

## SECTION 13 1200

### PRECAST CONCRETE RESTROOM BUILDING

#### PART 1 – GENERAL

##### 1.01 SCOPE

A. This section specifies the performance attributes required for prefabricated precast concrete buildings for design, engineering, fabrication, onsite delivery and installation on a prepared site.

B. Contractor to furnish a precast concrete building. Building to be set by manufacturer on contractor's prepared foundation in accordance with manufacturer's requirements. Precast building to be provided by manufacturer with all necessary openings as specified by contractor in conformance with manufacturer's structural requirements.

##### 1.02 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 0 and Division 1 Specification Sections, apply to Work of this Section.

##### 1.03 QUALITY ASSURANCE

- A. ACI-318-11, "Building Code Requirements for Reinforced Concrete". Concrete Reinforcing Institute, "Manual of Standard Practice".
- B. ANSI/ASCE-7-10 "Building Code Requirement for Minimum Design Loads in Buildings and Other Structures".
- C. CBC 2022
- D. 2022 CBC Title 24 (Part 2) - Accessibility
- E. 2022 Cal Green Code - Sustainability
- F. Concrete Reinforcing Institute, "Manual of Standard Practice".
- G. Fabricator must be a certified producer/member of The Precast/Prestressed Concrete Institute (PCI) at time of bid.
- H. Building fabricator must have a minimum of 5 years' experience manufacturing and setting transportable precast concrete buildings.
- I. Licensed by the California Department of Housing and Community Development.
- J. All site assembly and building connections work shall be performed by a qualified representative of the manufacturing company. Manufacturing company shall at all times prior to bid and during construction have and maintain a Class B - California General Contractors License.
- K. No alternate building designs to the pre-engineered EASI-SET® building will be allowed unless pre-approved by the owner 10 days prior to the bid date. Manufacturers and designs must meet ALL the specifications as set forth in this specification document.

##### 1.04 DESIGN REQUIREMENTS. All walls are minimum 4" thick, roof is 5" thick, and floor is 6" thick.

- A. Standard Models Dimensions: Dimensions- length, width, and heights as set forth on the plan drawings.

- B. Design Loads:
  - 1. Standard Live Roof Load – 60 PSF
  - 2. Standard Floor Load – 250 PSF
  
- C. Roof: Roof panel shall slope approximately 12” from left to right or front to back in the short-sided direction. The roof shall extend a minimum of 6” beyond the wall panel all around. An optional turndown feature is available where the design extends ½” below the top edge of the wall panels to further prevent water migration into the building along top of wall panels. Only available with broom finish or top surface applied finishes.
  
- D. Roof, floor, and wall panels must each be produced as single component monolithic panels. No roof, floor, or vertical wall joints will be allowed, except at corners. Wall panels shall be set on top of floor panel.
  
- E. Floor panel must have ½” step-down around the entire perimeter to prevent water migration into the building along the bottom of wall panels.
  
- F. Plumbing shall be designed in accordance with the 2022 CBC.
  
- G. Electrical system shall be designed in accordance with the 2022 CBC.
  
- H. Accessibility - Prefabricated flush toilet buildings shall conform to the requirements of the “Uniform Federal Accessibility Standards” (UFAS) and the “Americans with Disabilities Act Accessibility Guidelines” (ADAAG). Buildings shall have full unobstructed 60-inch turning diameter in each interior and entry area.
  
- I. A fully grouted cove base shall be incorporated into all restroom walls for sanitary purposes. See the design plan by Easi-Set.

**1.05 SUBMITTALS – Deferred Submittals**

- A. Engineering calculations and erection drawings that are designed and sealed by a professional engineer registered in the State of California or in the state where the project is located.  
Shop drawings to specify types and materials of all structural wall embeds.
- B. California Department of Housing and Community Development – manufacturer’s certificate.
- C. California General Contractors License
- D. PCI - Certified Plant Certificate
- E. 5000 PSI Concrete mix design with test reports.
- F. Product data for plumbing fixtures, lighting, hand dryers, doors and door locks
- G. ADA design sheet indicating access layouts, signage and all fixture mounting dimensions
- H. Concrete stain color chart for engineering color selection.
- I. ALL Optional items chosen by engineer clearly noted on building submittal sheet including welding certificates if applicable.

## **PART 2 – PRODUCTS**

### **2.01 MANUFACTURERS**

- A. **EASI-SET®** brand as manufactured by StructureCast, the licensed manufacturer of Easi-Set Buildings or approved equal.
- B. Substitutions: Refer to Section 00 2113 (Instruction to Bidders), Article 6, Paragraph 6.07

### **2.02 MATERIALS**

- A. Concrete: Steel-reinforced, 5000 PSI minimum 28-day compressive strength, air-entrained (ASTM C260).
- B. Reinforcing Steel: ASTM A615, grade 60 unless otherwise specified.
- C. Precast Floor and Roof members shall be Post-Tensioned. Roof and floor to be each post-tensioned by a single, continuous tendon. Post-tensioning cable shall be 41K polystrand CP50, .50", 270 KSI, 7-wire strand, enclosed within a greased plastic sheath (ASTM A416). Tendon shall form a substantially rectangular configuration having gently curving corners wherein the positioning of the cable member results in a pattern of one or more loops and a bisecting of the loop(s). The cable member starts from one corner of the concrete building panel, forms a gentle perimeter loop(s) returning to a point where the cable member entered the concrete building panel. The tendon then turns 90 degrees and follows the cable member(s) to a point midway along the "Y" axis of the concrete building panel and then turns 90 degrees along the "X" axis of the concrete building panel. This bisects the concrete building panel and crosses the opposite parallel portion of the cable member and exits from an adjacent side of the concrete building panel.
- D. Caulking: Joint between building and floor slab shall be caulked on the exterior and interior surface of the joints. Caulking shall be SIKAFLEX-1A elastic sealant or equal. Exterior caulk joint to be 3/8" x 3/8" square so that sides of joint are parallel for correct caulk adhesion. Back of joint to be taped with bond breaking tape to ensure adhesion of caulk to parallel sides of joint and not the back.
- E. Vents: 12" x 12" screened aluminum vents to be cast in rear or side wall of each restroom. Vents shall be SUNVENT #164FL or equal.
- F. Panel Connections: All panels shall be securely fastened together with 3/8" thick stainless-steel embedded weld plates of structural quality. All fasteners to be 1/2" diameter bolts complying with ASTM A307 for low-carbon steel bolts. Cast-in anchors used for panel connections to be Dayton-Superior #F-63, or equal. All inserts for corner connections must be secured directly to form before casting panels. No floating-in of connection inserts shall be allowed. Stainless Steel plates shall be welded using Stainless Steel welding rod. All welding shall be performed by a certified welder with certificates supplied at time of bid. Floor to wall connections to be coved.

### **2.03 ACCESSORIES**

Doors and Frames:

1. Shall comply with Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI-100) and as herein specified. All door and frame galvanizing shall be in accordance with ASTM A924 and A653 for hot dipped steel and shall be of the 0.6 oz class of galvanizing.
2. Buildings shall be equipped with 3068 doors: 16 gauge (.045"), 1.75" thick hollow metal steel. Active doors shall be non-handed, prepared for a cylindrical lever lock, flush top cap and three hinges.
3. Active doors shall be reinforced with minimum, 16 gauge (.072") closer reinforcements to support surface mounted hardware.
4. Doors and frames shall meet SDI standard Level 2 model 1: Heavy Duty 1 3/4" Flush Hollow Metal Doors.
5. Frames shall comply with ANSI 250.8-2003 (SDI-100) and be constructed of 16 gauge hot dipped galvanized (.053") steel in a depth to match the wall thickness. Frames shall be knocked down, mechanically fastened, or welded, cast in place or post anchored as required. Strike jambs shall be prepared to receive three rubber mutes to cushion door closing.
6. Doors and frames shall be reinforced to receive surface applied hardware. Minimum 10 gauge hinge reinforcements shall be used to prevent door sag.
7. Doors and frames shall be factory treated with an anticorrosive phosphate solution to inhibit rusting and to etch metal to accept top coating of field applied finishes. Doors and frames shall be given one coat of rust inhibitive primer and one finish coat of enamel paint.
8. Doors, frames and hardware shall comply with the requirements under 2013 ADA Standards for Accessible Design.

**Door Hardware: Limited Lifetime Warranty on Mechanical assemblies as noted**

1. Hinges: Hinge standards shall comply with ANSI 156.17 Grade 1 hinges (3 per door minimum) Hinges shall meet NFPA 80 label requirements for 3-hour fire doors. Hinges shall be 32D (Type 630) Satin Stainless Steel with non-removable pins. Manufacturer shall provide a Limited Lifetime Warranty on this product.
2. Cylindrical Lock: BEST Series 9K or Schlage ND series with lever, ANSI 156.2, Series 4000, Grade 1. UL listed ADA approved. Dormitory function. Deadlocking latch bolt x levers except when locked by push button in inside lever. Key in outside lever locks or unlocks outside lever and releases button. Closing door releases push button. Inside lever always free. Zinc dichromate chassis with cast solid zinc levers to resist corrosion. Furnish locks with 6 pin solid brass standard Schlage "C" keyway. All locks to be keyed alike. Manufacturer shall provide a Limited Lifetime Warranty on this product. Dead Bolt to be Schlage B Series, Grade 1. A156.36 – 2010 High Traffic, Heavy Duty or similar.
3. Drip Cap: Aluminum drip cap with minimum projection of 2 1/2" shall be furnished. Drip cap to extend 2" beyond each end of opening to allow for appropriate protection against the elements.

4. Door Stop: ANSI 156.16 Approved wall mounted door stop with keeper constructed of a corrosion resistant cast brass material. Finish 26D (Type: 626) Brushed Chrome Finish. Approved manufacturers:
5. Door Sweep: Nylon brush door sweep, with drip edge. ANSI/BHMA certified. Sweeps shall be approved for UL 10C Positive Pressure and suitable for use with fire doors rated up to three hours.
6. Surface Closers : LCN Series 40 or 41 and set for full compliance with CBC / ADA closer delay times. Mount all closers on inside of exterior doors.

## **2.04 FINISHES**

### **A. Finishing Concrete**

1. All exterior building walls and exterior screen walls will be any one of the available textures. Textures shall wrap panel sides/edges where panel sides/edges will be exposed.
2. All exterior surfaces of the roof panels will be cast to simulate any one of the available textures. The underside of the overhang will have a smooth finish.

B. Interior of Building: Hand troweled finish on all interior panel surfaces.

C. Exterior of Building: Full range of manufacturers options.

D. Roof panels: Full range of manufacturers options.

E. Restroom floor to be finished with 2-part epoxy coating, sealed to the top of the cove.

### **F. Painting/Staining**

1. An appropriate curing time be allowed before paint is applied to concrete.
2. Schedule of finishes.
  - a. Inside concrete surfaces.
    - 1) Inside floors will be one (1) coat of 1-part water based chemical resistant urethane or two (2) part epoxy coating or approved equal.
    - 2) Interior walls and ceilings will be two (2) coats of a modified acrylic, water repellent penetrating stain, followed by one (1) coat of clear sealer.
  - b. Metal surfaces both inside and out.
    - 1) Two (2) coats of DTM ALKYD.
  - c. Exterior concrete surfaces.
    - 1) Exterior walls will be two (2) coats of water repellent penetrating stain in the same color as the walls or roof followed by one (1) coat of clear acrylic anti-graffiti sealer (Sherwin-Williams 2K waterbased anti-graffiti clear coating system. or approved equal.

## **2.05 PLUMBING**

A. Waste and vent piping: ABS or PVC plastic.

B. Water piping: Copper tubing Type L, hard drawn. Provide a gate or ball valve at the inlet end of the water line. Size water lines to provide proper flushing action based on a nominal water pressure of 40 psi.

C. Provide a main shut-off valve, hose bib and drain in the service area.

- D. Toilet and urinal: Stainless-steel, wall hung, with siphon jet action. Back spud for concealed flush valve action.
- E. Flush valve: Concealed flush-o-meter constructed of rough brass with water saver flow of 1.28 gallons per flush for toilet and 0.5 gallons per flush for urinal. Push button activated
- F. Lavatory: Stainless-steel, 18 inches wide x 18 inches front to back.
- G. Faucet: Self-closing water set with indexed push button.
- H. Hose bib: Provide single unit in the service area.
- I. Floor drains: Provide a floor drain in each room of the toilet building that have 2 or more toilets or urinals.
- J. Hammer Arrester. Size and quantity as needed.
- K. PROFLO, trap primer and distribution units as needed for floor drains.
- L. Water fountain to be stainless-steel high-low ADA compliant.

#### GRAB BARS

- A. Stainless steel tubing, 1-1/2 inch outside diameter mounted 1-1/2 inches from wall, 18 gauge, type 304 Stainless steel concealed screw-mounting flanges

#### TOILET PAPER DISPENSER

- A. Bar-type toilet paper dispenser shall be constructed of stainless-steel with satin finish or steel designed to hold three standard rolls of toilet paper. Holder shall not prevent the free turning of the paper rolls.

#### MIRRORS

- A. Frameless stainless steel mirror American Specialties, # 8026-1624.

### 2.06 ELECTRICAL

- A. All components are UL listed.
- B. Provide 200 amp breaker panel--Sized to meet load requirements and mounted to meet most current electrical code.
- C. Interior lighting--Vandal resistant fixtures with built-in occupancy sensor, energy efficient LED lights, and lifetime warranty.
- D. Exterior lighting--Vandal resistant fixtures with built-in photoelectric switch, energy efficient LED lights.
- E. Exhaust fans--All wet location motion activated with speed control in chase area to control CFM.
- F. Wiring--Conduit, surface mounted in the service area and concealed in the user compartments. All wire will be copper.

- G. GFI outlets provided per current electrical code requirements.

## **2.07 BUILDING**

All fixed polycarbonate windows shall have a stainless-steel window frame embedded into the face of the precast wall.

### **Part 3.00 - INSTALLATION OF PRECAST CONCRETE TOILET AND UTILITY BUILDINGS**

#### **3.01 – GENERAL**

##### A. Description

1. The work of this section consists of installing precast concrete toilet and utility buildings including clearing and grubbing, excavating, backfilling, site grading and cleanup.

##### C. Flush Toilet

1. All plumbing and electrical connections shall be made by licensed plumbers and electricians in the state where the building is installed.

##### F. Delivery and Handling

1. Contractor shall coordinate with the building manufacturer for the delivery and placement of the precast concrete building. Refer to Sections 13120, 13121 or 13122

#### **3.02 - ACCESS**

Contractor must provide a level unobstructed area large enough for a crane and a tractor-trailer to park adjacent to the pad. Crane must be able to place outriggers within 5'-0" of edge of pad and truck and crane must be able to get side by side under their own power. No overhead lines may be within 75' radius of center of pad. Firm roadbed with turns that allow 65' lowbed tractor-trailer must be provided directly to site. A minimum of 24" clearance is required between this building and adjacent buildings.

#### **3.03 - SITE PREPARATION REQUIREMENTS (MANUFACTURER'S RECOMMENDATION)**

- A. building shall bear fully on a crushed stone base that is at least two feet larger than the length and width of building.
- B. Stone shall be a minimum of 4" thick or down to firm subgrade. The vertical soil capacity under stone shall be compacted to have minimum bearing of 1,500 pounds per square foot. Stone shall be 3/8" or smaller and must be screeded level within 1/4" in both directions. Stone shall be placed within a

perimeter form with flat and level top edge for screeding. Forming material shall remain around stone until after the building is set.

- C. The crushed stone base shall be kept within the confines of the soil or perimeter form. Do not allow the stone base to become unconfined so that it may wash, erode, or otherwise be undermined.
- D. Provide positive drainage for the fill, concrete pad, or slab as required.

### **3.04 - INSTALLATION**

- A. Install pre-fab concrete building per approved manufacturer's instructions.
- B. Delivery and Handling
  - 1. Contractor shall coordinate with the building manufacturer for the delivery and placement of the precast concrete building.
    - a. Provide exact location by stakes or other approved method as required by prefab building manufacturer.
    - b. Provide clear and level site free of overhead and/or underground obstructions.
    - c. Provide access to the site for truck delivery and sufficient area for the crane to install.
    - d. Water, electrical and sewage site connections to be placed per manufacturer provided drawings. Must be placed to easily connect to the building.
- C. Compacting per soils report or manufacturers requirements. More stringent requirement to be provided.

END OF SECTION