 - c. Name of manufacturer.
 - d. Name of Contractor.
 - e. Building dimensions including.
 - f. Governing building code and year of edition.
 - g. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
 - h. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
 - i. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- E. Erector Certificate: Signed by manufacturer certifying that erector complies with requirements.
- F. Manufacturer Certificate: Signed by manufacturer certifying that products comply with requirements.

- G. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Erector Qualifications: An experienced erector who has specialized in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.
- B. Manufacturer Qualifications: A qualified manufacturer.
 - 1. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- C. Meet or exceed the minimum requirements for material quality, fabrication, and installation procedures of the following organizations:
 - 1. American Concrete Institute (ACI).
 - 2. American Institute of Timber Construction (AITC).
 - 3. American Plywood Association (APA).
 - 4. American Softwood Lumber Standards, U.S.
 - 5. Department of Commerce, PS-20.
 - 6. American Wood Preserver's Bureau (AWPA).
 - 7. International Building Code (IBC).

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store panels to ensure dryness and with positive slope for drainage

of water. Do not store panels in contact with other materials that might cause staining, or other surface damage.

1.7 PROJECT CONDITIONS

A. Field Measurements:

1. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.

1.8 COORDINATION

- A. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- B. Coordinate panel assemblies with flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.9 WARRANTY

- A. Salt Dome Warranty: Manufacturer's standard form in which manufacturer agrees to repair finish or replace framing components and panels that show evidence of deterioration within specified warranty period.
 1. Deterioration shall not include damaged caused by equipment charging the dome with salt or dispensing salt from the dome into trucks.
 2. Warranty Period of one year from submittal completion.
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials or workmanship within specified warranty period. Materials failures include manufacturing defects and failure of asphalt shingles to self-seal after a reasonable time.
 1. Material Warranty Period: 25 years from date of Substantial Completion, prorated, with first 3 years nonprorated.

2. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds up to 60 mph 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: The design for storage building system is based on "Dome Salt Storage Building" as manufactured by Dome Corporation of America, 973-744-0440. Subject to compliance with requirements, provide the named product or a comparable product.

2.2 FABRICATION, GENERAL

- A. General: Design components and field connections required for erection to permit easy assembly.
 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 2. Fabricate structural framing to produce clean, smooth cuts. Bore holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

2.3 FOUNDATION/RETAINING WALL

- A. Concrete shall be 4,000 psi concrete in accordance with Section 03300 "Cast-In-Place Concrete."
- B. Foundation shall be a floating mat foundation and be designed and constructed on compacted stone base.
 1. Foundation shall extend not less than three feet below finish grade or floor slab, which ever is at a lower elevation.
 2. Retaining wall shall extend to a height of not less than eight feet above floor slab as coordinated with capacity of dome.
 3. Foundation/retaining wall shall be not less than 12-inches thick with two mats of reinforcing steel designed to withstand the stressed of the materials stored within the building and the dome structure live and dead loads.

4. Exposed interior surfaces of retaining wall shall be coated with two applications of a mixture of 50% mineral spirits and 50% linseed oil after not less than a 28 day curing period.

C. Floor Slab

1. The floor slab shall be two layers of asphalt paving in accordance with Maryland Department of Transportation Standard Specifications.
2. Base course shall be 3-inches of compacted asphalt paving.
3. Top course shall be 2-inches of compacted fine aggregate course.
4. Floor slab shall be level to within 1-inch and shall slope away from the dome to match existing paving.

2.4 DIMENSION LUMBER

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Provide dressed lumber, S4S.
3. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

B. Grade and Species: Provide visually graded dimension lumber for truss chord and web members, of not less than the following grade:

1. Grade for Members: C.C. #1 or better.

2.5 PANEL PRODUCTS

A. Sheathing Panels: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 ROOFING

A. Dome shall be covered with 235 lbs minimum fiberglass shingles on underlayment of non-perforated No. 15 asphalt roofing felt.

- B. Asphalt roofing felts and shingles shall be attached with large head galvanized roofing nails, length as recommended by shingle manufacturer. Shingles shall be attached with not less than 6 nails. Staples will not be allowed.
- C. Color and Shingle per Section: 073113 - Asphalt Shingles.

2.7 DOOR

- A. Overhead Coiling Door: Manufacturer's standard roll-up door curtain of high strength open weave vinyl coated polyester curtain. Door shall be equipped with a motorized operator sized to accommodate door size with weatherproof corrosion resistant housing and three-button (Open, Close, Stop) control box. Door system shall be designed to operate to a temperature of not less than 10 degrees below zero.
 - 1. Basis of Design: Block'n Rail; www.blocknroll.com, 1-866-256-2567.
 - 2. Color: Selected from manufacturer's full range of available colors by Architect.

2.8 ACCESSORIES

- A. General: Provide accessories as standard with building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
- B. Flashing and Trim: Formed from minimum 0.025-inch thick, aluminum.
- C. Roof Ventilators: Corrosion resistant fan type as determined by building manufacturer.
- D. Light Fixtures: weatherproof corrosion resistant as standard with building manufacturer.

2.9 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, in area of high relative humidity, or exposed to salt, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or of Type 316 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.

- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.

2.10 FINISHES

- A. Paint all exposed wood exposed to the exterior of the building including door opening trim and fan dormer.
 - 1. The paint selected shall be first quality materials as manufactured by Sherwin Williams, MAB, Devco Paint or approved equal acceptable to the Engineer.
 - 2. Color shall be as selected from manufacturers standard selection.
 - 3. Paint shall be alkyd type semi-glass enamel house paint.
- B. Surface Preparation
 - 1. The surfaces to be primed shall be sanded smooth, all dust and dirt removed and completely dry.
 - 2. No painting shall be attempted when temperature is below 545 degrees F. or in wet weather.
- C. Application
 - 1. Apply paint in strict conformance with manufacturer's recommendations
 - 2. Painting shall consist of a prime coat and two finish coats.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

- B. The building will be constructed in strict accordance with these Special Provisions and the drawing and specifications of the manufacturer.
- C. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clear and prepare site for construction.
- B. The site shall be proof rolled with a vibrator and any soft spots repaired with CR-6. Place 8-inches of CR-6 and compact to 95% Proctor.
- C. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place, unless otherwise indicated.

3.3 ERECTION AND ASSEMBLY

- A. Assembly and installation of trusses, framing, prefabricated panels, finish work, door, canopy and all related work shall be accomplished in accordance with manufacturer's drawings and specifications. Minor adjustment shall be performed in the field to accommodate field conditions in conformance with the manufacturers recommendations.
- B. Do not field cut, drill, or alter structural members without written approval from building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated and according to manufacturer's drawings and specifications.
- D. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- E. Apply plywood sheathing to framing with 2-inch spiral nails spaced at 6-inches at all edges and a continuous bead of adhesive recommended by the building manufacturer.
- F. Set all nails flush with surface of plywood sheathing before starting roofing application.

- G. Sheathing surfaces shall be smooth, free of projections and debris and shall be dry before applying roofing.
- H. Asphalt roofing felts and shingles shall be attached with large head galvanized roofing nails, length as recommended by shingle manufacturer. Shingles shall be attached with not less than 6 nails. Staples will not be allowed.
- I. Install flashings at all edges of roofing and around all openings in accordance with shingle manufacturers recommendations.

3.4 DOOR AND FRAME INSTALLATION

- A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components.

3.5 FINISHING

A. Surface Preparation

- 1. The surfaces to be primed shall be sanded smooth, all dust and dirt removed and completely dry.
- 2. No painting shall be attempted when temperature is below 545 degrees F. or in wet weather.

B. Application

- 1. Apply paint in strict conformance with manufacturer's recommendations
- 2. Painting shall consist of a prime coat and two finish coats.

3.6 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Install

work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.7 ADJUSTING

- A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.
- B. Roof Ventilators: After completing installation, including work by other trades, lubricate, test, and adjust units to operate easily, free of warp, twist, or distortion as needed to provide fully functioning units.

3.8 CLEANING AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, and abraded surfaces of prime-painted surfaces.
- C. All paint cans and debris, scraps and trash shall be removed from the site by the contractor.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-01 Western Facility Operations Building–per lump sum

Item 011010-02 Western Facility Police Building–per lump sum

Item 011010-03 Western Facility Fuel Island–per lump sum

Item 011010-04 Western Facility Salt Dome—per lump sum

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 131200

SECTION 133419 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes metal building systems that consist of integrated sets of mutually dependent components including structural framing roof panels, wall panels, soffit panels, doors, windows and accessories.
- B. See Division 03 Section "Cast-in-Place Concrete" for concrete foundations, slabs, and anchor-bolt installation.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal building systems capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Engineer metal building systems according to procedures in MBMA's "Metal Building Systems Manual."
 - 2. Design Loads: As indicated on Structural Drawings General Notes.
 - 3. Design Loads: As required by MBMA's "Metal Building Systems Manual."
- B. Seismic Performance: Design and engineer metal building systems capable of withstanding the effects of earthquake motions determined according to IBC 2006.
- C. Thermal Movements: Provide metal panel systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
- D. Thermal Performance: Provide insulated metal panel assemblies with the following maximum U-factors and minimum R-values for opaque elements when tested according to ASTM C 1363 or ASTM C 518:
 - 1. Metal Roof Panel Assemblies:
 - a. R-Value: 30

2. Metal Wall Panel Assemblies:

- a. R-Value: 19

1.3 SUBMITTALS

- A. Product Data: For each type of metal building system component indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 2. Anchor-Bolt Plans: Submit anchor-bolt plans before foundation work begins. Include location, diameter, and projection of anchor bolts required to attach metal building to foundation. Indicate column reactions at each location.
 3. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing; include provisions for openings. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
 4. Metal Roof and Wall Panel Layout Drawings: Show layouts of metal panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
- C. Samples: For each type of building component and for each color and texture required.
- D. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
1. Name and location of Project.
 2. Order number.
 3. Name of manufacturer.
 4. Name of Contractor.

5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design loads and load combinations.
9. Building-use category.
10. AISC Certification for Category MB: Include statement that metal building system and components were designed and produced in an AISC-Certified Facility by an AISC-Certified Manufacturer.

E. Welding certificates.

F. Erector Certificate: Signed by manufacturer certifying that erector complies with requirements.

G. Manufacturer certificate.

H. Surveys: Show final elevations and locations of major members. Have surveyor who performed surveys certify their accuracy.

1.4 QUALITY ASSURANCE

A. Erector Qualifications: An experienced erector who has specialized in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

B. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.

1. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components in an AISC-Certified Facility.

2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

C. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."

- D. Structural Steel: Comply with AISC's "Specification for Structural Steel Buildings-- Allowable Stress Design, Plastic Design," or AISC's "Load and Resistance Factor Design Specification for Structural Steel Buildings," for design requirements and allowable stresses.
- E. Cold-Formed Steel: Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members," or AISI's "Load and Resistance Factor Design Specification for Steel Structural Members," for design requirements and allowable stresses.
- F. Pre-Erection Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to metal building systems including, but not limited to, the following:
 - 1. Inspect and discuss condition of foundations and other preparatory work performed by other trades.
 - 2. Review structural load limitations.
 - 3. Review required testing, inspecting, and certifying procedures.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness and with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.6 PROJECT CONDITIONS

- A. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.

1.7 COORDINATION

- A. Coordinate size and location of concrete foundations and casting of anchor-bolt inserts into foundation walls and footings. Concrete, reinforcement, and formwork requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- B. Coordinate installation of wall and roof penetrations.

1.8 WARRANTY

- A. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Siliconized Polyester Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 15 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 2 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 3. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. American Buildings Company.
 2. American Steel Building Company, Inc.; Division of NCI Building Systems, LLP.
 3. Behlen Mfg. Co.

4. Butler Manufacturing Company.
5. Ceco Building Systems; Division of Robertson-Ceco Corporation.
6. Crown Metal Buildings, Inc.
7. LLP.
8. Metallic Metal Building Company; Division of NCI Building Systems, LLP.
9. Package Industries, Inc.
10. Southern Structures, Inc.
11. Spirco Manufacturing; Division of Metal Building Products, Inc.
12. Star Building Systems; Division of Robertson-Ceco Corporation.
13. Steelo Systems Inc.
14. United Structures of America, Inc.
15. VP Buildings, Inc.; a United Dominion Company.

2.2 STRUCTURAL-FRAMING MATERIALS

- A. W-Shapes: ASTM A 992/A 992M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
- B. Channels, Angles, M-Shapes, and S-Shapes: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
- C. Plate and Bar: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50 or 55; or ASTM A 529/A 529M, Grade 50 or 55.
- D. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
- E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B or C, structural tubing.

- F. Structural-Steel Sheet: Hot-rolled, ASTM A 1011/A 1011M, Structural Steel (SS), Grades 30 through 55, or High-Strength Low Alloy Steel (HSLAS), Grades 45 through 70; or cold-rolled, ASTM A 1008/A 1008M, Structural Steel (SS), Grades 25 through 80, or High-Strength Low Alloy Steel (HSLAS), Grades 45 through 70.
- G. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80 or High-Strength Low Alloy Steel (HSLAS), Grades 50 through 80; with G60 coating designation; mill phosphatized.
- H. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 - 1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80 or High-Strength Low Alloy Steel (HSLAS), Grades 50 through 80; with G90 coating designation.
 - 2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Structural Steel (SS), Grade 50 or 80; with Class AZ50 coating.
- I. Non-High-Strength Bolts, Nuts, and Washers: ASTM A 307, Grade A, carbon-steel, hex-head bolts; ASTM A 563 carbon-steel hex nuts; and ASTM F 844 plain (flat) steel washers.
 - 1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M,
- J. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
 - 1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.
 - 2. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex-head steel structural bolts with splined ends.
 - a. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.
- K. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers, plain.

- L. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
 - 1. Configuration: Straight.
 - 2. Nuts: ASTM A 563 heavy hex carbon steel.
 - 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 4. Washers: ASTM F 436 hardened carbon steel.
 - 5. Finish: Hot-dip zinc coating, ASTM A 153/A 153M.

- M. Headed Anchor Rods: ASTM F 1554, Grade 36 straight.
 - 1. Nuts: ASTM A 563 heavy hex carbon steel.
 - 2. Plate Washers: ASTM A 36/A 36M carbon steel.
 - 3. Washers: ASTM F 436 hardened carbon steel.
 - 4. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

- N. Threaded Rods: ASTM A 36/A 36M.
 - 1. Nuts: ASTM A 563 heavy hex carbon steel.
 - 2. Washers: ASTM F 436 hardened ASTM A 36/A 36M carbon steel.
 - 3. Finish: Hot-dip zinc coating, ASTM A 153/A 153M.

- O. Primer: SSPC-Paint 15, Type I, red oxide.

2.3 MATERIALS FOR FIELD-ASSEMBLED METAL PANELS

- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.
 - 1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grades 33 through 80, with G90 coating designation.

2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Structural Steel (SS), Grade 50 or 80; with Class AZ50 coating designation.
3. Surface: Embossed finish.
4. Exposed Finishes: Apply the following coil coating, as specified or indicated on Drawings:
 - a. Siliconized-Polyester Coating: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.
 - b. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions, except as modified below:
 - c. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored backer finish, consisting of prime coat and wash coat with a total minimum dry film thickness of 0.5 mil.

2.4 THERMAL INSULATION FOR FIELD-ASSEMBLED METAL PANELS

- A. Metal Building Insulation: , glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch-wide, continuous, vapor-tight edge tabs; and with a flame-spread index of 25 or less.
- B. Mineral-Fiber-Blanket Insulation: ASTM C 665, type indicated below; consisting of fibers manufactured from glass.
 1. Type: II blankets with nonreflective membrane covering.
- C. Vapor-Retarder Facing: ASTM C 1136, with permeance not greater than 0.02 perm when tested according to ASTM E 96, Desiccant Method.
 1. Composition: Metallized-polypropylene film facing.
- D. Retainer Strips: 0.019-inch- thick, formed, galvanized steel or PVC retainer clips colored to match insulation facing.

- E. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.5 DOOR AND FRAME MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with G60 zinc (galvanized) or A60 zinc-iron-alloy (galvannealed) coating designation.

2.6 MISCELLANEOUS MATERIALS

- A. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
 - 1. Fasteners for Metal Roof Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless-steel cap or zinc-aluminum-alloy head and EPDM or neoprene sealing washer.
 - 2. Fasteners for Metal Wall Panels: Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with nylon or polypropylene washer.
 - 3. Fasteners for Metal Roof and Wall Panels: Self-drilling Type 410 stainless-steel or self-tapping Type 304 stainless-steel or zinc-alloy-steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal panels.
- B. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- C. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

D. Metal Panel Sealants:

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing.
2. Joint Sealant: ASTM C 920; one-part elastomeric polyurethane, polysulfide, or silicone-rubber sealant.

2.7 FABRICATION, GENERAL

- A. Tolerances: Comply with MBMA's "Metal Building Systems Manual": Chapter IV, Section 9, "Fabrication and Erection Tolerances."
- B. Metal Panels: Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.8 STRUCTURAL FRAMING

A. General:

1. Primary Framing: Shop fabricate framing components to indicated size and section with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 - a. Make shop connections by welding or by using high-strength bolts.
 - b. Join flanges to webs of built-up members by a continuous submerged arc-welding process.
 - c. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 - d. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary structural members with specified primer after fabrication.
2. Secondary Framing: Shop fabricate framing components to indicated size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form,

punch, drill, and weld secondary framing for bolted field connections to primary framing.

- a. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary structural members with specified primer after fabrication.
- B. Primary Framing: Manufacturer's standard structural primary framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing. Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
1. Rigid Clear-Span Frames: I-shaped frame sections fabricated from shop-welded, built-up steel plates or structural-steel shapes. Interior columns are not permitted.
 2. Frame Configuration: One-directional sloped, load-bearing-wall type.
 3. Exterior Column Type: Uniform depth or tapered.
 4. Rafter Type: Uniform depth.
- C. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:
1. End-Wall and Corner Columns: I-shaped sections fabricated from structural-steel shapes; shop-welded, built-up steel plates; or C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.0598 inch.
 2. End-Wall Rafters: C-shaped, cold-formed, structural-steel sheet; with minimum thickness of 0.0598 inch; or I-shaped sections fabricated from shop-welded, built-up steel plates or structural-steel shapes.
- D. Secondary Framing: Manufacturer's standard secondary framing members, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Fabricate framing from cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet prepainted with coil coating, unless otherwise indicated, to comply with the following:
1. Purlins: C- or Z-shaped sections; fabricated from minimum 0.0598-inch-thick steel sheet, built-up steel plates, or structural-steel shapes; minimum 2-1/2-inch-wide flanges.
 - a. Depth: As required to comply with system performance requirements.

2. Girts: C- or Z-shaped sections; fabricated from minimum 0.0598-inch- thick steel sheet, built-up steel plates, or structural-steel shapes. Form ends of Z-sections with stiffening lips angled 40 to 50 degrees to flange and with minimum 2-1/2-inch- wide flanges.
 - a. Depth: As required to comply with system performance requirements.
 3. Eave Struts: Unequal-flange, C-shaped sections; fabricated from 0.0598-inch-thick steel sheet, built-up steel plates, or structural-steel shapes; to provide adequate backup for metal panels.
 4. Flange Bracing: Minimum 2-by-2-by-1/8-inch structural-steel angles or 1-inch diameter, cold-formed structural tubing to stiffen primary frame flanges.
 5. Sag Bracing: Minimum 1-by-1-by-1/8-inch structural-steel angles.
 6. Base or Sill Angles: Minimum 3-by-2-by-0.0598-inch zinc-coated (galvanized) steel sheet.
 7. Purlin and Girt Clips: Minimum 0.0598-inch- thick, steel sheet. Provide galvanized clips where clips are connected to galvanized framing members.
 8. Secondary End-Wall Framing: Manufacturer's standard sections fabricated from minimum 0.0598-inch- thick, zinc-coated (galvanized) steel sheet.
 9. Framing for Openings: Channel shapes; fabricated from minimum 0.0598-inch-thick, cold-formed, structural-steel sheet or structural-steel shapes. Frame head and jamb of door openings, and head, jamb, and sill of other openings.
 10. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- E. Bracing: Provide adjustable wind bracing as follows:
1. Rods: ASTM A 36/A 36M; ASTM A 572/A 572M, Grade 50; or ASTM A 529/A 529M, Grade 50; minimum 1/2-inch- diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
 2. Cable: ASTM A 475, 1/4-inch- diameter, extra-high-strength grade, Class B zinc-coated, 7-strand steel; with threaded end anchors.

3. Angles: Fabricated from structural-steel shapes to match primary framing, of size required to withstand design loads.
 4. Rigid Portal Frames: Fabricate from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 5. Fixed-Base Columns: Fabricate from shop-welded, built-up steel plates or structural-steel shapes to match primary framing; of size required to withstand design loads.
 6. Diaphragm Action of Metal Panels: Design metal building to resist wind forces through diaphragm action of metal panels.
 7. Bracing: Provide wind bracing using any method specified above, at manufacturer's option.
- F. Bolts: Provide plain finish bolts for structural-framing components that are primed or finish painted. Provide hot-dipped galvanized bolts for structural-framing components that are galvanized.
- G. Factory-Primed Finish: Apply specified primer immediately after cleaning and pretreating.
1. Prime primary, secondary, and end-wall structural-framing members to a minimum dry film thickness of 1 mil.
 - a. Prime secondary steel framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.
 2. Prime galvanized members with specified primer, after phosphoric acid pretreatment.

2.9 METAL ROOF PANELS

- A. Trapezoidal-Rib, Standing-Seam Metal Roof Panels: Formed with raised trapezoidal ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
1. Material: Zinc-coated (galvanized) 0.0269 inch thick.
 - a. Exterior Finish: Fluoropolymer.

- b. Color: As selected by Architect from manufacturer's full range.
2. Clips: Manufacturer's standard, floating type to accommodate thermal movement; fabricated from zinc-coated (galvanized) steel or zinc-coated (galvanized) steel, aluminum-zinc alloy-coated steel, or stainless-steel sheet.
3. Joint Type: Panels snapped together.
4. Joint Type: Mechanically seamed, folded as standard with manufacturer.
5. Panel Coverage: 24 inches.
6. Panel Height: 3 inches.

2.10 FIELD-ASSEMBLED METAL WALL PANELS

- A. Tapered-Rib-Profile, Exposed-Fastener Metal Wall Panels: Formed with raised, trapezoidal major ribs and intermediate stiffening ribs symmetrically spaced between major ribs; designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.
 1. Material: Zinc-coated (galvanized) 0.0269 inch thick.
 - a. Exterior Finish: Fluoropolymer.
 - b. Color: As selected by Architect from manufacturer's full range.
 2. Major-Rib Spacing: 6 inches o.c.
 3. Panel Coverage: 24 inches.
 4. Panel Height: 1.5 inches.

2.11 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.

B. Metal Soffit Panels: Match profile and material of metal roof panels.

1. Finish: Match finish and color of metal roof panels.

2.12 DOORS AND FRAMES

A. Swinging Personnel Doors and Frames: Metal building system manufacturer's standard doors and frames; prepared and reinforced at strike and hinges to receive factory- and field-applied hardware according to ANSI/DHI A115 Series.

1. Steel Doors: 1-3/4 inches thick; fabricated from 0.0329-inch- uncoated thickness, metallic-coated steel face sheets; of styles indicated; seamless at both vertical edges; with 0.0528-inch- uncoated thickness, inverted metallic-coated steel channels welded to face sheets at top and bottom of door.

a. Core: Polystyrene foam or Polyurethane foam.

b. Glazing Frames: Steel frames to receive field-installed glass.

c. Glazing: As specified in Division 08 Section "Glazing."

2. Steel Frames: Fabricate 2-inch- wide face frames from 0.0528-inch- uncoated thickness, metallic-coated steel sheet.

a. Type: Factory welded.

3. Hardware: Comply with Division 08 Section "Door Hardware." Provide keyed mortise locksets. Storeroom function.

4. Anchors and Accessories: Manufacturer's standard units, galvanized according to ASTM A 123/A 123M.

5. Finishes for Personnel Doors and Frames:

a. Surface Preparation: Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

1) Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

- b. Factory Priming for Field-Painted Finish: Immediately after cleaning and pretreating, apply manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria.

2.13 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels, unless otherwise indicated.
 1. Closures: Provide closures at eaves and ridges, fabricated of same material as metal roof panels.
 2. Clips: Manufacturer's standard, formed from steel sheet, designed to withstand negative-load requirements.
 3. Cleats: Manufacturer's standard, mechanically seamed cleats formed from steel sheet.
 4. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 5. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal roof panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels, unless otherwise indicated.
 1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
 2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible

closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

- D. Flashing and Trim: Formed from minimum 0.0159-inch- thick, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.
1. Opening Trim: Minimum 0.0269-inch- thick, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- E. Gutters: Formed from minimum 0.0159-inch- thick, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
1. Gutter Supports: Fabricated from same material and finish as gutters; spaced 36 inches o.c.
- F. Downspouts: Formed from 0.0159-inch- thick, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- long sections, complete with formed elbows and offsets.
1. Mounting Straps: Fabricated from same material and finish as gutters; spaced 10 feet o.c.
- G. Ventilators: Type, complete with hardware, flashing, closures, and fittings as indicated by requirements shown on drawings.

2.14 SOURCE QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and special inspecting agency to perform the following tests and inspections and to submit reports.
- B. Special Inspector: Owner will engage a qualified special inspector to perform the following tests and inspections and to submit reports. Special Inspector will verify that manufacturer maintains detailed fabrication and quality-control procedures and will review the completeness and adequacy of those procedures to perform the Work.

1. Special inspections will not be required if fabrication is performed by a manufacturer registered and approved by authorities having jurisdiction to perform such Work without special inspection.
 - a. After fabrication, submit certificate of compliance with copy to authorities having jurisdiction certifying that Work was performed according to Contract requirements.
- C. Tests and Inspections:
1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1.

PART 3 - EXECUTION

3.1 ERECTION

- A. Before erection proceeds, engage professional surveyor to survey elevations and locations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments to receive structural framing, with Erector present, for compliance with requirements and metal building system manufacturer's tolerances.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place, unless otherwise indicated.
- C. Erect metal building system according to manufacturer's written erection instructions and erection drawings.
- D. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- E. Set structural framing accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

- F. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
1. Set plates for structural members on wedges, shims, or setting nuts as required.
 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- G. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment. Level and plumb individual members of structure.
- H. Primary Framing and End Walls: Erect framing true to line, level, plumb, rigid, and secure. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist cure grout for not less than seven days after placement.
1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and snug-tightened or pretensioned joints.
- I. Secondary Framing: Erect framing true to line, level, plumb, rigid, and secure. Fasten secondary framing to primary framing using clips with field connections using non-high-strength bolts.
1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 2. Locate and space wall girts to suit openings such as doors and windows.
 3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- J. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
1. Tighten rod and cable bracing to avoid sag.

2. Locate interior end-bay bracing only where indicated.
- K. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- L. Erection Tolerances: Maintain erection tolerances of structural framing within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- ### 3.2 METAL PANEL INSTALLATION, GENERAL
- A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 2. Install metal panels perpendicular to structural supports, unless otherwise indicated.
 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 4. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 5. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- B. Lap-Seam Metal Panels: Install screw fasteners with power tools having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or metal panels. Install screws in predrilled holes. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal panel manufacturer.

3.3 METAL ROOF PANEL INSTALLATION

- A. General: Provide metal roof panels of full length from eave to ridge, unless otherwise indicated or restricted by shipping limitations. Install ridge and hip caps as metal roof panel work proceeds.
- B. Field-Assembled, Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
 - 1. Install clips to supports with self-tapping fasteners.
 - 2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 3. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
 - 4. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels for fasteners.
 - 5. Provide metal closures at peaks, rake edges, rake walls and each side of ridge caps.
- C. Field-Assembled, Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint at location and spacing recommended by manufacturer.
 - 1. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
 - 2. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels; on side laps of ribbed or fluted metal panels; and elsewhere as needed to make metal panels weatherproof to driving rains.

3. At metal panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.4 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. When two rows of metal panels are required, lap panels 4 inches minimum.

2. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.

3. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Pre-drill panels.

4. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.

5. Install screw fasteners in predrilled holes.

6. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated, or if not indicated, as necessary for waterproofing.

7. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-tapping screws.

8. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Field-Assembled, Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.5 METAL SOFFIT PANEL INSTALLATION

- A. Provide metal soffit panels full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.6 THERMAL INSULATION INSTALLATION FOR FIELD-ASSEMBLED METAL PANELS

- A. General: Install insulation concurrently with metal wall panel installation, in thickness indicated to cover entire wall, according to manufacturer's written instructions.
 - 1. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 - 2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
 - 3. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation with both sets of facing tabs sealed to provide a complete vapor retarder.
- B. Blanket Roof Insulation: Comply with the following installation method:
 - 1. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing members. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.
 - 2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
- C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing members. Hold in place by metal wall panels fastened to secondary framing.
 - 1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.7 DOOR AND FRAME INSTALLATION

- A. General: Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.
- B. Personnel Doors and Frames: Install doors and frames according to ANSI A250.8. Shim as necessary to comply with DHI A115.IG. Fit non-fire-rated doors accurately in their respective frames.
 - 1. At fire-rated openings, install frames according to, and doors with clearances specified in, NFPA 80.
- C. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing."

3.8 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 - 2. Install components for a complete metal wall panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 - 1. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection.
- C. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 4 feet o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.

- 1. Provide elbows at base of downspouts to direct water away from building.

- E. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and special inspecting agency to perform the following tests and inspections and to submit reports.

- B. Special Inspector: Owner will engage a qualified special inspector to perform the following tests and inspections and to submit reports.

- C. Tests and Inspections:

- 1. High-Strength, Field-Bolted Connections: Connections shall be inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - 2. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1.

3.10 CLEANING AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

- B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

- C. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.

- 1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or SSPC-SP 3, "Power Tool Cleaning."
 - 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-05 Western Facility Storage Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 133419

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SECTION 133420 – MODULAR BUILDINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract and Division 01 Specification Sections, and Division 02 through 36 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes items to be provided as part of, and requirements for providing the modular building structures, including but not limited to:
 - 1. Minimum modular building requirements.
 - 2. Design, construction and installation.
 - 3. Required modular building components.
 - 4. Heating, ventilating and other mechanical systems.
 - 5. Electrical power, lighting and building systems.
- B. Under this contract the Contractor shall provide complete modular buildings as indicated on the drawings and specified herein
- C. The tie-in connections of the modular buildings to the main building's fire, networking, communication and security systems, etc., are included under this contract.
- D. The tie-in connections of the modular buildings to new domestic water and sanitary facilities are included under this contract.
- E. Related Sections include, but are not limited to, the following:
 - 1. Division 01 Section "Summary" for work restrictions and coordination with Owner's consultants and work being performed concurrently.
 - 2. Division 01 Section "Execution Requirements" for progress cleaning and field engineering requirements.

3. Division 10 Section "Awnings" for fabric canopy at ramps.
4. Division 02 Section "Earthwork" for grading requirements.
5. Division 13 Section "Detention Cell Modules" for holding cells.
6. Division 08 Section 087163 "Detention Door Hardware" for holding cell locks.

1.3 GENERAL

- A. This project for modular buildings is undertaken to provide space for Police Operations. Each building provided is intended to be self-contained and self-sufficient with ventilation, heating, air conditioning, and lighting.
- B. The Contractor shall provide new units specifically fabricated for this project, and shall submit any and all drawings and specifications as required for full review and approval by Project Engineer and the Maryland Transportation Authority (Authority).
- C. The Authority will provide all furnishings and equipment not specified herein as a condition of this contract.
- D. All facilities must be IBC/Maryland sealed.

1.4 SUBMITTAL REQUIREMENTS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for modular building structure. Include manufacturer's cut sheets for all proposed HVAC and plumbing equipment and controls.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 2. Light fixtures, light switches, power receptacles, panelboards, data outlets and sleeves/penetrations.
 3. Floor plans showing conduit penetrations.

4. Floor plans showing HVAC systems including duct layouts with sizes, air devices, and equipment and thermostat locations.
 5. Floor plans and riser diagrams showing all plumbing systems.
- C. Engineering Calculations: Submit structural calculations sealed by an engineer registered in the state of Maryland for all structural items, including foundation systems, wall structure, roof structure, and floor structure.
- D. Samples for Initial Selection: For modular building structure with factory-applied color finishes.
- E. Maintenance Data: For modular structure and HVAC systems and installed equipment to include in maintenance manuals.
- F. Warranties: Special warranties specified in this Section.

1.5 PERFORMANCE REQUIREMENTS

- A. Comply with all applicable County, Maryland and Federal Codes including any codes applicable to premanufactured modular structures.
- B. Every effort is to be made to insure the safety of all individuals during transportation as well as during installation. All work is to be handled in complete compliance with OSHA and MOSH requirements and all current local, county and state codes. Transportation permits and scheduled routes shall be verified to the satisfaction of Maryland Transportation Authority prior to any moves. The Contractor is advised that the buildings are being moved to a site that may have other construction under way and/or community neighbors present or within the immediate vicinity. Extreme caution is to be taken to assure a safe environment at all times
- C. Structural Performance: Provide modular building structure capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Wind Loads: Determine loads based on the following minimum design wind pressures:
 - a. In accordance with the International Building Code 2006, Exposure D.
 2. Ground Snow Loads: 25 lb/sq. ft.

- 3. Floor load: A minimum of 40 pounds per square foot load capacity. However, the load capacity shall equal or exceed IBC 2006 code for such use by a minimum of 37 adults. Floor loads for cell areas are to be coordinated by the Contractor with cell manufacturer and accounted for in structure design.

- D. Seismic Performance: Provide modular building structure capable of withstanding the effects of earthquake motions determined according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

- E. HVAC: System shall be sized for the following design conditions:

SEASON	INDOOR	OUTDOOR
Summer	75° / 50% RH	91° / 74 WB
Winter	70°	0°

- F. Electrical: Vendor/ Manufacturer shall comply with the requirements of the 2005 National Electrical Code.

1.6 DAMAGE

- A. During preparation for delivery of units, actual delivery and installation of units, and at all times until completion of project, Modular Building Contractor shall provide adequate protection and facilities to safeguard modular buildings, buildings, walks, grounds, roadways, etc., from damage and to safeguard all persons on or about the premises. Any damage to the Authority property (buildings, walks, grounds, roadways, curbing, lawns, shrubbery, etc.) caused by the Contractor or any of the Contractor's subcontractors shall be immediately and expertly repaired to the satisfaction of the Authority. All repairs shall be made at the Contractor's expense.

- B. The Contractor will be required to clean up their work area and any adjacent work areas at the end of each work shift. These areas shall be cleaned to the satisfaction of the Authority. The accumulation of debris in the modular building or on the surrounding grounds will not be permitted. All debris shall be disposed of off site at the Contractor's expense.

1.7 MINIMUM MODULAR BUILDING REQUIREMENTS

- A. All units must be adequate for the intended use as determined by the Authority (not industry) standards.

- B. Functional Occupancy: 32 officers, two ranking supervisors, secretary, two prisoner cells.

1.8 DESIGN, CONSTRUCTION AND INSTALLATION

- A. The Contractor is responsible for, but not limited to, the following:
 - 1. Design, assembly, delivery, installation and connection of each modular unit in order to provide a complete and fully operational facility with all noted accessories specified herein.
 - 2. Design and installation of ramps, stairs, railings, walks, as necessary to provide access to the Modular Building buildings.
 - 3. The feeder from Panel MDP in the Maintenance Building to Panel P in the Police Building, including all Branch Circuits to HVAC equipment, lighting, receptacles, etc.
 - 4. Installation of recessed rough-in boxes wire and conduits for fire, networking, communication and security systems, etc.
 - 5. Design and installation of complete and operational HVAC and plumbing systems. Provide electrical heat tracing where piping runs through unconditioned spaces.
 - 6. The Modular Building Contractor Modular Building supplier and installer shall coordinate with the Authority to insure that all provided items and equipment are compatible with the Authority systems, and make changes, if required, at no additional cost to the Authority.
 - 7. All fees, permits, and licensing required to design, assemble, deliver and install all Modular Building components, including all required anchorages, steps, ramps, interior finishes, etc. All work shall be in accordance with the latest applicable codes and regulations of all governing agencies.
 - 8. Examining the receiving site to verify dimensions and existing conditions prior to making any move. The Contractor shall notify the Authority immediately of any conditions which have to be addressed prior to making the move of the unit(s). Transportation route of Modular Building to construction site will have to pass under the existing I-370 Roadway, at Crabbs Branch Way clearance height 15.4 feet.

9. Protection of the interior and exterior of the modular buildings during transport and placement. The Contractor and the Authority representative shall examine each upon installation at the site. The Authority will have the right to reject any unit after delivery, and, at the Authority's option, to have the Modular Building Contractor repair or replace the rejected unit.
10. Designing and providing cast-in-place concrete pier foundation as needed to accommodate the unit(s) and site. This foundation is to be complete before the units are delivered. It is to be of such type that it shall be in accordance with any and all building codes applicable to such structure.
11. All surveying, grading and surveying, sediment control and/or construction of a temporary road, including design and approvals for such, to ensure that Modular Building floor height is a maximum of 30" above grade at all building entrances.
12. Applying for and obtaining all the necessary permits for the proper and legal transportation of the modular buildings. The Contractor shall furnish a copy of all standard moving permits to the Authority representative, prior to moving each modular building. The Contractor will notify the Authority representative of special permits that will be required.
13. Applying for and obtaining all necessary local, county and state permits for the installation of the work.
14. Loading and transportation of unit(s) to the site. All truck and automobile traffic is to be confined to the routes and staging areas designated and approved by the Authority. Every effort shall be made to keep noise, dust, vibration, and other activities to a minimum. The Contractor is responsible for keeping all driveways and entrances serving the premises clear and available at all times. Do not use these areas for parking or storage of materials without prior approval of the Authority.
15. Rigging and placement of unit(s) on the foundation.
16. Designing, providing and installing any required hurricane tie-downs.
17. Assembly of all units to make them secure, complete, and fully functional for use, including but not limited to siding, roofing, floor finishes, wall finishes, ceiling installation, installation of electrical components as indicated on drawings.
18. Design, construction and erection of ADA acceptable ramps and railings are to be provided as needed so as to be in complete compliance with all building codes.

19. Design and construction of new stairs and handrails to be used for providing access into the modular building.
20. Connecting all structural encumbrances which are to be used to secure the modular building to the foundation and site.
21. Providing functioning electrical equipment that will operate on service as indicated on drawings.
22. Coordinating with work being performed concurrently on site by others.
23. Sidewalks to the modular structure is the responsibility of the Contractor.
24. Design, assembly, delivery, installation and connection of holding (detention) cells.

1.9 REQUIRED MODULAR BUILDING COMPONENTS

A. Building Components:

1. Room design or equivalent as shown on plans, subject to acceptance of alternate layout by the Authority during shop drawing review.
2. Windows: As shown on Drawings.
3. Doors: Doors shall be fitted with heavy duty lock sets. Exterior door shall have electric magnetic locks..

B. Exterior Components

1. Stairs: Stairs shall be constructed of treated lumber with landing, treads, risers, hand rails, and support posts to meet and/or exceed all building code requirements.
2. Ramps: Shall be constructed of treated lumber with landing, treads, risers, hand rails, and support posts to meet and/or exceed all ADA and building code requirements.
3. Fabric Canopy and Framing Over Ramps constructed of weather resistant fabric and metal framing.

1.10 HEATING, VENTILATING AND OTHER MECHANICAL SYSTEMS

- A. Both heating and air conditioning are required along with the proper exterior fresh air mix for the occupancy requirements. System shall have a complete system of temperature controls.
- B. Ductwork shall be sized at 0.1 in. w.g. per 100 feet pressure drop. Supply ducts shall be insulated. Supply and return ducts shall be lined within 10 LF of Air Handling Unit.
- C. All air from holding cells shall be exhausted.
- D. Plumbing systems shall be provided with insulated domestic water piping, hot water heater, plumbing fixtures and floor drains as indicated on the Plans. Water and drainage piping located on the exterior side of building insulation shall be heat-traced.
- E. Plumbing fixtures and air devices within holding cells shall be security-type.

1.11 ELECTRICAL POWER, LIGHTING AND BUILDING SYSTEMS

- A. All electrical equipment shall operate on provided electric service.
- B. Lighting.
 - 1. Interior Ceiling Lights: Provide a minimum continuous illumination level of 60 continuous foot candle per square foot at 30" above floor using 120 volt, four-foot fluorescent lighting fixtures recessed in a drop ceiling. Fixtures shall be complete with T8 Lamps, Electronic Ballast and Lens.
 - 2. Exterior Lights: Exterior light, single, 120V, to be located at the maximum height on the lock side of the door above each exit door, complete with bulb(s),
 - 3. Exit Lights: Green, LED type, to be located at each exit, complete with battery, charger and lamps.
 - 4. Exterior Lights: Exterior lights along length of Fabric Canopy.
- C. Electrical.
 - 1. In general, all wiring shall be metal clad cable with copper wire and a separate equipment ground conductor wiring shall meet or exceed all applicable codes.

2. The Drawings indicate one Panelboard for the Police Building. The Contractor may provide multiple sub panels for branch circuit connections at his option but all sub panels shall be fed back to Panel P.
3. Provide one weather proof duplex general purpose receptacle at the exterior of the front, back and at each side wall exterior building (total of four per building area).
4. Provide additional receptacles and circuiting as shown on the drawing and required by Code.
5. Recessed rough-in boxes, wire and conduit to ceiling space for networking systems (data and voice) security systems and fire alarm systems shall be provided for each building as indicated on the drawings. Final location of these items will be provided to the successful bidder after project award. The electrical power and lighting work shall be complete with outlets, receptacles, wiring to panels, and all other necessary components for complete working systems.

1.12 QUALITY ASSURANCE

- A. Source Limitations: Obtain Modular Building through one source from a single manufacturer.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, and in-service performance.
 1. The configuration shown on the attached drawing is to indicate the general requirements for the modular building structure. Other arrangement of interior fittings and accessories, such as restroom layout, electrical panel location, entrance location, will be considered to accommodate manufacturer's standard layout. Construction does not constitute acceptance. Acceptance is dependant upon submission of manufacturer's drawings to the Authority and approval of said drawings after their review by the Authority.
- C. Welding: Qualify procedures and personnel according to the following:
 1. AWS D1.1, "Structural Welding Code--Steel."
 2. AWS D1.3, "Structural Welding Code--Sheet Steel."

D. Regulatory Requirements: Modular building structure indicated is to comply with accessibility requirements. Comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)," FED-STD-795, "Uniform Federal Accessibility Standards" and "Maryland Accessibility Code" (COMAR 05.02.02.07 & .12).

1. Provide hardware that does not require tight grasping, pinching, or twisting of the wrist, and that operates with a force of not more than 5 lb.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.

1. Subject to compliance with requirements, permanently mark safety glass with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction.

G. Preinstallation Conference: Conduct conference at Project.

H. HVAC systems shall be designed and installed in accordance with the 2003 International Mechanical Code, and as amended by the Code of MD Regulations (COMAR) 09.15.05.02.

I. Duct systems shall be designed and installed in accordance with the latest edition of "HVAC Duct Construction Standards" as published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

J. Plumbing systems shall be designed and installed in accordance with the 2003 National Standard Plumbing Code with 2004 Supplement, and as amended by the Code of MD Regulations (COMAR) 09.20.01.02.

1.13 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of plumbing and electrical utility connection points and other construction contiguous with modular building and indicate measurements on Shop Drawings.

1.14 COORDINATION

- A. Coordinate installation of anchorages for modular building structure. Delivery and installation of modular building will be provided by the Contractor. Furnish setting drawings, templates, and directions for installing anchorages, anchor bolts, and items with integral anchors that are to be embedded in concrete. Deliver such items to Project site in a timely manner to prevent delay in the installation of the modular units.

1.15 WARRANTY

- A. Modular Building Warranty: Industry-standard warranty on all plumbing, electrical and mechanical systems; on floor, wall, and roof assemblies, and on all structural components, and on all items supplied as part of the Modular Building.
 - 1. Warranty Period: Minimum two years from date of Substantial Completion for all items except structural components, which shall be ten years from date of Substantial Completion.
 - 2. Where items or components supplied as part of this contract carry their own warranties, those warranties shall be transferred to Owner.
- B. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace factory-applied finishes that show evidence of deterioration within the specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 MODULAR BUILDING MATERIALS

- A. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
 - 1. Sheet: ASTM B 209.
 - 2. Extruded Shapes: ASTM B 221.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- C. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, commercial quality, G90 coating designation; mill phosphatized.
- D. Galvanized, Rolled Steel Tread Plate: ASTM A 786/A 786M, rolled from steel plate complying with ASTM A 572/A 572M, Grade 55; hot-dip galvanized according to ASTM A 123/A 123M.
- E. Steel Structural Tubing: ASTM A 500, Grade B.
- F. Steel Mechanical Tubing: ASTM A 513, welded steel mechanical tubing.
- G. Plastic Laminate: NEMA LD 3, HGS or HGL grade.
- H. Plywood: DOC PS 1, Exterior grade.
- I. Particleboard: ANSI A208.1, Grade M-2.
- J. Clear Float Glass: ASTM C 1036, Type I, Class 1, Quality q3.
- K. Clear Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3.
- L. Wired Glass: ASTM C 1036, Type II (patterned and wired flat glass), Class 1 (clear), Quality-Q-6.
- M. Insulating Glass: Units complying with ASTM E 774 for Class CBA and consisting of 2 lites of 2.5-mm-thick clear float glass and dehydrated air space, with a total overall unit thickness of not less than ½-inch, and with manufacturer's standard dual seal.
- N. Anchorages: Anchor bolts; hot-dip galvanized according to ASTM A 153/A 153M or stainless steel.

- O. Building Insulation: Unfaced Glass-Fiber Blanket Insulation complying with ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.
- P. Air Barrier: Polyethylene complying with ASTM D 4397, 6 mils thick, with maximum permeance rating of 0.13 perms.
- Q. Treated Lumber: Treated lumber used at THE AUTHORITY facilities shall be treated in accordance with American Wood Preservers' Associates (AWPA) standards. Wood preservative treatments shall be appropriate for the intended use. Wood that is exposed to public contact shall be treated in accordance with standards for residential use and child care.
- R. Fiberglass Reinforced Panels: Basis of Design; Marlite, pebble finish P-140 Ivory Class A, with PVC trim accessories, as manufactured by Marlite (www.marlite.com) Full Wall Height Panels.

2.3 MODULAR BUILDING BUILDINGS, GENERAL

- A. General: Provide a complete, integrated set of manufacturer's standard, mutually dependent components that form a completely assembled, modular building structure, ready for installation on Project site. Modular building structure shall be capable of withstanding structural and other loads indicated, thermally induced movement, and exposure to weather without failure or infiltration of water into interior. Include structural framing, roof and wall panels, door(s), windows, and accessories complying with requirements indicated.
 - 1. Building Style: Standard square corners
 - 2. Doors: As indicated on Drawings.
 - 3. Windows: As indicated on Drawings
- B. Available Manufacturers:
 - 1. Modular Technologies corp., Kinston, NC.
 - 2. Comark Building Systems, Inc.
 - 3. GE Modular Space.
 - 4. RESUN Space Solutions, Edgewood, MD

5. Valley Modular Offices, Abington, MD.
 6. Williams Scotsman Corporation, Baltimore, MD.
- C. Floor structure/transportation frame:
1. Floor structure shall be wood joists or trusses with $\frac{3}{4}$ -inch plywood or orientated strand board floor deck mounted on a permanently attached steel transportation frame with road gear, (axels and towing tongue).
 2. Transportation frame and road gear shall be a perimeter frame configuration, sized by the manufacturer to accommodate all loads and stresses imposed on the structure during delivery and installation of the modular building structure.
 - a. Axles: When delivered and set up, axles will remain on the unit. Trailer tongues will be removed and stored under the unit off the ground.
 3. Underside of floor structure shall be sealed and protected against weather during transportation and after installation.
- D. Insulation Values
1. Floor system shall be insulated to a U value of 0.052 overall thermal transmission value.
 2. Wall system shall be insulated to a U value of 0.052 overall thermal transmission value.
 3. Roof system shall be insulated to a U value of 0.033 overall thermal transmission value.
- E. Walls:
1. Exterior Walls: Minimum 2 x 6-inch nominal studs (sized as necessary) at 16-inches on center
 - a. Interior Face: Taped and painted abuse-resistant gypsum wall board.
 - b. Exterior face: Sheathed with air barrier and metal siding exterior. Shall be 0.019-inch thick aluminum roll formed siding and trim, prefinished with Kynar/Hylar organic high performance coating. Color as selected from manufacturers standard color ranges.

2. Fire-rated and non-rated interior walls: Not less than 2 x 4-inch nominal studs at 16-inches on center with 5/8-inch abuse- gypsum wall board with taped and painted finish on both sides. Paint shall be low gloss or eggshell latex paint.
 - a. Full Wall Height, fully-adhered FRP panels, all Toilet Room Walls and as indicated on Drawings..
- F. Floor Finish: 12" x 12" x 1/8" Vinyl Composition Tile. Color to be selected by the Authority from manufacturer's full range of options.
- G. Ceilings: 24" x 48" acoustical panel ceiling tiles in suspended heavy duty metal ceiling.
 1. Armstrong "School Zone", Fine Fissured #466 or approved equal.
 2. USG "Clima Plus" #2410 or approved equal.
 3. Armstrong Prelude XL suspension system or approved equal.
 4. Color: White for panels and grid.
- H. Roof structure: Wood frame low slope trusses with 5/8-inch sheathing and 0.060-inch EPDM seamless membrane covering fully adhered.
 1. Comparable roof structures designed for Asphalt Shingles shall match products and requirements of Section 07 31 13 "Asphalt Shingles."
 2. Provide gutter system at roof edge to protect occupants from roof drainage. Provide downspouts and splashblocks at regular intervals sufficient to drain roof surface.
 3. Insulation value shall be maintained between duct and exterior surface of structure where ductwork is run in unconditioned or unheated spaces.
- I. Single-hung Windows: Rigid (unplasticized) hollow PVC extrusions formulated and extruded for exterior applications, complying with AAMA/WDMA 101/I.S.2/NAFS with 12-mm-thick, clear insulated glass. Equip windows with positive action locking mechanism, concealed counterbalances, sash lifts, and weatherstripping.
 1. Finish: Uniform, solid, homogeneous beige interior and exterior.
 2. Provide galvanized steel insect screens for each window.

3. Provide metal horizontal louver min-blind (1" width) at each window. Color selected by the Authority.
- J. Exterior Doors: Exterior doors shall be manufacturer's Extra Heavy Duty 3/0 by 6/8 minimum height, Fiber-reinforced Plastic (FRP) faced, insulated door.
1. Frame: Painted hollow metal.
 2. Door shall be equipped with heavy duty, aluminum, geared continuous hinge; overhead door closer; weatherstripping; removable mullion; and threshold.
 - a. BHMA/ANSI A156.2, Series 4000, Grade 1 or 2 entrance function cylindrical or bored lockset
 - 1) Medeco Security Locks, Inc.
 - 2) Keyed to Owners Master keying system.
- K. Interior Doors: Interior doors shall be flush hardwood-faced, solid core doors not less than 3/0 by 6/8 in size.
1. Frame: Painted hollow metal.
 2. Doors and frames shall be 20-minute rated where indicated.
 3. Doors shall be equipped with BHMA/ANSI A156.2, Series 4000, Grade 1 or 2, with not less than three ANSI A5133 stainless steel standard weight hinges.
 4. Provide doors with fully operational hardware sets for the following functions:
 - a. Privacy function restrooms.
 - b. Building function lockset at buildings.
 - c. Storeroom function at Janitor's Closet and Electric Closet.
 - d. Office functions.
 5. At each door, provide kick plates/mop plates and roller bumper type door stop mounted on top face of doors.

6. Provide overhead closers at entrance/exit doors.
 7. Provide acrylic ADA compatible room signs at each door.
- L. Locksets:
1. Entrance Pull/Push Bar Basis of Design: Rockwood Rm 251.
 2. Mortise Locksets. Stamped steel case with steel or brass parts; BHMA A156.13, Grade 1; Series 1000.
 3. Manufacturers:
 - a. Best Access Systems; Div. Of the Stanley Works (BAS).
 - b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group Company (CR).
 - c. SARENT Manufacturing Company; an ASSA ABLOY Group Company (SGT).
 4. Functions
 - a. Office.
 - b. Privacy Set (Restrooms.)
 - c. Store Room.
 - d. Passage (I.T. / Duty Officer)
 5. Magnetic Locks: Refer to Division 28, Section "Access Control."
- M. Gun Lockers: Provide recessed, nine (9) position locker in corridor. Provide single recessed locker in Commander and Assistant Commander Offices.
1. Basis of Design Product: FASCO Security Products: FL 714-66 COMP pistol locker, medium duty, 52-1.2" x 29-1/2" x 6-1/2", (fasco security products.com; 763.434.9841).
- N. Marker Boards: Quantity of one 12' long x 4' high magnetic white markerboard with aluminum frame and chalk/eraser tray.
- O. Tack Boards: Quantity of two 4' x 4'. Location to be established after delivery of buildings.

P. Tack Strips: 12' long with flag-holder attachment, installed along top of markerboard/tackboard.

Q. Restrooms: Restrooms shall be ADA accessible with the following equipment at locations indicated on Drawings: NOTE: This Paragraph does not apply to Holding Cells.

1. Standard Mirror: 18-inch wide by 60-inch high, stainless steel-framed mirror.
2. Paper towel dispensers, surface mounted.
3. Toilet tissue dispenser: Advantage A2090RA, surface mounted.
4. Liquid-soap dispenser: Bobrick – B2112 or approved equal.
5. Grab bar: Bobrick B6806.99X or approved equal.
6. Sanitary napkin disposal: Bobrick B-254 or approved equal.
7. Waterclosets: Floor Mounted, Bottom Outlet, American Standard Madera 14" H EL 1.6/FV Top Spud and Seat or approved equal with required supply fittings including shutoff valve.
 - a. Provide 17" high toilets.
8. Lavatories: 20-inch x 14-inch wall hung or approved equal. Supply fittings, including shutoff valves, and drain
 - a. Provide anti-microbial, insulating pipe guards at each lavatory.
9. Service Sink: Floor-mounted, stainless steel sink:
 - a. Products:
 - 1) Elkay EFS-2523-C.
 - 2) Size: 25 by 23 inches.
 - 3) Finish: Satin.
 - 4) Faucet: Elkay LK-401, LK-402, and LK-403.

- 5) Drain: Grid with NPS 3 (DN 80) outlet.
- 6) Material: #16 Gage, Type 302 (18-8) Stainless Steel.

10. Lavatory Faucet:

- a. Single-control mixing valve. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor. Chicago Faucet, Model 3300-CP.
 - 1) Body Material: Commercial, solid brass.
 - 2) Finish: Polished chrome plate.
 - 3) Maximum Flow Rate: 0.5 gpm (1.5 L/min.)
 - 4) Centers: 4 inches.
 - 5) Mounting: Deck, exposed.
 - 6) Valve Handles(s): Push button.
 - 7) Inlet(s): NPS 3/8 (DN 10) tubing, plain end.
 - 8) Spout: Rigid type.
 - 9) Spout Outlet: Aerator.
 - 10) Operation: Self-closing, metering, adjustable.

11. Flushometers

- a. Description: Flushometer for water-closet fixture. Include brass body with corrosion-resistant internal components, control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.
 - 1) Internal Design: Diaphragm operation.
 - 2) Style: Exposed.

- 3) Inlet Size: NPS 3/4 DN 20, NPS 1 (DN 25).
 - 4) Trip Mechanism: Oscillating, lever-handle actuator.
 - 5) Consumption: 1.6 gal./flush (6.0 L/flush).
 - 6) Manufacturer and Model: Sloan, Royal.
12. Ventilation/Exhaust Fan (provide one fan for each restroom, each fan shall be provided with minimum 75 cfm airflow capacity per each plumbing fixture (watercloset and/or urinal) located in the restroom. Fan shall be sized to overcome any intake and exhaust pressure drop due to ductwork, intake grille, and exhaust grille, dampers, etc.
- R. Plumbing Fixtures for Holding Cells:
1. Combination toilet/lavatory fixture shall be Acorn Model 1440 or approved equal. Fixture shall be fabricated from Type 304 stainless steel, minimum 14 gauge. Fixture shall be floor-mounted with floor waste connection. Water and flush controls shall be push-button type. Toilet shall meet ANSI 112.19.2M requirements, with 1.6 gpf water usage. Water supply to lavatory shall be through bubbler designed for penal application with push button controls. Fixture shall withstand loading of 2500 pounds without permanent damage.
- S. Fire Extinguisher Cabinets: Recessed, steel or aluminum with red enamel finish and clear acrylic bubble-style glazing.
1. Extinguisher: 4A:60B:6
- T. Heat Pump: Provide packaged wall-mounted heat pump units having electrical refrigeration and electric heat. Unit shall be self-contained, packaged, factory assembled and pre-wired, consisting of cabinet and frame, supply fan, front discharge, outside air intake, controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan. Units shall have built-in Commercial Room Ventilator with exhaust air damper capable of up to 50% outside air, low ambient control and single point power connection with built-in circuit breaker. Units shall be complete with a seven-day programmable night setback and setup thermostat with battery backup and occupied (ventilation on) and unoccupied (ventilation off) modes of operation. Units shall have an auxiliary electric heating coil. Units shall be sized in accordance with requirements specified in Part 1, with minimum one unit per building section.

- U. Split-system Air Conditioning Unit: (IT / COMM / DUTY OFFICER OFFICE):
1. General: the same manufacturer shall supply both indoor and outdoor sections of the split-system air conditioning unit.
 2. Outdoor Unit: Provide outdoor-mounted, air-cooled split system outdoor section suitable for wall hung installation. Unit shall consist of a scroll or reciprocating compressor, an air-cooled coil, propeller-type blow-thru outdoor fans, full refrigerant charge, and control box. Unit shall discharge air horizontally away from building. Units shall be used in a refrigeration circuit matched to a duct-free cooling fan coil unit.
 3. Indoor Unit: Indoor, under-ceiling mounted, direct-expansion fan coil to be matched with the outdoor condensing unit. Unit shall be shipped complete with cooling coil, fan, fan motor, piping connectors, electrical controls, solid-state electromechanical control system, and ceiling mounted brackets.
- V. Electric Water Heater: Heater(s) shall have 150 psi working pressure and be equipped with extruded high density anode rod. All internal surfaces of the heater(s) exposed to water shall be glass-lined with an alkaline borosilicate composition that has been fused to steel by firing at a temperature range of 1600°F. Electric heating elements shall be medium watt density with zinc plated copper sheath. Each element shall be controlled by an individually mounted thermostat and high temperature cutoff switch. The outer jacket shall be of baked enamel finish and shall be provided with full size control compartment for performance of service and maintenance through hinged front panels and shall enclose the tank with foam insulation. The drain valve shall be located in the front for ease of servicing. Heater for MOD Sink shall have 10 gallon storage capacity and (2) 3 KW heating element, with drain pan and expansion tank. Heaters for lavatories shall be electrical instantaneous type.
- W. Accessories: Provide the following:
1. Steps/HC ramp.
 2. Enclosed skirting.
 3. Anchoring foundation and tiedowns.
- X. Water Piping.
1. Materials:
 - a. Soft copper tube with soldered joints.

- b. Hard copper tube with soldered joints.
- c. PVC pipe and socket fittings, Schedule 40, with solvent-welded joints.
- d. Valves:
 - 1) Bronze and cast-iron general-duty valves for metal piping.

Y. Sanitary Waste and Vent Piping.

- 1. Materials:
 - a. Cast-Iron Pipe and Fittings:
 - 1) Hubless with heavy-duty, Type 304 stainless-steel couplings.
- 2. Copper Tubing and Fittings:
 - a. DWV tube with solder-joint fittings.
 - b. Soft copper tube with copper pressure fittings.
 - c. Hard copper tube with copper pressure fittings.
- 3. PVC Pipe and Fittings. Schedule 40 pipe with socket fittings.
- 4. Installation:
 - a. Aboveground, Soil, Waste, and Vent Piping Applications:
 - 1) NPS 1-1/4 and NPS 1-1/2 (DN 32 and DN 40): Copper DWVV, PVC.
 - 2) NPS 2 to NPS 4 (DN 50 to DN 100): Cast iron, hubless, Copper, DWV, PVC.

Z. Air devices for holding cells:

- 1. Supply and exhaust air: Titus Model SG-LFF or approved equivalent. Grilles shall have flush lattice face with sleeve. Grilles shall be fabricated from minimum 12 gauge steel with 13/16" holes on 1-inch centers. Finish shall be standard white.

- AA. Holding/Detention Cells as specified in Division 13 Section "Detention Cell Modules."
- BB. Gun Safe: Patriot Model "The Protector" or comparable product (www.patriotsafe.com).
- CC. Kitchen Sink: Provide a two bowl, commercial, counter mounting, stainless steel kitchen sink with overall dimensions of 24"x18"x7" deep with metal thickness of 0.05 inch minimum. Provide rotating gooseneck chrome plated faucet with dual faucet handles, minimum NPS ½ chrome plated copper stops, and chrome plated brass P-trap with connection to garbage disposal.
- DD. Garbage Disposal at Kitchen Sink: Provide a commercial light duty garbage disposal meeting the following requirements. Light-capacity model for light foodservice applications such as convenience stores, delis and fast food operations including: 1/2 horsepower motor; 1725 RPM; 120V operation uses standard wall switch; automatic reversing motor and corrosion resistant stainless steel; 3/4" rubber mounting above grinding chamber for isolating sound and eliminating vibration; stationary and rotating shredding elements made from cast nickel chrome alloy; provide with mounting hardware by unit manufacturer for connection into kitchen sink waste piping. Provide with minimum one year manufacturer's warranty.

2.4 FABRICATION

- A. Fabricate modular building structure completely in factory.
- B. Preglaze windows and doors at factory.
- C. Prewire modular building structure at factory, ready for connection to service at Project site except for Owner furnished equipment. Provide conduit and junction boxes as indicated on drawings for Fire alarm, security, data, telephone, video and public address systems.

2.5 FINISHES

- 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: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system

consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

- D. Steel and Galvanized Steel Finishes: 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 specified below to comply with ASTM A 780.
1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
 2. Air-Dried Enamel Finish: Apply manufacturer's standard enamel finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION

- A. Provide anchorage foundation and tiedowns as recommended by modular building structure manufacturer complying with all applicable building codes.
- B. Connect electrical power service in conformance with all applicable codes and in conformance with the utility supplier's requirements.

3.3 ADJUSTING AND CLEANING

- A. Adjust doors, operable windows, and hardware to operate smoothly, easily, properly, and without binding. Confirm that locks engage accurately and securely without forcing or binding.

- B. Lubricate hardware and other moving parts.
- C. After completing installation, inspect exposed finishes and repair damaged finishes.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-02 Western Facility Police Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 133420

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SECTION 134263 – DETENTION CELL MODULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. This specification is intended for the provision of pre-engineered factory built modular steel cells and associated items. This specification covers furnishing and installation of the above units including labor, materials, equipment and services required for the complete fabrication, delivery and installation of the units to the proposed project.
2. These units shall be factory prefabricated, pre-engineered steel modular cell units and associated items, which are to be set in place at the project site. They are to be installed in the existing layout and configured as shown on the architectural drawings for the project.

- B. Related Sections:

1. Division 06 Sections for connections to plywood floor.
2. Division 09 Sections for finishes.
3. Division 22 Sections for plumbing connections and service.
4. Division 23 Sections for HVAC connections and service.
5. Division 26 Sections for electrical connections and service.
6. Division 28 Sections for access control and video surveillance systems.

1.3 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements

1. All standards listed in this section reference United States codes and practices. Where required, apply national codes and standards, which are equal to or more stringent than those referenced.
2. Except for more stringent requirements as indicated or imposed by governing regulations (with which the work must comply), comply with applicable requirements of ANSI/ASME Standards.
3. NFPA Code: Comply with NFPA codes and specifically with sections relating to electrical work.
4. The interior and exterior panel finishes must comply with the specifications in Section 2.05 of this document.
5. All cell manufacturers must meet the specifications contained in this document. All items listed above must be submitted in accordance with Section 1.03 of this document. No modifications will be permitted on these specifications.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Acceptable Manufacturers include, but are not limited to:

1. Kullman Buildings Corp.
2. Sweeper Metal Fabricators Corp.
3. PX Direct Jail Products
4. Eagle Detention Systems

C. Product Data: Submit manufacturer's detailed technical product data and installation instructions for each principal component or product and include certified test reports and analysis as listed in this specification.

1. Engineering and design data must include a written description of design methodology and design values used for this project, as well as a copy of

engineering calculations. Provide a separate written statement from structural engineer that the design submitted meets the requirements of all applicable codes and engineering standards.

D. In-House Technical Expertise:

1. The modular steel cell producer must have current in-house design engineering capability to provide final engineered structural design for modular steel cells and associated items and their integration into the building construction.

E. Production Capacity:

1. The modular steel cell producer must have the production capacity and resources to produce the required number of units within duration of production, which is compatible with the construction schedule.

F. Shop Drawings:

1. Submit shop drawings for all modular steel cell types and associated items. The manufacturer's name, address, and telephone number shall be indicated in the title block on each drawing.
2. Scaled floor plans, cross-sections, elevation drawings and details indicating dimensions and full description of modular steel cell units and associated items including structural/security details which indicate manufacturing responsibility of this specification.
3. Show steel fabrication shop drawings and details, and connections to adjacent work.
4. Include base plate plans and detailed drawings for all members.
5. Include detailed drawings indicating exact dimensional requirements for waste, water, vents, and HVAC duct field connections.

G. Erection:

1. Provide a written description of erection procedures.
2. Module and system connections: Provide list of critical interfaces with building construction and building systems, as well as the equipment which will be used during erection.

1.5 PRODUCT HANDLING

- A. The modular units shall be protected with a weatherproof covering to prevent damage during transportation.
- B. At time of delivery on site, the general contractor shall provide suitable protective coverings, tarps, barriers, devices, signs or such other methods or procedures to protect modular steel cell work from damage or vandalism.

1.6 WARRANTY

- A. The warranty period is twelve (12) months starting on the date of substantial completion of modular steel cell work. Manufacturer agrees to replace/repair/restore defective materials and workmanship during warranty period. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performance below required minimums, excessive wear, unusual deteriorations or aging of materials or finishes and unsafe conditions. Acts of vandalism are not covered by this warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Material shall be as specified herein. All material and equipment items shall be new and shall be in first class condition when delivery is completed.
- B. All steel used in the fabrication of the modular steel cells shall be free from defects impairing strength, durability, or appearance, and of best commercial quality for purpose intended. All steel edges shall be free of burrs, sharp corners, roughness or other conditions, which could cause injury to persons or damage to other materials.
- C. Provide standard pre-engineered modular steel cells which will fulfill requirements as specified herein.

2.2 WELDING

- A. Welding shall be done in a thorough manner using welding wire of the same composition as sheets or parts to be welded. Welds shall be strong, ductile, with excess metal ground off joints and finished smooth to match adjoining surfaces. Welds shall be free of imperfections and shall be the same color as adjoining surfaces. Joints may be seamlessly welded by any acceptable process except that carbon arc welding will not be permitted. Butt welded joints provided with straps shall not be filled with solder.

- B. All welded joints shall be homogeneous with the sheet steel itself. Any form of welding permitting carbon pickup will not be acceptable.
 - 1. All welds shall be prime painted with a single coat of acrylic gray primer.
 - 2. All welds required to insure the performance of the cell construction shall be concealed so as to eliminate inmate access. Welding of walls, floors and ceilings on inmate accessible surfaces by any means of welding will not be acceptable.
 - 3. All workmanship shall be of the best quality of craftsmen skilled in their respective trades.

2.3 STEEL PANELS

- A. All wall and ceiling panels shall be pan shaped and fabricated using standard 12-gauge galvanized steel sheet. This is the minimum gauge requirement.
- B. All exposed cell front panel covers will be fabricated of 12 gauge galvanized steel sheets.
- C. All material used in fabrication of panels shall be free from defects impairing strength, durability or appearance and of best commercial quality for purpose intended.
- D. All panels will be fastened to each other and the structural framing by means of conventional nut and bolting. Exposed hardware will be tamperproof type fasteners requiring special tools for removal.

2.4 FINISHES

- A. All interior panels shall be finished using a two-part epoxy coating (epoxy-polyamine coating), which is molecularly bonded or chemically grafted to the steel substrate, providing a strong and permanent finish. The finished coating shall be resistant to scratches, abrasion, impact, urine, salt air and other chemicals. Cell fronts will be primed only with finish coating by others.
- B. The coating shall be applied using approved methods as recommended by coating manufacturer.
 - 1. Materials: The coating formulation for application on to galvanized and/or galvanized steel shall use technology of chemical grafting that involves the use of monomers, prepolymers, catalyst and grafting initiator system along with essential colored pigments. When applied onto galvanized steel, the coating

shall obtain grafting polymerization on the steel surface, thereby giving strong adhesion to the substrate.

2. Application: The coating must be applied by spraying. The viscosity of this formulation can be adjusted accordingly with a suitable thinner. After the application, the coated parts are subjected to a cure at 275 degrees F for 15 minutes. The coating can be applied without the pretreatment of the steel surface.
3. Stability:
 - a. Corrosion resistance: Meets ASTM B117 test requirements for corrosion resistance to 240 hours when tested in 5% salt spray chamber at 95 degrees F.
 - b. Impact resistance: In accordance with ASTM specification D-2794-69 at impact of 160 inch/pounds, no failure of the coating in terms of cracks or chipping is observed during deformation of the substrate.
 - c. Abrasion resistance: The coat shall be highly resistant to abrasion and wear and will conform to falling sand abrasion testing ASTM D4060-81: 75-85 mg. loss (CS-17 Wheel, 1 Kg. load, 1000 cycles).
 - d. Accelerated Weathering, QUV (ASTM G52-83): 1000 hours. No through rusting, blistering or loss of adhesion. Weather to an attractive matte finish.
 - e. Immersion, Salt & Fresh Water: Passes two years immersion in both fresh and salt (5% sodium chloride solution) water. No loss of adhesion, through rusting (ASTM D610-85) or blistering beyond 1/16" from scribe (ASTM D1654-79a).
 - f. Humidity (ASTM D2247-68): 1000 hours. No through rusting, blistering or loss of adhesion.
 - g. Flexibility: No cracking or loss of adhesion. Maryland DOT SP2-15.02 (Coating cured 2 weeks @ 75 degrees F, then bent uniformly around 8" diameter mandrel.) Substrate: SSPC-SP-5 Steel Panel 4" by 30" by 1/8").
4. Characteristics: The coating is highly resistant to:
 - a. Scratch from knife, nail or any hard pointed object
 - b. Impact, no cracks or peeling of paint

- c. Corrosion
 - d. Abrasion and wear
 - e. Urine
 - f. Commercial cleaning fluids
5. Interior walls and ceiling will be finished using a coating of which the architect will select the color.

2.5 HARDWARE

- A. All panels will be fastened to each other and also to the structural framing by means of conventional nut and bolting. Exposed hardware will be tamper proof type fasteners requiring special tools for removal.

2.6 CONSTRUCTION – GENERAL

- A. The modular steel cells shall be fabricated as herein specified in accordance with the following procedures.
- B. Fabricate modular steel cells with necessary provisions for final assembly in completed Modular Building.

2.7 TUBULAR FRAME

- A. Dimensions: (Vertical: 3" x 5" x 1/4" thick wall) (Horizontal: 2" x 5" x 1/4" thick wall) (Note: 1/8" thick steel tubes may be substituted where load calculations allow.)
- B. Structural frame shall be constructed using tubing conforming to requirements of ASTM A500 Grade B.
- C. Tubing will be welded to form square rigid and true frame. All welds on exterior surfaces will be ground smooth to avoid interference with finishing panels.
- D. Horizontal members will have 16 gauge galvanized steel angle clips welded top and bottom at all panel joints to allow direct attachment of wall panels to structural framing as required.

- E. All structural components shall be prime painted with an enamel primer on all inside and outside surfaces. Application of coating shall be in a manner to ensure the thorough coating of all surfaces.
- F. Provide locating pin system for each cell and associated item for vertical and horizontal alignment. Pin shall be manufactured from steel conforming to requirements of ASTM A36 and shall be of a design to maintain structural integrity of the cellular system as set forth by requirements of this specification.

2.8 SECURITY WINDOWS, DOORS, AND FRAMED OPENINGS

- A. All windows, doors, and framed openings will be of an equivalent security level to the wall framing in which they are to be mounted.
- B. Steel swing doors.
 - 1. See related section 087163 Detention Door Hardware for information related to this section.
 - 2. All internal framing members of detention doors will be constructed of 12 gauge C channels forming a continuous perimeter and joints will be completely seam welded. Intermediate 12 gauge formed galvanized steel C channels will be placed 9 inches AFF and then spaced 12 inches on center. They will be continuous seam welded around C channel door framing.
 - 3. All detention hardware will be secured by welding 1/8" thick ASTM steel plate stiffeners to door substrate members. All detention hardware will be fastened per specification with security screws.
 - 4. Door Panels of 2" x 2" woven metal wire mech.

2.9 PANELS

- A. General: All individual panels shall be pan-shaped with edge stiffeners, flanges, and returns formed from a single unit of galvanized steel. Panels shall not be manufactured by attaching stiffeners, flanges, or other material to a flat sheet. Panel seams within the cell created by edge butting flat sheet edges shall not be permitted. All panel edges, knockouts, notches, and holes shall be solvent cleaned with mineral spirits and primed with a single coat of acrylic gray primer.

- B. Wall Panels: Fabricated from steel plate.
 - 1. Panels reinforced with steel stiffeners as required. All wall panels are to fit between horizontal framing members to provide additional support to structural frame.
 - 2. Front wall panels of 2" x 2" woven metal wire mesh.
 - 3. Ceiling panels formed same as sidewall panels.

2.10 MISCELLANEOUS

- A. Miscellaneous items of hardware, fastenings, and like items are to be as required by steel cell manufacturer to produce the cell.
- B. All surfaces shall be protected with an approved weatherproof covering during transportation.

2.11 INTERIOR EQUIPMENT AND ACCESSORIES

- A. General: All specified equipment and accessories to be installed as per manufacturer's directions and instructions. All interior equipment and accessories shall be protected wherever possible from damage during fabrication, transportation, construction, and storage. The equipment and accessories shall be as specified herein and in accordance with the following procedures and standards.
- B. Toilet/Sink Combination: Refer to Section 133420 Modular Buildings for information regarding sink and toilet for detention cell modules and related connections/accessories.
- C. Bunk: Bunk shall be 28 ½" x 77 7/8" x 2". One bunk per cell. Bunk shall be fabricated from galvanized steel. Bunk will be formed from one continuous sheet with 2" returned bends that are hemmed on all exposed edges. All edges of bunks will be welded and ground smooth. Bunk will be fastened with security fasteners. Bunk finish shall match interior wall finish.

2.12 ELECTRICAL WORK

- A. The work under this section shall consist of the following:
 - 1. Furnishing and installing conduits, pull strings, outlet and junction boxes for all electrical wiring in the modular cells. All wiring will be supplied and installed by the electrical contractor.

2. Lighting fixtures in modular steel cells and associated items including lamps as required.
- B. Conduits: Conduit shall be ¾" diameter conduit, wire and boxes required for the cell to be terminated outside the cell wall.
- C. Lighting: Maximum security surface mounted light fixture with 14 gauge cold rolled steel formed construction with seams welded and ground smooth. Door frame is secured to inner structure with tamperproof, plated steel captive flush bolts. Inner structure die-formed of 16 gauge galvanized steel. An internal 16 gauge CRS continuous length piano hinge joins the outer housing to the inner structure. Shielding is .375" ultraviolet stabilized polycarbonate and .125" prismatic acrylic overlay. Two 32-watt lamps, 120-volt ballast and night light. Light fixture by Kenall, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Assemble modular steel cell sections/panels and associated items into place in coordination with the erection of the building by the building contractor.
- B. Level all modular steel cell sections/panels and connect together in proper location by means of locating pin or plate system to assure horizontal and vertical alignment.

PART 4 – MEASUREMENT

4.1 METHOD OF MEASUREMENT

- A. No separate measurement will be made for work under this section.

PART 5 – PAYMENT

5.1 BASIS OF PAYMENT

- A. No separate payment will be made for work under this section. The cost of the work described in this section shall be included in the respective Lump Sum Bids under:

Item 011010-02 Western Facility Police Building—per lump sum

- B. Costs include all labor, materials, services, testing and equipment necessary to complete the work in every respect.

END OF SECTION 134263

