

SPECIFICATIONS

SECTION 03420

PRECAST INSULATED CONCRETE BUILDING

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work includes the supply and installation of a precast concrete insulated building with appurtenances, complete in- place, at the location, and in accordance with the contract drawings and as specified herein.

B. The manufacturer of the building shall be an organization specializing in the manufacture of precast concrete buildings for at least 5 years.

C. The manufacturer of the building shall be a PCI Certified Plant in category A1.

1.2 – SUBMITTAL

1.2.1 SHOP DRAWINGS

A. Shop Drawings and Design Calculations shall be signed and sealed by a Professional Engineer registered in the State of New York.

B. Before starting fabrication, submit Shop Drawings showing layout, dimensions, anchorages, connections and connection accessories.

1.2.2 INSULATION

A. Quality Assurance Submittals:

1. Certificates:
 - A. ICC-ES Evaluation Service Report.
2. Test Reports:
 - A. All reports and tests in accordance with ICC-ES Acceptance Criteria 320.
3. Manufacturer's installation instructions

B. Thermal Calculations: Provide calculations complying with ASHRAE/IESNA Standard 90.1 and confirming the effective resistance for the concrete sandwich wall system.

1. Isothermal Planes (Series Parallel Path) Analysis:
 - A. To be in compliance with the standard, all wall assemblies must be calculated as provided for in the ASHRAE Handbook – 1985 Fundamentals – Chapter 23
2. Building Envelope Performance Study:
 - A. ASHRAE/IESNA SANDARD 90.1-1989 – SYSTEM PERFORMANCE CRITERIA: R-Value Performance and the Heating And Cooling Load Adjustment for the Effects of Concrete Mass Within the Building Envelope

C. Dew point calculations: Provide calculations complying with the ASHRAE Handbook of Fundamentals – Theory of Water Vapor Migration and confirming the requirements for effective moisture condensation prevention. The construction of the wall panel and the building envelope must include adequate design to prevent the formation of frost or ice on any panel surface and must maintain inner-wall condensation potential below 0.004 oz/day/sqft based on summer design extremes.

PART 2 – PRODUCTS

2.1 PRECAST CONCRETE

A. The structural design for the Precast Concrete Building shall be performed in accordance with the ANSI Building Code Requirements for minimum design loads in building and other structures:

1. Wind Load = 27 PSF
2. Snow Load = 60 PSF
3. Floor Live Load = 100 PSF

B. Concrete shall have a 28 day strength of 5000 PSI. Building shall meet the ACI 318 Building Code requirements, or latest edition, for reinforced concrete.

C. Air entraining admixture, conforming to ASTM C260, shall be added to produce between 5 to 9 percent air by volume.

D. Reinforcing steel shall be in with the Concrete Reinforcing Institute Manual of standard practice. Reinforcing steel shall be in conformance with ASTM A615 grade 60 and welded wire fabric shall be ASTM A185.

E. Walls shall be a min 8" thick comprised of 2" face mix, 2" insulation, 4" structural back. Building shall be leak proof and corrosion proof with a 2 hour fire rating. Wall panels shall have a natural concrete, uniform interior broom finish. Exterior shall have an exposed aggregate finish with smooth concrete bands at the corners.

F. Roof thickness shall vary and slope away from the door. Roof shall have a minimum 3" overhang on all sides, and a continuous, built in drip edge. Roof edge shall have a smooth form finish.

G. Panel-to-Panel, Panel-to-Roof and Panel-to-Floor connections shall be A36/A709-36 zinc plated steel, with a minimum dimension of 5"x5"x1/2". Washers shall be zinc plated A36 steel 3"x3"x1/4" with (1) 9/16" hole. Bolts shall be 1/2" diameter ASTM A449 Grade 5 with locking washer.

H. Panel-to-Roof and Panel-to-Floor gasket shall be 1" wide x 1/2" thick closed cell neoprene NYSDOT 705.08

J. Caulk all joints inside and out, caulk shall be BASF Sonolastic NP-1, color shall be Limestone.

2.2 INSULATION

A. Insulation shall be THERMOMASS ® Building System, as supplied by Composite Technologies Corporation, Boone, Iowa, 1-800-232-1748

B. Structural Non-Composite Wythe Connectors:

1. Shall be Non-Conductive, Non-corrosive, Fiber-composite connectors, having a tensile strength of 120,000 psi, minimum glass content of 76 percent by weight, and a coefficient of thermal expansion of 5×10^{-6} in/in/ °F, nominal.

2. ICC-ES Evaluation Service Report based on data submitted in accordance with ICC-ES Acceptance Criteria 320 indicating compliance with the applicable building code.

C. DOW ® Extruded Polystyrene Board Insulation: Complying with ASTM C578, Type IV; with regular spaced holes identifying connector placement locations.

2.3 DOORS AND HARDWARE

A. Doors and Frames shall be 3'-0" x 7'-0" x 1 3/4" for single doors and 6'-0" x 7'-0" x 1 3/4" for double doors. Doors shall be The Fleming D-Series 18 Ga. Steel door. Frames shall be The Fleming F-16 Series, 16 Ga., 4" weld, punched and dimpled frame with 2" head.

B. Hinges shall be stainless steel with full mortise and concealed area. Hinges shall be Hager BB1279 - 4 1/2"x4 1/2".

C. Threshold shall be National Guard Products, Saddle Threshold #425E.

D. Dead Bolt shall be Schlage B660Px626 heavy duty dead bolt with strike.

E. Closer shall be Hager 5200 Series-AL closer tested and certified under ANSI Standard A156.4 grade one.

F. Push and Pull Plates shall be Hager 30S push plate and 31E pull plate.

G. Sweeps shall be National Guard Products, 102VA sweeps

2.4 PENETRATIONS: Penetrations shall be neat and any damage to surrounding surfaces shall be repaired. All penetrations shall be verified by the contractor prior to fabrication.

2.5 LOUVERS AND VENTS: Provide openings for louvers and vents as indicated on the drawings.

2.6 MANUFACTURERS: The precast building, complete with all accessories outlined above, shall be Lakelands Concrete Products Inc., Ph: 585-624-1990 or equal

PART 3 – EXECUTION

A. The precast building shall be shipped to the jobsite and erected in place as shown on the contract drawings.

B. After all piping, wiring and utilities have been installed, tested and approved, contractor to clean the interior and exterior, and adjust doors to provide a weather tight seal.

PART 4 – WARRANTY

A. Precast concrete manufacturer shall guarantee precast concrete products against defects in materials and workmanship for a period of 1 year after delivery and erection.

END OF SECTION