PART I – GENERAL

1.01 SUMMARY
A. This document is to be used in preparing specifications for projects utilizing the Master Wall Inc.® External Insulation Coating System.
B. Related Sections
   1. Unit Masonry – Section 04200
   2. Concrete – Sections 03300 and 03400
   3. Light Gauge Cold Formed Steel Framing – Section 05400
   4. Wood Framing – Section 06100
   5. Sealant – Section 07900
   6. Flashing – Section 07600

1.02. REFERENCES
A. Section Includes
   2. ASTM C 150 Standard Specification for Portland Cement
   3. ASTM C 297 Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
   4. ASTM C 1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
   5. ASTM C 1396 (formerly C 79) Standard Specification for Gypsum Board
16. ASTM G 53 Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials
17. ASTM G23 Standard Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) with and without Water for Exposure of Nonmetallic Materials

1.03 DEFINITIONS
A. Base Coat: Material used to encapsulate one or more layers of reinforcing mesh fully embedded that is applied to the outside surface of the EPS.
B. Building Expansion Joint: A joint through the entire building structure designed to accommodate structural movement.
C. Contractor: The contractor that installs the External Insulation System to the substrate.
D. Master Wall Inc.: the manufacturer of the External Insulation System.
F. Finish: An acrylic-based coating, available in a variety of textures and colors that is applied over the base coat.
G. Insulation Board: Expanded polystyrene (EPS) insulation board, which is affixed to the substrate.
H. Panel Erector: The contractor who installs the panelized External Insulation System.
I. Panel Fabricator: The contractor who fabricates the panelized External Insulation System.
J. Reinforcing Mesh: Glass fiber mesh(es) used to reinforce the base coat and to provide impact resistance.
L. Substrate: The material to which the External Insulation System is affixed.
M. Substrate System: The total wall assembly including the attached substrate to which the External Insulation System is affixed.
1.04 SYSTEM DESCRIPTION

A. General: The Master Wall Inc.® External Insulation System consists of an adhesive, expanded polystyrene insulation board, base coat, reinforcing mesh(es) and finish adhesively attached to the Cemplaster Fiberstucco system.

B. Design Requirements

1. Acceptable substrates for the External Insulation System shall be:
   a. Cemplaster Fiberstucco.

2. Deflection of substrate systems shall not exceed 1/360 times the span.

3. The substrate shall be flat within 6.4 mm (1/4 in) in a 3.05 m (10 ft) radius.

4. The slope of inclined surfaces shall not be less than 6:12, and the length shall not exceed 305 mm (12 in).

5. All areas requiring an impact resistance classification higher than “standard”, as defined by ASTM E 2486 (formerly EIMA Std. 101.86), shall be as detailed in the drawings and described in the contract documents.

6. Expansion Joints
   a. Design and location of expansion joints in the External Insulation System is the responsibility of the project designer and shall be noted on the project drawings. As a minimum, expansion joints shall be placed at the following locations:
      1) Where expansion or control joints occur in Cemplaster Fiberstucco.
      2) Where building expansion joints occur.
      3) Where the External Insulation System abuts dissimilar materials.

7. Terminations
   a. The system shall be terminated a minimum of 152 mm (6 in) above finished grade.
   b. Sealants
      1) Shall be manufactured and supplied by others.
      2) Shall be compatible with External Insulation System materials. Refer to current Master Wall Inc.® Technical Bulletin #131 for listing of sealants approved by sealant manufacturer for use with EIFS.
      3) The sealant backer rod shall be of closed cell.

8. Dark Colors - The use of dark colors must be considered in relation to wall surface temperature as a function of local climatic conditions. Use of dark colors in high temperature climates can affect the performance of the system.

9. Flashing: Shall be provided at all roof-wall intersections, windows, doors, chimneys, decks, balconies and other areas as necessary to prevent water from entering behind the External Insulation System and wall system.
D. Performance Requirements

1. The External Insulation System shall have been tested as follows:
   a. Durability

<table>
<thead>
<tr>
<th>TEST</th>
<th>TEST METHOD</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion Resistance</td>
<td>ASTM D968</td>
<td>No deleterious effects after 500 liters (528 quarts)</td>
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<tr>
<td>Accelerated Weathering</td>
<td>ASTM G53</td>
<td>No deleterious effects after 2000 hours</td>
</tr>
<tr>
<td>Freeze-Thaw</td>
<td></td>
<td>No deleterious effects after 60 cycles</td>
</tr>
<tr>
<td>Mildew Resistance</td>
<td>ASTM D 3273</td>
<td>No growth during 28 day exposure period</td>
</tr>
<tr>
<td>Water Resistance</td>
<td>ASTM D 2247</td>
<td>No deleterious effects after 14 days exposure</td>
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<tr>
<td>Salt Spray Resistance</td>
<td>ASTM B 117</td>
<td>No deleterious effects after 300 hours exposure</td>
</tr>
<tr>
<td>Water Penetration</td>
<td>ASTM E 331</td>
<td>No water penetration beyond the inner-most plane of the wall after 2 hours at 299 Pa (6.24 psf)</td>
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<tr>
<td>Water Penetration</td>
<td>ICC ES (AC 219)</td>
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b. Structural

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<tr>
<th>TEST</th>
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<tr>
<td>Tensile Bond</td>
<td>ASTM C 297/E 2134</td>
<td>Minimum 104 kPa (15 psi) – substrate or insulation failure</td>
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<tr>
<td>Transverse Wind Load</td>
<td>ASTM E 330</td>
<td>Withstand positive and negative wind loads as specified by the building code</td>
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</table>


<table>
<thead>
<tr>
<th>Mesh Weight</th>
<th>Minimum Strengths</th>
<th>Tensile Classification</th>
<th>EIMA Impact Range</th>
<th>Impact Joules</th>
<th>Impact (in-lbs)</th>
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<tbody>
<tr>
<td>g/m² (oz/yd²)</td>
<td>(lb/in)</td>
<td></td>
<td>(psf)</td>
<td></td>
<td></td>
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<tr>
<td>Standard - 153 (4.5)</td>
<td>27 g/cm (150 lbs/in)</td>
<td>Medium</td>
<td>6-10</td>
<td>(50-89)</td>
<td></td>
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<tr>
<td>Hi-Tech - 203 (6)</td>
<td>36 g/cm (200 lbs/in)</td>
<td>Medium</td>
<td>6-10</td>
<td>(50-89)</td>
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<tr>
<td>Medium - 353 (10.4)</td>
<td>45 g/cm (250 lbs/in)</td>
<td>Medium</td>
<td>6-10</td>
<td>(50-89)</td>
<td></td>
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<tr>
<td>Medium - 353 (10.4), with Standard Mesh</td>
<td>45 g/cm (250 lbs/in)</td>
<td>High</td>
<td>10-17</td>
<td>(90-150)</td>
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<tr>
<td>Strong - 509 (15), with Standard Mesh</td>
<td>71 g/cm (400 lbs/in)</td>
<td>High</td>
<td>10-17</td>
<td>(90-150)</td>
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<tr>
<td>Ultra - 695 (20.5), with Standard Mesh</td>
<td>712 g/cm (550 lbs/in)</td>
<td>Ultra High</td>
<td>&gt;17</td>
<td>(&gt;150)</td>
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<tr>
<td>Detail Mesh - 153 (4.5)</td>
<td>27 g/cm (150 lbs/in)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
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d. Fire performance

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<tr>
<td>Fire Resistance</td>
<td>ASTM E119</td>
<td>No effect on the fire resistance of a rated wall assembly</td>
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<tr>
<td>Surface Burning Characteristics</td>
<td>ASTM E84</td>
<td>Flamespread – 0, Smoke Developed 0</td>
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<tr>
<td>Radiant Heat Test</td>
<td>BOCA 99, Section 1407.0</td>
<td>Average heat flux values within the 2.5% required to pass test</td>
</tr>
<tr>
<td>Intermediate Fire Test</td>
<td>NFPA 285 (UBC 26-9)</td>
<td>1. Resist flame propagation over the exterior surface 2. Resist vertical spread of flame within combustible core/component of panel from one story to the next</td>
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</table>
1.05 SUBMITTALS
A. Product Data – The contractor shall submit to the owner/architect the manufacturer’s product data sheets describing products, which will be used on this project.
B. Shop Drawing for Panelized Construction: The panel fabricator shall prepare and submit to the owner/architect complete drawings, showing: wall layout, connections, details, expansion joints and installation sequence.
C. Samples: The contractor shall submit to the owner/architect two (2) samples of the External Insulation System for each finish, texture and color to be used on the project. The same tools and techniques proposed for the actual installation shall be used. Samples shall be of sufficient size to accurately represent each color and texture being utilized on the project.
D. Test Reports – When requested, the contractor shall submit to the owner/architect copies of selected test reports verifying the performance of the External Insulation System.

1.06 QUALITY ASSURANCE
A. Qualifications
1. System Manufacturer: Shall be Master Wall Inc.® All materials shall be manufactured or sold by Master Wall Inc.® and shall be purchased from Master Wall Inc.® or its authorized distributors.
2. Contractor: Shall be knowledgeable in the proper installation of the Master Wall Inc.® External Insulation System and shall be experienced and competent in the installation of Exterior Insulation Systems. Additionally, the contractor shall possess a current Master Wall Inc.® applicator certificate issued by Master Wall Inc.®
3. Insulation Board Manufacturer: Shall be approved by Master Wall Inc.®, shall be capable of producing the Expanded Polystyrene (EPS) in accordance with current Master Wall Inc.® specification and code requirements and have a third party quality assurance program in place.

B. Regulatory Requirements
1. The EPS shall be separated from the interior of the building by a minimum 15-minute thermal barrier.
2. The use and maximum thickness of EPS shall be in accordance with the applicable building codes.

C. Certification
1. The External Insulation System shall be recognized for the intended use by the applicable building code(s).
D. Mock-Up
1. The contractor shall, before the project commences, provide the owner/architect with a mock-up for approval.
2. The mock-up shall be of suitable size as required to accurately represent the products being installed, as well as each color and texture to be utilized on the project.
3. The mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual application. The finish used shall be from the same batch that is being used on the project.
4. The approved mock-up shall be available and maintained at the job site.
5. For panelized construction, the mock-up shall be available and maintained at the panel fabrication location.

1.07 DELIVERY, STORAGE AND HANDLING
A. All Master Wall Inc.® materials shall be delivered to the job site in the original, unopened packages with labels intact.
B. Upon arrival, materials shall be inspected for physical damage, freezing, or overheating. Questionable materials shall not be used.
C. Deliver all materials in original unopened packages with labels intact. Verify all quantities, colors, and textures against bill of lading.
D. 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).
E. Stack insulation board flat, fully supported off the ground and protected from direct exposure to the sun.
F. Material safety data sheets (MSDS) shall be supplied for the components of the EIFS and be available at the job site.

1.08 PROJECT 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 External Insulation System shall be protected during installation and while curing from weather and shall be protected from site damage.
E. Coordinate installation of the External Insulation System 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 sealant work 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, and texture variations, etc.

H. Existing Conditions - The contractor shall have access to electric power, clean water, and a clean work area at the location where the Master Wall Inc.® materials are to be applied.

1.09 SEQUENCING AND SCHEDULING
A. Installation of the External Insulation System shall be coordinated with other construction trades.
B. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, etc.

1.10 LIMITED MATERIALS WARRANTY
A. Master Wall Inc.® shall provide a limited warranty against defective material upon written request. Master Wall Inc.® shall make no other warranties, expressed or implied. Master Wall Inc.® does not warrant workmanship. Full details are available from Master Wall Inc.®
B. The applicator shall warrant workmanship separately if required. Master Wall Inc.® shall not be responsible for workmanship associated with installation of the External Insulation System.

1.11 DESIGN RESPONSIBILITY
A. It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for its intended use. The designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings and the like. Master Wall Inc.® has prepared guidelines in the form of specifications, installation details and product sheets to facilitate the design process only. Master Wall Inc.® is not liable for any errors or omissions in design, detail, structural capability, attachment details, shop drawings, or the like, whether based upon the information prepared by Master Wall Inc.® or otherwise, or for any changes which purchasers, specifiers, designers, or their appointed representatives may make to Master Wall Inc.®’s published comments.

1.12 MAINTENANCE
A. Maintenance and repair shall follow the procedures noted in Master Wall Inc.® Technical Bulletins #112 and #129.
PART II – PRODUCTS

2.01 MANUFACTURER
A. All components of the External Insulation System shall be supplied or obtained from Master Wall Inc.® or its authorized distributors. Substitutions or additions of materials other than specified will void the warranty.

2.02 MATERIALS
A. Portland Cement: Shall be Type I or II, meeting ASTM C 150, white or gray in color, fresh and free of lumps.
B. Water: Shall be potable, clean and free of foreign matter.

2.03 COMPONENTS
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.

B. Insulation Board
   1. Insulation Board 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’x12”. Refer to actual contract documents and building code requirements to determine actual insulation board thickness.
C. Reinforcing Mesh
1. Detail Mesh
2. Standard Mesh
3. Hi-Tech Mesh
4. Medium Mesh
5. Strong Mesh
6. Ultra Mesh

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 high build 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.)
4. Expanded Polystyrene Base (EPSB): a 100% pure acrylic polymer based noncementitious base coat.

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.)

F. Superior 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. Desert Sand – coarse sand texture
5. Refinish – Fine texture used to create numerous finishes
6. Superior Stone/Aggre-stone Specialty Finishes
Note: The above textures excluding Superior Stone & Aggre-stone Finishes are also available in the Superior Silicone Coat product line and the Superior Elastomeric Coat product line. Superior Silicone Coat combines acrylic and the siloxane polymers to provide the maximum resistance to moisture. Superior Elastomeric Coat utilizes elastomeric polymers to enable the finishes to bridge minor cracking.

PART III – EXECUTION

3.01 EXAMINATION
A. Prior to installation of the External Insulation System, the contractor shall verify that the Cemplaster Fiberstucco:
   1. Is flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.
   2. Is sound, dry, connections are tight, has no surface voids, projections or other conditions that may interfere with the External Insulation System installation or performance.
B. Prior to the installation of the External Insulation System, 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 External Insulation 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 External Insulation System 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 External Insulation System Installation Details.
C. Prior to the installation of the External Insulation System, the contractor shall notify the general contractor, and/or architect, and/or owner of all discrepancies.

3.02 PREPARATION
A. The External Insulation 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 External Insulation 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 repellants, 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.® Aggre-fkex System Application Instructions.
B. The overall minimum base coat thickness shall be sufficient to fully embed the mesh.
C. Sealant shall not be applied directly to textured finishes.
D. When installing the External Insulation System, the notched trowel method of adhesive application shall be used over gypsum sheathing substrates.
E. High impact meshes shall be installed as specified at ground level, high traffic areas and other areas exposed to or susceptible to impact damage.

3.04 FIELD QUALITY CONTROL
A. The contractor shall be responsible for the proper application of the External Insulation 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 EPS supplier shall certify in writing that the EPS meets Master Wall Inc.®’s specifications.
E. 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 External Insulation System 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 External Insulation System has been installed, shall be left free of debris and foreign substances resulting from the contractor’s work.

3.06 PROTECTION
A. The External Insulation System 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.

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.®