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GigaHouse Specifications

GigaHouse™: Factory made highly insulated housing materials designed to create pre-engineered steel framed structures utilizing IBC/ICC-ES code approved products. Panels are used for all walls and roofs and erect rapidly reducing labor and measuring.

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Materials and installation methods to rapidly construct steel stud based insulated walls and roofs. Interior and exterior wall coatings to cover insulated panels of EPS foam.

1.02 DESIGN REQUIREMENTS

A. Insulated EPS PanelSystem components to accept steel stud inserts.

1. Wall and roof panels are pre cut to specific dimensions, width, height and thickness. These EPS foam based components include flat panels, curved panels, corners and intersecting “T” shaped pieces all of which have pre-cut placements for structural steel stud insertions.

2. Pre-cut factory made insulation panels locate where the structural steel studs and patented connector shall be installed.

3. Steel studs, connectors and top and bottom tracks are pre-cut and supplied with each of the insulation panels.

4. Hardware such as self drilling self tapping Tapcon screws are used to attach steel studs to tracks as per typical IBC steel framing codes.

5. Roof to foundation anchors are used to tie down the roof through mechanical steel connections to the foundation via all-thread, coupling nuts and expansion anchors set into the concrete slab or footings.

1.03 PERFORMACE REQUIREMENTS

A. Shall be acceptable for use under the building code enforcing body in the jurisdiction of the project.

1.05 SUBMITTALS

A. Manufacturer’s technical data sheet, specifications and Best Practice Guide.

B. Samples for architect’s approval (when specified).

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1.06 QUALITY ASSURANCE

A. Manufacturer

1. All materials manufactured, sold and distributed by GigaCrete, Inc. North Las Vegas, NV.

B. Contractor Requirement.

1. Contractor must be licensed, insured and engaged in application practices of similar materials to those herein this specification.
2. Employ skilled mechanics who are knowledgeable and experienced in similar steel framing and material applications.
2. Contractor must provide proper equipment, manpower and supervision on the jobsite to install the product in accordance with GigaHouse™ Best Practice Guide publication.

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Material shall be delivered to the jobsite in their original palletized and unopened coatings packages.
2. Material shall be inspected for damages. Damaged panels, studs and coatings packages should be removed from the remaining usable stock and damage claims made to the shipping company.

B. Storage

1. Product shall be stored indoors in a dry location free of moisture, high humidity, direct sunlight, off the floor and under cover. EPS foam will slowly degrade when exposed to constant UV rays from sunlight.
2. Storage location shall be protected from excessive heat or freezing conditions within the temperature range of 35°F - 90°F.

C. Handling

1. Do not to throw, drop or mishandle unopened packages using caution to preserve condition of sealed packages. EPS foam panels are delicate at the edges and should be handled with care and caution to not break off edges.

1.08 PROJECT CONDITIONS

A. Wind and Ambient and Surface Temperature.

1. Heat and humidity are not factors with the EPS foam however, the panels are lightweight so extreme caution during high winds should be taken.

2. PlasterMax™ interior finish and StuccoMax™ exterior shall be applied in ambient air temperatures above 40°F and rising and remain above 40°F for a 24 hour period.
3. Do not apply StuccoMax™ during inclement weather or when inclement weather is inevitable unless appropriate weather protection is used.
4. Do not apply PlasterMax™ interior finish and StuccoMax™ to substrates that are below 32°F or that are wet, frozen or contain frost.
5. Avoid installing StuccoMax™ in direct sunlight or high winds whenever possible as this may cause rapid hydration and cause product failure.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. GigaCrete Inc. North Las Vegas, Nevada.

2.02 MATERIALS

A. ICC-ES-ESR-1556 Star-R foam EPS panels ranging in density from 1lb to 2lbs density per cubic foot.

B. ICC-ES-ESR – 3016 Cemco Steel Framing studs and track

C. ICC-ES AC11- Cementitious Exterior Wall coating StuccoMax™ - A non Portland cement based dry material packaged in 75 pound paper bags requiring only the addition of potable water.

D. PlasterMax interior plaster with fire ratings, IBC 803.2.1 IBC 803.3 and NFPA 286, UBC 26-3, ASTM- E84,

E. Reinforcing EIFS Mesh (determined by architect for impact resistance requirement).

1. 4.2 ounce per sq-yd – Standard Mesh (Low Impact Resistance).
2. 11 ounce per sq-yd – High Impact Resistance (recommended).

2.04 JOBSITE INGREDIENTS

A. Power supply for jobsite mixing of coatings and electrically operated tools such as screw gun chargers is required.

B. Clean potable water from a municipal source.

2.03 JOBSITE MIXING

A. Mix in accordance with Manufacturer's instructions contained within StuccoMax Best Practice Guide.

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PART 3 – EXECUTION

A. Installers must qualify under the Quality Assurance requirement in this specification (section 1.06).

3.01 EXAMINATION

A. Inspect EPS surface for:

1. Dirt, UV damage causing a powdery surface, grease, paint, laitance, concrete spatter or any other foreign material that may act as a bond breaker.
2. Moisture on the surface. Ensure that the EPS is dry before the application.
3. Wall areas must be plumb, square and straight within 1/8" within a 4 foot radius. Identify and mark problematic wall areas.

B. Report any deviations from the specification requirements or any other conditions that may adversely affect the coatings installation to the general contractor.

3.02 SURFACE PREPARATION

A. Rasp the substrate to remove potential bond breakers listed in section 3.01A.1 and to ensure good adhesion.

B. Repair damage, dents and voids in the EPS substrate with an appropriate expanded insulation prior to applying PlasterMax™ or StuccoMax™. Do not attempt to make repairs with StuccoMax™ or anything other than expanded insulation.

3.03 INSTALLATION

A. Make sure the concrete slab or foundation is flat. Clean and mark the slab for track locations as called out on installation drawings. Locate track components, some may have to be cut to size and notched for intersecting tracks.

B. Install vapor barrier foam roll underneath bottom tracks and shoot into the slab using shot pins, also called red heads. Alternately, drill and bolt using expansion anchors.

C. Locate and place next to final locations, all EPS panels, corner and T components, these are marked ABCD etc on the installation drawings.

D. Start by assembling a self supporting corner; begin installing panel to panel connectors and drop into the slots cut into the foam each stud or connector. Do not leave any studs out. Corners should have at least two panels up in the shape on a letter L to support panels headed in the opposite leg. Continue with all panels

required to complete the first level and finish by placing the top track in place on the top of the walls and screw securely on both sides. Erect all walls before fastening with Tapcon screws on both sides of each panel top and bottom. This will allow for minor adjustments to be made caused by panel creep.

E. Fasten any floor or roof truss support hangers from top of walls if required and hang trusses. Galvanized truss brackets are supplied in the assembly components along with bolts or Tapcon screws.

F. After erecting roof trusses and or compression rings for hip roofs, roof panels are placed starting at the peak or ridge and worked downwards. Roof panels have steel connectors and purlin studs at the inside face of the panels creating a steel to steel connection with the trusses. Angle brackets are supplied and attach the studs to the both sides of the top chord of the truss using Tapcon screws.

G. Interior roof surfaces where steel studs are exposed must now be covered with additional EPS foam sheets. These sheets are cut to fit and spray glued into place and additional screws and plastic washer mechanically connect through the foam to the studs and connectors. Cinch the screws and washers into the foam to allow for coatings to form a flat and even surface finish.

H. Roof panels are sealed at all edges with expanding polyurethane foam sprayed into gaps or voids and allowed to set before trimming flat. At this time it is possible to fill any damaged areas and trim flat prior to applying any coatings.

I. Affix all moldings around windows and doors after they are installed with appropriate flashing as per code and manufacturers recommendations.

J. Rasp any areas not flat and remove all dust and loose particles prior to applying coatings.

K. Apply a thin layer of PlasterMax™ or StuccoMax™ by hand or peristaltic type sprayer and embed specified mesh overlapping all abutting mesh edges by a minimum of 2.5”. This can be in strips covering the abutted joints or as full sheets covering the entire wall surface. *Note: GigaCrete recommends 11oz mesh which can be overlapped and has very high strengths and impact resistance.*

L. An additional thin layer of StuccoMax™ is re applied over the mesh coat(s) while the material in the base layer is still in its plastic state.

M. Remove surface irregularities by trowel before surface skin forms, generally in the application short term. Misting water on the wall surface may assist troweling. Flattening the wall surface with a damp sponge is also acceptable.

N. Texturing may be done to the second StuccoMax™ layer while still workable. Texture finishes shall be specified by the architect and the responsibility of the installer.

3.04 PROTECTION

A. Provide protection of installed StuccoMax™ from excessive heat, cold, wind and other trade activity. StuccoMax™ may be allowed to get wet once it has gained enough initial strength.