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Part 1 General

1.01 SECTION INCLUDES

A. Application of Master Wall coatings over Insulated Concrete Forms (ICF).
B. Molded Expanded Polystyrene (MEPS) Insulated Concrete Form Guidelines.

1.02 SCOPE OF WORK

A. Provide all materials, labor, and equipment to install the Field Applied Master Wall Inc. coatings over an Insulated Concrete Form (ICF) substrate.
B. Related Sections:
   1. Concrete 03300
   2. Unit Masonry 04200
   3. Light Gauge Steel Framing 05400
   4. Sheathing 06100
   5. Sheet Metal Flashing and Trim 07620
   6. Sealants 07900
   7. Doors and Windows 08000

1.03 REFERENCES

A. ASTM Standards
   1. ASTM B-117 (Federal Test Standard 141A Method 6061) Salt Spray Fog Test Method
   2. ASTM C-67 Method of Sampling and Testing Brick and Structural Clay Tile
   3. ASTM C-79 Test Method for Gypsum Sheathing
   4. ASTM C-150 Specification for Portland Cement
   5. ASTM C-578 Specification for Preformed Cellular Polystyrene Thermal Insulation
   6. ASTM C-1177 Specification for Glass Mat Gypsum Substrate for Use as Sheathing
   7. ASTM D-897 (Modified) Bond Strength Before and After 2000 Hours Fluorescent UV-Condensation Type Weathering (QUV Weatherometer)
   8. ASTM D-2247 (Federal Test Standard 141A Method 6201) Method of Testing Metal Specimens at 100 Percent Relative Humidity
   9. ASTM E-72 Transverse Load Test Method
   10. ASTM E-84 Test Method of Surface Burning Characteristics of Building Materials
   11. ASTM E-96 Test Method for Water Vapor Transmission of Materials
   12. ASTM E-108 (Modified) Method for Fire Tests of Roof Coverings
   13. ASTM E-330 Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
   14. ASTM E-331 Test method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
   15. ASTM G-23 (Federal Test Standard 141A Method 6151) Recommended Practice for Operating Light and Water Exposure Apparatus (Carbon-Arc Type) for Exposure of Non-metallic Materials
   16. ASTM G-53 Recommended Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Non-metallic Materials

B. Other Test Methods and Reference Documents
   1. BOCA Radiant Panel Test Method for Ignitibility Characteristics of Exterior Wall Systems
   2. ICBO Freeze Thaw Test Method

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C. EIMA Standards and Documents
   1. EIMA 101.86 Standard Test Method for Resistance of Exterior Insulation and Finish Systems (EIFS), Class PB, to the Effects of Rapid Deformation (Impact)
   2. EIMA 105.01 Standard Test Method for Alkali Resistance of Glass Fiber Reinforcing Mesh for Use in Exterior Insulation and Finish Systems (EIFS), Class PB
   3. EIMA Guide for use of Sealants with Exterior Insulation and Finish Systems (EIFS), Class PB
   4. EIMA Guideline Specification for Exterior Insulation and Finish Systems (EIFS), Class PB
   5. EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board

D. Building Code Standards
   1. Section 1406.0, 1996 National Building Code, Building Officials and Code Administrators International (BOCA)
   2. Section 717.4 and 717.5, 1994 Standard Building Code, Southern Building Code Congress International (SBCCI)
   3. UBC Standard 26-4 (formerly UBC 17-6), 1994 Uniform Building Code, International Conference of Building Officials (ICBO)

1.04 TERMS / DEFINITIONS

A. Applicator – The contractor that applies the Master Wall coatings.
B. Adhesive – A cementitious material used to attach the insulation board to the substrate.
C. Aesthetic Joint – A groove in the MEPS designed to create aesthetics and used to provide starting and stopping points during the application of the finish coat. A minimum ¾" thickness of MEPS shall remain below the deepest point in the aesthetic groove. Aesthetic joints are not expansion or control joints nor should they be used in lieu of expansion or control joints.
D. Backwrapping – The application of the reinforced base coat on the exposed edge of the MEPS and a minimum of 2 ½" on each face of the MEPS.
E. Base Coat – The material applied to the face of the insulation board and reinforced with one or more layers of mesh to function as the weather barrier.
F. Base Coat Mixture – A field mixed blend of base coat and Portland cement.
G. Building Expansion Joint – A joint through the entire building structure designed to accommodate structural movement.
H. Class PB System – A class of EIFS where the base coat varies in thickness depending upon the number of layers, or thickness, of reinforcing material. The reinforcing material is glass fiber mesh, which is embedded into the base coat per EIFS manufacturer's recommendations and with no mesh color visible. Protective finish coats, of various thicknesses, in a variety of textures and colors, are applied over base coat.
I. Designer – The person or firm that is responsible to create the plans and specifications for the entire project.
J. EIFS – Exterior Insulation and Finish System
K. EIMA – EIFS Industry Members Association
L. Expansion Joint – A designed joint in the continuity of a material, assembly, or system, designed to accommodate movement.
M. Finish Coat – An acrylic based, factory mixed decorative and protective coating that is applied to the base coat.

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N. Insulated Concrete Form (ICF) – a concrete form manufactured with Molded Expanded Polystyrene Board, manufactured to meet or exceed EIFS manufacturer's specifications.
O. Insulation Board – Molded Expanded Polystyrene Board, manufactured in accordance with the EIFS manufacturer's specifications, attached to the substrate and covered with the reinforced base coat and finish.
P. MEPS – Molded Expanded Polystyrene Board, manufactured in accordance with the EIFS manufacturer's specifications, attached to the substrate and covered with the reinforced base coat and finish.
Q. Reinforcing Mesh – Balanced, open weave, basic glass fiber mesh(es) supplied by the manufacturer of the EIFS, treated for compatibility with other materials of the system, which functions to strengthen the system and adds impact resistance.
R. Mechanical Fastener – Typically a plastic washer and a mechanical fastener utilized to attach the insulation board to the substrate.
S. Sheathing – A substrate in a sheet form.
T. Substrate – The material to which the EIFS is attached.

1.05 QUALITY ASSURANCE

A. Design and Detailing
1. General
a. Master Wall Inc.'s current published details, specifications, data sheets, technical bulletins and other literature/information are minimum standards and guidelines that shall be followed when designing and detailing a project with the Insulated Concrete Form finishes.
b. Details shall conform to Master Wall Inc.'s details and shall be consistent with the project requirements.
c. Master Wall Inc. must approve deviations from the standard published details in writing.
d. The architect, engineer or the designer of the project should determine where the dew point would occur in relationship to the wall assembly and the project location during summer and winter conditions.
e. Drip details shall be specified in accordance with Master Wall Inc.'s published details.
f. At all locations the reinforced base coat or the substrate shall encapsulate the approved insulation board.
g. The minimum slope of inclined surfaces shall not be less than 6" (152 mm) in 12" with a maximum length of 12" unless approved in writing by Master Wall Inc. Inclined surfaces which are or could be defined as roofs by the building codes or application are not approved by Master Wall Inc.
h. The use of dark colors must be considered in relation to wall surface temperature as a function of local climatic conditions.
i. The MEPS shall be separated from the interior of the building by a 15-minute thermal barrier.
j. The use and maximum thickness of MEPS shall be in accordance with the applicable building codes.
k. It is the responsibility of the architect and the purchaser to determine if a product is suitable for their intended use. The architect or designer of the project shall be responsible for all decisions pertaining to the design, details, structural capability, attachment details, shop drawings and the like. Master Wall Inc. has prepared specifications, details and data sheets to assist as guidelines for the use and installation of the products. Master Wall Inc. is not responsible for the design, details, structural capability, attachment details and shop drawings whether it is based on Master Wall Inc.'s information or not.

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2. Substrate
   a. The maximum deflection under full flexural design loads of the substrate system shall not exceed L/360.
   b. Acceptable substrates for ICF coatings include forms manufactured of Molded Expanded Polystyrene without exposed metal or plastic ties and of approved insulation materials. Forms with exposed ties shall receive at least ¾" minimum approved insulation board.
   c. Substrates not approved in the manufacturer's published literature shall be approved by the manufacture in writing prior to the application or the system.
   d. The project architect or engineer shall engineer the substrate with regard to the required structural performance.

3. Expansion joints
   a. Expansion joints shall be installed in the wall a maximum of every 75 lineal feet. Reference construction documents for specific locations.
   b. Expansion joints in the system are required at building expansion joints, at prefabricated panel joints, where substrates change, at floor lines in wood framed construction, and where structural movement is anticipated.

4. Aesthetic Joints
   a. Aesthetic joints may be installed to provide sufficient break points in the ICF System to prevent cold joints from occurring in the finish coat.
   b. Aesthetic joints shall not be used in lieu of an expansion or control joint.

5. Sealants
   a. Sealants and backer rod, as required at expansion joints and dissimilar substrates, shall provide a complete watertight system.
   b. The sealants in an expansion joint, or any sealant joint that anticipates significant movement, shall be bonded to the reinforced base coat, not the finish coat. The color of the mesh shall not be visible and the texture of the mesh shall not be exposed within base coat at these locations.
   c. All penetrations through the system such as hose bibs, dryer vents, lighting fixtures, air-conditioning hoses, etc. must be properly sealed to insure the integrity of the system.

6. Flashings
   a. When wood framed construction is used, sill pans with three sided end dams shall be installed prior to window frame installation and designed to collect and direct water to the exterior of the reinforced base and finish coat.
   b. Metal flashing shall be installed at heads of openings.
   c. Continuous metal flashing shall be installed at heads of ganged windows.
   d. Flashing shall be installed at rooflines in a manner to prevent any intrusion of water behind the EIFS. This shall include the use of roof kick-out flashing at roof terminations.
   c. When the EIFS is applied to the chimney, a chimney cricket shall be installed.
   d. Wooden decks must be flashed before system is installed. Refer to Master Wall Inc.'s details.

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B. Qualifications
   1. The EIFS Manufacturer shall have manufactured Exterior Insulation and Finish Systems in the United States for at least 10 years.
   2. The Applicator shall be knowledgeable in the proper installation of the Master Wall Inc. coatings.
   3. The Applicator shall have demonstrated the ability to install the system on projects of similar size and complexity.
   4. The Applicator shall provide the proper equipment, manpower and supervision on the job site to install the system in compliance with project plans and specifications.
   5. The Insulation Board Manufacturer shall be approved by Master Wall Inc. to produce MEPS in accordance with Master Wall Inc.'s specifications.
   6. The sealant contractor shall be experienced in the installation of high performance industrial and commercial sealants.
   7. Prior to the installation of the Master Wall coatings, erect sample wall mock-up using materials and joint details required for final work. Provide special features as directed for sealant and contiguous work. Build mock-up at the site where directed of full thickness, indicating the proposed color, texture, and workmanship to be expected in the completed work. Obtain architect's acceptance of the mock-up in regard to aesthetic quality before start of work. Retain mock-up during construction as a standard for judging completed work. Do not alter, move, or destroy mock-up until work is completed, and until final acceptance of the project by architect.

1.06 SUBMITTALS

A. The Applicator shall submit a list of completed projects of like size and complexity.
B. The Applicator shall submit a certificate of training indicating that they have been given instructions on the proper installation of the EIF System.
C. The Applicator shall submit EIFS Manufacturer's current literature, brochures, specifications, and details.
D. The Applicator shall submit sufficient samples of each finish texture and color selected. The samples shall be prepared with the same tools and techniques required for the actual project. Color and texture should be approved based on the job site mock-up samples.
E. The Applicator shall provide any shop drawings that may be applicable to the project for approval by the project architect.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in original unopened packages with labels intact. Verify all quantities, colors, and textures against bill of lading.
B. Store all materials protected from direct exposure to weather conditions and at temperatures not less than 40° F (4° C) or greater than 110° F (43° C).
C. Stack insulation board flat, fully supported off the ground and protected from direct exposure to the sun.
D. Material safety data sheets (MSDS) shall be supplied for the components of the EIFS and be available at the job site.

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1.08 JOB CONDITIONS

A. Ambient air temperatures shall be 40° F (4° C) or greater and rising at the time of installation of the Master Wall Inc. products and shall remain at 40° F (4° C) or greater for at least 24 hours after application.
B. Provide supplemental heat and protection as required when the temperature and conditions are not in accordance with installation requirements. Sufficient ventilation and time shall be provided to ensure that materials have sufficiently dried prior to removing supplemental heat.
C. Adequate protection shall be provided to prevent weather conditions (humidity, temperature, and precipitation) from having an affect on the curing or drying time of Master Wall Inc. materials.
D. Adjacent materials and the Master Wall coatings shall be protected during installation and while curing from weather and shall be protected from site damage.
E. Coordinate installation of the Master Wall coatings with related work specified in other sections to ensure that the wall assembly is protected to prevent water from getting behind the system. The cap flashing shall be installed as soon as possible after the finish coat has been applied. When this is not possible, temporary protection shall be provided immediately in this area.
F. All sealants shall be installed in a timely manner. Protect open joints from water intrusion during construction with backer rod, or temporary covering, until permanently sealed.
G. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffolding lines, texture variations, etc.

1.09 REPAIR AND MAINTENANCE

A. Refer to Master Wall Inc. specific repair and maintenance procedures.
B. Sealants and Flashings shall be inspected annually to verify that the products are not allowing water intrusion. If sealant and/or flashing are allowing water intrusion, repairs should be made immediately.

1.10 LIMITED MATERIALS WARRANTY

A. A Limited Materials Warranty shall be issued upon the receipt of a properly completed warranty request form.

PART 2 PRODUCTS

2.01 GENERAL

A. All components of the Master Wall coatings shall be obtained from Master Wall Inc. or its authorized distributors. No substitutions of, or additions of, other materials shall be submitted without prior written permission from Master Wall Inc. Substitutions or additions will void the warranty.

2.02 MATERIALS

A. Adhesives
   1. Master Wall Inc. Foam & Mesh (F&M) Adhesive: An acrylic-based product mixed one-to-one by weight with Portland cement for use as the adhesive to bond insulation board to an approved substrate.
   2. Master Wall Bagged Base Coat (MBB): A polymer based cementitious product mixed with 5 to 6 quarts of water for use as an adhesive.
   3. F & M Plus: An acrylic-based product mixed one-to-one by weight with Portland cement designed for use as the adhesive to bond insulation board to an approved substrate.

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B. Insulation Board
   1. Insulation Board and ICF shall meet or exceed ASTM C-578 and Master Wall Inc.'s requirements for MEPS.
   2. Nominal 1.0 pcf, aged expanded polystyrene.
   3. Flamespread and smoke development shall be 25 and 450 or less respectively per ASTM E-84.
   4. Maximum size 2'x4'x4". Refer to actual contract documents to determine actual insulation board thickness.

C. Reinforcing Mesh
   1. Detail Mesh – nominal 4.5 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.
   2. Standard Mesh – nominal 4.5 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.
   3. Hi-Tech Mesh – nominal 6.0 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.
   4. Medium Mesh – nominal 10.4 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.
   5. Strong Mesh – nominal 15.4 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.
   6. Ultra Mesh – nominal 21 oz./sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Master Wall Base Coats, and conforming to ASTM D-76, D-579, D-5035, and MIL-Y-1140.

D. Base Coats
   1. Master Wall Inc. Foam & Mesh (F&M) Adhesive: An acrylic-based product mixed one-to-one by weight with Portland cement designed for use with reinforcing mesh as the base coating over the insulation board.
   2. Master Wall Bagged Base Coat (MBB): A polymer based cementitious product mixed with 5 to 6 quarts of water for use as an adhesive and base coating over the insulation board.
   3. F&M Plus: An acrylic-based product mixed one-to-one by weight with Portland cement designed for use with reinforcing mesh as the base coating over the insulation board. (This product shall be used where indicated on the construction drawings when a leveling base coat is required.)

E. Water Resistant Adhesive & Base Coat
   1. Guardian – An acrylic-based product mixed one-to-one by weight with Portland cement for use as the adhesive to bond insulation board to an approved substrate and/or as a base coat with reinforcing mesh over insulation board. (This product should be used as designated on the construction drawings where additional resistance to moisture is needed.)

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F. Finish: Master Wall Inc.'s "Superior" Finishes are acrylic-based wall coatings available in a variety of colors and textures. The following textures are available:
1. Perfect - riled texture
2. Spray – sand type texture
3. R-Coarse – coarse riled texture
4. R-Spray – coarse sand texture
5. Refinish – Fine texture used to create numerous finishes
6. Aggre-flex Superior Stone Finish – clear acrylic matrix filled with colored ceramic beads

Note: The above textures excluding Superior Stone and Aggrestone Finishes are also available in the Aggre-flex Superior Silicone Coat product line and the Aggre-flex Superior Elastomeric Coat product line. Aggre-flex Superior Silicone Coat combines acrylic and the siloxane polymers to provide the maximum resistance to moisture. Aggre-flex Superior Elastomeric Coat utilizes elastomeric polymers to enable the finishes to bridge minor cracking.

G. Water: Shall be clear, clean and potable without any foreign matter in the solution, which may affect the color and setting qualities of the cement, adhesive, base or finish coat.

H. Cement: Type I or I-II Portland cement meeting ASTM C-150.

I. Sealant Systems: Reference Sealant Specification, Section 07900.

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to installation of the ICF Coatings, the contractor shall verify that the substrate:
1. Is of a type listed in this specification.
2. Is flat within 6.4 mm (1/4 in) in a 3 m (10 ft) radius.
3. Is sound, dry, connections are tight, has no surface voids, projections or other conditions that may interfere with the ICF Coatings installation or performance.

B. Prior to the installation of the ICF, the architect or general contractor shall insure that all needed flashings and other waterproofing details have been completed, if such completion is required prior to the coatings application. Additionally, the Contractor shall ensure that:
1. Metal roof flashing has been installed in accordance with Asphalt Roofing Manufacturers Association (ARMA) Standards.
2. Openings are flashed in accordance with the ICF Coatings Installation Details or as otherwise necessary to prevent water penetration.
3. Chimneys, Balconies, and Decks have been properly flashed.
4. Windows, Doors, etc. are installed and flashed per manufacturer's requirements and the ICF Coatings Installation Details.

C. Prior to the installation of the ICF Coatings, the contractor shall notify the general contractor, and/or architect, and/or owner of all discrepancies.

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3.02 PREPARATION

A. The ICF Coatings materials shall be protected by permanent or temporary means from inclement weather and other sources of damage prior to, during, and following application until completely dry.
B. Protect adjoining work and property during ICF Coatings installation.
C. The substrate shall be prepared as to be free of foreign materials, such as, oil, dust, dirt, form release agents, efflorescence, paint, wax, water repellents, moisture, frost and any other condition that inhibit adhesion.

3.03 INSTALLATION

A. The system shall be installed in accordance with the current Master Wall Inc. ICF Coatings Application Instructions.
B. Sealant shall not be applied directly to textured finishes.

3.04 FIELD QUALITY CONTROL

A. The contractor shall be responsible for the proper application of the ICF Coatings materials.
B. Master Wall Inc. assumes no responsibility for on-site inspections or application of its products.
C. If required, the contractor shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures, workmanship and as to the specific products used.
D. If required, the sealant contractor shall certify in writing that the sealant application is in accordance with the sealant manufacturer's and Master Wall Inc.'s recommendations.

3.05 CLEANING

A. All excess ICF Coatings materials shall be removed from the job site by the contractor in accordance with contract provisions and as required by applicable law.
B. All surrounding areas, where the ICF Coatings have been installed, shall be left free of debris and foreign substances resulting from the contractor's work.

3.06 PROTECTION

A. The ICF Coatings shall be protected from inclement weather and other sources of damage until dry and permanent protection in the form of flashings, sealants, etc. are installed.

End of Specification

Disclaimer

This Specification is published for general informational purposes only and is not intended to imply that these are the only materials, procedures, or methods, which are available or suitable. Materials, procedures, or methods may vary according to the particular circumstances, local building code requirements, design conditions, or statutory and regulatory requirements. While the information in this specification is believed to be accurate and reliable, it is presented without guarantee or responsibility on the part of Master Wall Inc.

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