

DIVISION 13 SPECIAL CONSTRUCTION SECTION 13121

PRE-ASSEMBLED CONTROL BUILDING WITH FLOOR

PART I - GENERAL

This section is for the "Pre-Assembled Control Building" complete with all materials and accessories as needed for a complete building as shown on the project drawings and as specified herein. All requirements of the contract documents, General Conditions, and Project Requirements apply to this section except as modified herein.

1.01 DESCRIPTION

- A. The work shall include the furnishing, delivery, and installation of One (1) pre-assembled, pre-engineered, rigid-framed steel building as specified herein.
- B. The building shall be a fully framed structure constructed with a stand-alone, internal frame-work of structural steel. The building shall be constructed with 4" deep (minimum) wall framing members of galvanized steel, roll-formed, Kynar 500® PVDF-coated liner panels and ribbed, Kynar 500® PVDF resin-based coated exterior architectural panels and roofing. Self-Framing, Pan-Style, and other building systems which utilize the buildings exterior panels or roofing components for its structural framing elements will NOT be accepted.

1.02 DESIGN REQUIREMENTS

- A. Codes and Standards. The structure design and manufacture shall, as a minimum, conform to ASCE (American Society of Civil Engineers) current edition of "Minimum Design Loads for Buildings and Other Structures" and to the MBMA (Metal Building Manufacturers Association) "Recommended Design Practices Manual." Building shall be manufactured and built to satisfy the current Editions of the International Building Code (IBC), and the National Electrical Code (NEC). Building Manufacturer shall supply plans and calculations stamped by a Registered Professional Engineer for the State where Building to be installed, and is responsible for obtaining any State Industrial Building Commission Approvals and Third Party Inspections if required by the State where building is installed.
- B. Loading. The building shall be designed at a minimum to support the following loads:
 - 1. Roof Load - 50 PSF (40# live and 10# dead)
 - 2. Ceiling Dead Load - 10 PSF
 - 3. Wall Load - 110 mph wind, plus wall mounted equipment.
 - 4. Floor Load - 250 # PSF
 - 5. Seismic Zone: Per UBC for site location.

1.03 DRAWINGS AND SUBMITTALS

- A. Within reasonable time of notice to proceed, the Manufacturer shall submit four (4) sets of Approval Drawings and an electronic file copy of same in AUTOCAD format to the engineer for

review. The drawings shall show at a minimum the building floor plan, interior and exterior dimensions, elevations, suggested foundation elevations and dimensions, and the location of all primary accessories included with the building.

- B. A standard color chart shall be provided to the Owner for exterior color selection prior to manufacturing.

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- C. A digital file of each final shop drawing shall be sent on disc or via E-Mail to the Engineer at the time of shipping and prior to request for final payment. Digital files shall be in AUTOCAD format or other approved computer graphics format.

1.04 QUALITY ASSURANCE

- A. Building Manufacturer to have a Quality Control program that follows building through to completion and is passed onto Owner with all instruction manuals and final drawings. Additionally, the building manufacturer to have been in the business of manufacturing preassembled control buildings for a minimum of 5 years, and able to supply proof of manufacturing at least 25 Preassembled Buildings of a similar type in that time.

1.05 WARRANTY

- A. Manufacturer shall guarantee that the complete building will have no defects in materials and workmanship for a period of Two Years, except as limited or extended by the original equipment or component manufacturer.
- B. Metal Exteriors, Roofing, and Liner Panel shall have a baked-on PVDF resin based paint coating,, over either a Galvalume or galvanized substrate, with a Twenty Year Warranty against rust perforation (Galvalume), a Thirty Year Warranty against fading and chalking and a Forty Year Warranty against flaking peeling and checking. Coatings to meet minimum performance requirements as set forth in ASCA specification 96 and AAMA specification 2605. (Kynar 500® is an approved coating).

PART II PRODUCTS

2.01 MATERIALS

- A. The materials shall be new, unused, and fabricated in a workmanlike manner in a factory environment. Hot rolled steel to meet as a minimum standard ASTM -A36, and all galvanized steel to meet as a minimum standard ASTMA -653.
- B. The components and building parts shall be clearly marked on the drawings.

2.02 INSULATED STRUCTURAL STEEL FLOOR SYSTEM

- A. Floor system shall have a hot rolled welded steel framework, with interior hot rolled steel channels, I-beams, or tube supports to meet required loads, with maximum deflection of L/240, and cold formed joists sized and spaced to meet design loads. Steel floor to be a welded 1/4" steel plate top surface with a painted, slip-resistant finish. Bottom of floor to have a rodent and

moisture barrier of recessed 26 gauge sheet galvanized steel. Floor system shall be designed to be anchored to and supported by concrete piers, a concrete slab, or frost wall footings as shown on the plans. Foundation to be by others with design assistance supplied by building manufacturer.

- B. Floor insulation system to be comprised of fiberglass batt or blown cellulose insulation between joists, and rigid polystyrene insulation between joists and bottom galvanized steel rodent barrier. Insulation system to provide R-30 insulation value.

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- C. Floor framework and floor deck plates to be fully cleaned, primed and painted with a self-priming, VOC compliant (EPA method 24), catalyzed coating system designed to provide an extremely durable finish, suitable for heavy industrial, severe coastal, chemical, or off shore environments with superior corrosion protection and resistance to fading. Paint system to have a minimum Dry Film Thickness, per coat of 5 - 7 mils. Color to be Navy Gray. Floor to have a non-slip texture added to Paint. Approved coating: Sherwin Williams Macropoxy 646 Fast-Cure Epoxy with a minimum dry film thickness of 5-7 mils.
- D. Floor system weld standards shall as a minimum meet AWS recommended practices.
- E. Heavy duty steel lift plates to be supplied and mounted to the base as needed for lifting the building.
- F. Ground lugs to be bolted to frame where indicated on Drawings.

2.03 BUILDING

- A. Framework: The building shall have a complete, internal, self-supporting, structural steel frame which does not utilize or rely on the exterior panels or roof cover panels for any of its structural strength or framing. The buildings stand-alone framework shall include 8 to 16 gauge, cold-formed, galvanized steel structural members. Building Frame work is to be thermally isolated from the exterior wall and roof sheeting with a 1" fiberglass insulation blanket. Building framework to have a flush-wall, vertical and horizontal framing format with girts, purlins, and full trusses on both end walls, which easily allows for future expansion and/or modifications. The wall framing members shall be 4" deep (minimum) and be of galvanized steel. Wall and ceiling structural support system are to be designed to provide load carrying capability for anticipated heavy equipment loads using 16 gauge galvanized steel hat channels behind the liner panels for reinforcement as needed, with locations shown on approval drawings. Roof to have 7 gauge to 14 gauge solid web hot rolled steel trusses.
- B. Insulation: Exterior walls shall have a minimum of 3.5", fiberglass batt insulation and a vapor barrier. The ceiling shall have a minimum of 6" fiberglass batt insulation and a vapor barrier. In addition to the bat insulation in the walls and ceiling, an additional 1" fiber-glass insulation blanket shall be installed over the entire building framework and under the exterior wall and roof panels, as a thermal break. The insulation system shall provide a minimum of R-19 in the walls, R-24 above the ceiling, and R-30 in the floor.
- C. Roof: A roof pitched 1 inch in 12 or greater shall have a covering of overlapping, 18 gauge, Galvalume, ribbed steel panels with a baked-on Kynar 500®, PVDF resin-based finish in manufacturer's standard colors. Overlapping roof panels shall be installed with appropriate self-tapping fasteners with integral gaskets. A roof with a pitch of less than 1 inch in 12 shall have a roof covering of mechanically-seamed, 24 gauge, Standing-Seam Roofing, with a minimum seam height of 2". Standing seam roof panels shall be of Galvalume steel, with a baked-on Kynar 500®, PVDF resin-based coating and shall have no visible fasteners on main run. Roof to include a matching, die-formed ridge cap, and a fully supported 3" overhang. Properly sized attic space ventilation shall be provided.

- D. Exterior Walls: The exterior walls shall be 18 gauge ribbed Galvalume steel panels with a baked-on PVDF resin-based finish in manufacturer's standard colors. Exterior siding panels to be overlapped and installed with appropriate self-tapping fasteners with integral gaskets, and shall be removable without any disturbance to interior panels. Butted seams are not allowed. All openings in walls are to be structurally framed, sleeved, trimmed, and provided with external drip caps. Repair or replacement of exterior panels must be able to be done entirely from outside.

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- E. Exterior Trim: The exterior trim package shall include stepped or boxed eave, rake, fascia, base, corner, jamb, and header trim in, 26 gauge Galvalume material with owner's choice of standard Kynar 500® colors.
- F. Interior Finish: The building's interior walls and ceiling shall be lined with flush-fit 22 gauge, roll-formed liner panels, with concealed fasteners and Regal White Kynar 500® finish over G-90 galvanized substrate. The building interior shall feature a complete matching trim system including base, jamb, header, and ceiling trim
- G. Interior Dimensions: The building's finished interior dimensions shall be no less than 10 ½" in width and length from the exterior dimensions shown on the drawings. Minimum floor to ceiling dimension shall be nominal 10'.
- H. Fasteners, Adhesives, and Sealants: The fasteners, adhesives, and sealants utilized shall be of types approved for use on this type of structure as required by the appropriate agency or governing body, as covered in section 1.02 of these specifications.
- I. Closures: Matching, pre-molded, closed cell elastomer closures provided by the siding and roof panel manufacturer shall be installed according to the manufacturer's recommendations at the eave line, beneath the roof panels, and where the trim meets the wall panels.

2.04 DOOR AND HARDWARE

- A. Minimum Standards. Doors shall at a minimum comply with Steel Door Institute directive SDI-100.
- B. Doors and Frames. Doors to be constructed of no less than 18-gauge steel faced leafs with stiffeners and 16 gauge door frames. Doors and frames to be hot-dipped galvanized to ASTM designations A924 and A653, then factory primed and painted with epoxy enamel to match the building or the trim. Door to have insulated core.
- C. Sizes and Quantity. Shall be as indicated on the drawings. Minimum size door is 36" x 84" x 1 ¾".
- D. Door Hardware shall include:
1. NRP stainless steel ball bearing hinges, minimum of Three (3) per door.
 2. Von Duprin low profile rim device type panic interior openers, with cylinder lock keyed entry and thumb latch exterior (22TP-SP28).
 3. LCN4110 closer with hold open arm.
 4. Weatherstripping and sweep, Reese #797B.
 5. Threshold, Reese #V301.
 6. Watershed, at top of door, Reese #202C; 203C.

7. Drip cap, extending 3" past door edge.
8. Entry alarm contacts, Edwards #61.

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2.05 MISCELLEANEOUS BUILDING ACCESSORIES

- A. Telecommunications Board. If indicated on the drawings, building manufacturer to install a 7/16" thick White FRP veneer plywood telecommunications board over a 7/16" OSB backer with flush transition trim to wall liner. Painted plywood fastened over the wall liner is not acceptable. Size and quantity to be as indicated on drawing or in the BOM.
- B. PVC Chases. 1" PVC Cable chases to be installed in the wall near the bottom of Telecommunications Board, and in diagonal building corners for ground leads. Chase(s) to be sealed with silicone caulk.
- C. Emergency Eye Wash. If indicated on the drawings, building manufacturer to install a wall mounted self contained emergency eye wash station containing, at a minimum, Two 16 ounce bottles of sterile saline solution.
- D. Fire Extinguisher(s). Wall mounted 10# Dry Chemical ABC Rated Fire Extinguishers are to be provided in a convenient location at each doorway.
- E. Furnishings. Furniture such as Desks, File cabinets, Drawing Racks, etc. to be supplied by building manufacturer only if specifically called for in Appendix A or in the BOM.

2.06 HEATING, VENTILATION, and AIR CONDITIONING

- A. Minimum Standards. Unit(s) to be a readily available wall mounted commercial grade air conditioner with integral heater, (Bard, Marvair, or equal). All electrical connections to meet NEC standards. Unit(s) to be supplied by a manufacturer with service representation within a 250 mile radius of area where building is installed.
- B. Size and Quantity. Unit(s) to be sized by building manufacturer to maintain a minimum interior temperature of 60 ° F, and a maximum interior temperature of 85 ° F, based on the ambient site conditions and expected internal heat gains as shown on the attached Appendix. A. Quantity to be as shown on the drawings or as determined by building manufacturer. Power feed is assumed to be 120/240 VAC, single phase unless noted otherwise in Appendix A or the BOM.
- C. Filters and Controls. Unit(s) to have supply and return grilles, and a replaceable pleated high efficiency filter on the return side. Unit(s) to be controlled by a separate wall mounted auto-change over thermostat, or a lead-lag controller if two units are used.

2.06.1 EXHAUST FANS

- A. Minimum Standards. Intake to have a filter rack, pleated high efficiency filter, insect screens and painted steel weather hood. Exhaust to have a back draft damper, insect screen, and painted steel weather hood. Units to be louvered aluminum with gravity dampers unless otherwise specified.
- B. Size and Quantity. Unless otherwise indicated, Intake and Exhaust to be sized by building manufacturer based on size of the building and/or any specific requirements based on Battery System being used.

- C. Controls. Exhaust fan to be controlled by a manual on-off switch, and a cycle timer (such as Intermatic). It may also be controlled by a Hydrogen Detector and/or a separate wall mounted thermostat, if called out in Appendix A or the BOM.

2.07 BUILDING ELECTRICAL - STANDARDS

- A. Minimum Standards. All grounding, workmanship and materials shall conform, as a minimum, to the current edition of the National Electric Code. All conduit shall be electrical thin wall metallic tubing (EMT) except service runs which are PVC, and flexible metallic conduit used for motor and fixture connections. All interior junction boxes are NEMA 1. All wiring and conduit is surface mounted and run tight to walls and ceiling. Conductors shall be 98% conductivity copper with 600 volt insulation, THHN, sized as required, 12 gauge minimum for line voltage wiring and 18 gauge for alarms.

2.08 BUILDING ELECTRICAL - MATERIALS

2.08.1 LIGHTING

- A. Interior Lighting. Building to be equipped with 4' twin tube 40 watt (*or 32 watt*) fluorescent light fixtures with rapid start ballasts, lamps, and acrylic lens cover. Lighting to be designed to provide a minimum of 50 foot candles at desk level.
- B. Exterior Lighting. Building to have a vandal resistant 70 watt High pressure Sodium (HPS) exterior light above each door, equipped with acrylic lens cover, and controlled by a built-in photocell.
- C. Emergency Lighting. Wall mounted emergency lighting to be installed in the quantity shown on the drawings. Lights to be dual head, 90 minute back up, with lamps included.
- D. Exit Signs. Red LED exit signs to be provided above each door.

2.08.2 RECEPTACLES

- A. Interior Receptacles. Wall mounted 20 amp, 125 V AC duplex receptacles shall be installed in the quantity indicated on the drawings, with standard Ivory cover plates, at 18" above floor level, unless otherwise indicated in Appendix A.
- B. Exterior Receptacles. Weatherproof, 20 amp, 125 VAC, GFI protected duplex receptacles Shall be installed next to any Air Conditioners and in any other location indicated on the drawings.

2.08.3 SWITCHES

- A. All switches are to be 20 amp, wall mounted with standard Ivory cover plates, at 44" above floor. Switches are standard single pole except lighting if more than One door is used and then switches to be Three Way.

2.08.4 ALARMS/DETECTORS

- A. Smoke Alarm(s). A ceiling mounted 120 VAC smoke detector and relay to be installed.
- B. Door Alarm(s). Each door to have a magnetic contact entry alarm.
- C. High and Low Temperature Alarms. One High Temperature and One Low Temperature alarm to be provided.

2.08.4.1 ALARM ENCLOSURE

- A. All alarms are to be wired to a wall mounted 12" x 12" NEMA 1 enclosure, with terminal blocks mounted and alarms wired to one side only, wiring from other side by others.

2.08.5 WIREWAY

- A. Building manufacturer to install a standard 4" x 4" metal Wireway with hinged removable cover around perimeter of building interior near the ceiling unless indicated otherwise on the drawings.

2.08.6 CABLETRAY

- A. An aluminum ladder type cable tray system to be provided in a layout and size as indicated in the drawings. Cable tray to be mounted from a reinforced ceiling using uni-strut and threaded rods. Load capacity of the cable tray shall at a minimum meet NEMA Class "C" (100 lbs. per lineal foot). The bottom of the cable tray shall be 8' 6" from the floor.
- B. The building to have either a fully framed and sleeved floor cutout with a removable cover plate, or fully framed and sleeved wall opening(s) with removable cover plates.
- C. Additionally, if indicated on the drawings the building to have an Exterior Cable Riser with two piece, weather proof removable cover, stainless steel bolts and wing nuts and a run of vertical tray.

2.08.7 GROUNDING AND ACCESSORIES:

- A. Copper Ground Bus Bar - 1/4 " x 2" copper bus bar, brackets, and accessories run as shown on drawings.
- B. Ground Fittings - Copper compression connectors and fittings, supplied per material specifications.

