

**EXTERIOR INSULATION AND FINISH SYSTEM (EIFS) GUIDE SPECIFICATION
(with Metric analogs) FOR CLASS MD (Moisture Drainage)**

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**TOTAL WALL'S T- WALL MOISTURE DRAINAGE SYSTEM
Mechanically Fastened, Using Sheet-Applied Moisture Barrier****PART 1: GENERAL****1.01 DESCRIPTION AND SCOPE**

- A. Requirements contained within Division 1 (General Requirements) are applicable to the work required of this section. Provide labor, materials, equipment, and supervision necessary to complete the exterior wall and finish system including:
1. application of moisture barrier over the sheathing substrate;
 2. attachment of optional TOTAL WALL PVC Spacer Lath over the moisture barrier;
 3. installation of window and door head flashing;
 4. application of TOTAL WALL mechanical fasteners for attachment of EPS insulation boards;
 5. application of a TOTAL WALL soft coat base coat and TOTAL WALL reinforcing mesh over the insulation boards;
 6. application of TOTAL WALL Acrylic Finish coat;
 7. application of backer rod and caulk sealant.
- B. Related work specified elsewhere:
1. Masonry, Division 4
 2. Metals, Division 5
 3. Wood Construction, Division 6
 4. Sheathing, Division 9
 5. Caulking/Sealants, Division 7
 6. Portland Cement Plastering, Division 9
- C. Referenced Documents:
1. Standards:
 - ASTM A526 Specification for Sheet Steel, Zinc Coated (Galvanized) by Hot-Dip Process, Commercial Quality;
 - ASTM B69 Specification for Rolled Zinc;
 - ASTM B117 Test Method for Salt Spray (Fog) Testing;
 - ASTM C67 Mod. Test Method for Saturated Freeze/Thaw Cycles of Exposure;
 - ASTM C150 Specification for Portland Cement;
 - ASTM C297 Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise Plane;
 - ASTM C578 Specification for Preformed, Cellular Polystyrene Thermal Insulation;
 - ASTM C1135 Test Method for Determining Tensile Adhesion Properties of Structural Sealants;
 - ASTM D968 Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive;
 - ASTM1784 Specification for Rigid PVC;

ASTM D2247 Practice for Testing Water Resistance of Coatings in 100% Relative Humidity;
ASTM E84 Test Method for Surface Burning Characteristics of Building Materials;
ASTM E108 Mod. Full Scale Structural Fire Testing of Wall Systems;
ASTM E330 Test Method for Structural Performance by Uniform Static Air Pressure Difference;
ASTM E331 Test Method for Water Penetration by Uniform Static Air Pressure Difference;
ASTM E695 Method for Measuring Relative Resistance to Impact Loading;
ASTM G23 and G53 Accelerated Weathering for Exposure of Nonmetallic Materials;
Fed Mil Spec 810D Test Method for Determining the Resistance to Mold and Fungus Growth;
NFPA Standard Test Method 268 Radiant Heat Fire Test.

2. Building Code Standards:

National Building Code, Building Officials and Code Administrators (BOCA), Section 1406.0;
Standard Building Code, Southern Building Code Congress International (SBCCI), Sections 717.4 and 717.5;
Uniform Building Code, International Conference of Building Officials (ICBO), UBC Standard 26-4;
International Building Code, International Code Council (ICC), Applicable IBC Standards;
International Residential Code (IRC).

D. Terms and Definitions

1. Class MD (Moisture Drainage) System

A class of EIFS in which the substrate sheathing is covered by a layer of an approved sheet-applied moisture barrier. Typically, the drainage plane for water is created by corrugations in a proprietary moisture barrier. The approved proprietary moisture barriers are: Tyvek Stucco Wrap, RainDrop HouseWrap, and Weather Trek Wrap. Alternatively, the drainage plane can be constructed by 1) a PVC spacer lath or 2) grooves or vents cut in the back of the EPS insulation boards. The insulation boards are attached to the substrate with mechanical fasteners. TOTAL WALL reinforcing mesh is embedded into a TOTAL WALL soft coat base coat in a 1/16" (1.6 mm) layer. Typically, one layer of base coat and reinforcing mesh are used; however, an additional layer of base coat and reinforcing mesh may be used to increase the impact resistance of the system. The TOTAL WALL reinforcing mesh is a woven glass fiber fabric which is coated with a protective plastic material. A TOTAL WALL synthetic finish coat in a chosen color and texture is applied

- over the base coat.
2. **Insulation Board**

A preformed rigid insulating foam plastic that functions to reduce heat flow through a wall and to provide a surface for the base coat and reinforcing mesh. Typically, a 2' by 4' (0.61 M by 1.22 M) expanded polystyrene (EPS) foam board with an average density of 1 lb. per cubic foot (16.02 g/liter) is used in thicknesses that vary from 1" to 4" (25.4 to 101.6 mm). The EPS board must meet specific performance and safety specifications. The EPS board may have grooves cut in the back of the board to provide the moisture drainage channel.
 3. **Mechanical Fasteners**

Devices consisting of a special corrosion resistant screw and a polypropylene plastic washer plate that are used to attach foam plastic insulation boards to a wall.
 4. **Base Coat**

A material that is applied to the face of the insulation board and is used to embed the reinforcing mesh and functions as a weather barrier.
 5. **Reinforcing Mesh**

An open weave fiberglass fabric that is coated with a protective plastic. It is embedded into a layer of TOTAL WALL base coat to strengthen the system.
 6. **Finish Coat**

A premixed, synthetic plaster material. It functions to provide a decorative color and texture coat and to provide additional weather resistance.
 7. **Accessories**

Items such as weep bases, corner beads, and casing beads that may be utilized in the assembly of the system. Flashing for window and door treatment, decks, roof kick-out areas, and dormers is utilized.
 8. **PVC Spacer Lath**

A plastic lath available in 4' X 8' (1.22 M by 2.44 M) sheets by 1/8" (3.2 mm) thick. This is an optional component for the MD System. If grooved EPS boards are used, or if the drainage plane is created by the use of one of the proprietary self-venting moisture barriers, then the PVC spacer lath is not used.
 9. **Moisture Barrier**

The moisture barrier is a sheet-applied water-resistive and water vapor permeable layer that is fastened directly over the substrate. Grade D building paper is acceptable. Approved proprietary moisture barriers which create their own drainage plane include Tyvek StuccoWrap, RainDrop HouseWrap, and Weather Trek Wrap. It is permissible to have more than one layer of sheet-applied moisture barrier.

10. Sealant

A permanently flexible self-sticking compound that is used to seal seams in the system such as the seams occurring between the system and windows and doors.

1.02 DESIGN LIMITATIONS AND DETAILING

- A. The maximum allowable system deflection, normal to the plane of the wall, is $L/240$.
- B. Design wind load shall not exceed TOTAL WALL's allowable wind load as stated in TOTAL WALL Code Evaluation Reports.
- C. All details shall conform with TOTAL WALL recommendations and shall be consistent with the project requirements.

1. General

- a. At all locations, the EPS board shall be completely encapsulated by the lamina.
- b. The insulation board shall be separated from the interior of the building by 1/2" (12.7 mm) gypsum wallboard or equivalent thermal barrier material which will limit the average temperature rise of the unexposed surface to not more than 250 F (121 C) after 15 minutes of fire exposure, when subjected to the ASTM E-119 time-temperature curve.
- c. The minimum thickness of EPS shall be 1" (25.4 mm), the maximum thickness shall be 4" (101.6 mm).
- d. The length and slope of inclined surfaces shall follow the guidelines listed below:
 - (1). Minimum slope: 6" (152.4 mm) of rise in 12" (304.8 mm) of horizontal projection.
 - (2). Inclined surfaces shall not be used for areas defined as roofs by building codes.
 - (3). Use not meeting the above criteria shall be approved in writing by TOTAL WALL prior to installation.

2. Substrate System

- a. Shall be engineered to withstand all applicable loads, including live, dead, positive and suction wind, seismic, etc. Bond strength, fastener strength and connection strength shall be analyzed and engineered. Appropriate factors of safety shall be used.
- b. The maximum deflection under positive or suction full design loads of the substrate system shall not exceed $L/240$.

3. Substrates

- a. Application of the system shall be to the following substrates only:
 - (1). Sound brick

- (2). Sound unit masonry
- (3). Sound concrete
- (4). Exterior grade gypsum sheathing
- (5). DensGlass (or equivalent) gypsum sheathing
- (6). Sound stucco
- (7). OSB sheathing
- (8). WR and MR gypsum board, when acceptable to code authorities
- (9). Exterior grade plywood
- (10). Cement board
- b. Substrates other than those listed above shall be approved by TOTAL WALL in writing prior to installation of the system.
- c. Sheathing substrates shall be oriented with their strong axis perpendicular to the supporting framing.
- d. The applicator shall verify that the proposed substrate is acceptable to the applicable regulatory authorities prior to installation of the system.
- e. Painted substrates shall have any loose paint removed using appropriate materials and methods. Layers of paint shall be removed to the virgin substrate.
- f. The substrate shall not have any planar irregularities greater than 1/4" (6.35 mm) in 8 lineal feet (2.4384 M).
- 4. Expansion Joints
 - a. Continuous expansion joints shall be installed at the following locations:
 - (1). where expansion joints occur in the substrate;
 - (2). where building expansion joints occur;
 - (3). at floor lines in wood-frame construction;
 - (4). where the system abuts other materials;
 - (5). where the substrate changes;
 - (6). where significant structural movements occur, e.g.:
 - (a). in walls longer or wider than 80 lineal feet;
 - (b). changes in building shape and structural system.
 - b. Expansion and contraction of the system and adjacent materials shall be taken into account in the design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficient of expansion of materials, joint width-to-depth ratios, etc.
 - c. Isolation joints are required around all wall penetrations, including doors and windows.

5. Details

- a. TOTAL WALL's latest published information shall be followed for standard detail treatments.
 - b. Non-standard detail treatments shall follow the recommendations of TOTAL WALL.
 - c. Corners shall be reinforced by wrapping reinforcing fabric around the corner from both directions for a minimum of 8" (203.2 mm), or with corner mesh, or approved PVC accessory.
 - d. Openings shall be reinforced using a 9 1/2" (241.3 mm) wide strip of detail mesh laid at a 45 degree angle to the opening corner.
 - e. Flashing is detailed at window and door heads, window sills (pan type flashing), deck ledger boards, roof kick-outs, and roof/wall interfaces.
- D. All areas requiring higher than standard impact resistance shall be detailed in the drawings and described in the contract documents.
- E. The use of dark colors must be considered in relation to estimated wall surface temperatures as a function of local climate conditions.

1.03 QUALITY ASSURANCES

A. Contractor

The contractor shall have a minimum of two years experience in the wall construction trades, be licensed by TOTAL WALL for application of MD Systems, demonstrate the ability to install the system based on projects of similar size and complexity, and meet the approval of the architect. The contractor shall provide a list of completed projects. The contractor shall provide the equipment, manpower, and supervision necessary to install the system in compliance with the project plans and specifications.

B. Insulation board manufacturer

The insulation board manufacturer shall be recognized by TOTAL Wall as capable of producing insulation board to meet the system requirements. The insulation board manufacturer shall be listed by an approved agency, and the board and packaging shall be labeled as required by TOTAL WALL and the applicable building code.

1.04 SUBMITTALS

- A. Sample Panel: The contractor shall submit to the architect a sample panel of at least 1' x 1' (30 X 30 cm) demonstrating the texture and color of the finish desired. The architect shall review the panel and determine the suitability of the finish presented.
- B. The contractor shall submit a list of three projects which exhibit the contractor's EIFS installation skills and which have been completed within the last five years. The list shall include project name, location, description of work, and date.

- C. TOTAL WALL's literature, including application instructions, specifications, and details.
- D. The insulation board manufacturer's documentation showing compliance with TOTAL WALL and code requirements.

1.05 PRODUCT DELIVERY AND STORAGE

- A. Delivery: Deliver all materials supplied by Total Wall in original, unopened containers with legible manufacturer's identification intact.
- B. Storage:
 - 1. Store all products off the ground, under cover, and protected from dampness and sunlight.
 - 2. Warning: EPS rigid insulation is combustible and may constitute a fire hazard if improperly used or installed. EPS insulation should be adequately protected. Use only as directed by the specific instructions for these products. During shipping, storage, installation or use, these materials should not be exposed to open flame or any ignition sources. For proper protection of rigid insulation, consult the National Fire Protection Association (NFPA) standards or the authority having jurisdiction. Store EPS under cover, off the ground with full support, stacked horizontally.
 - 3. All liquid products shall be stored at 40 F (4.4 C) or above and protected from freezing. Protect from exposure to direct sunlight during storage.

1.06 JOB CONDITIONS

- A. Install all materials in strict accordance with all safety and weather conditions required by the product literature, and in accordance with ASTM C926, paragraph 7, and as modified by the applicable standards of the authorities having jurisdiction.
- B. Apply all coatings when the ambient temperature is 40 F (4.4 C) and rising. A minimum temperature of 40 F (4.4 C) should be maintained for 24 hours after completion of work. Supplementary heat must be provided if stated temperature conditions do not exist. Do not apply coatings to a frozen surface.
- C. Protect surrounding areas and surfaces during application of the wall system.
- D. Protect system from precipitation during application and for at least 24 hours after application.

1.07 COORDINATION AND SCHEDULING

- A. Closely coordinate work with related sections and trades.
- B. Protect the tops of walls to prevent water from entering behind the system. Any required cap flashing, overhangs, or drip edges shall be installed as soon as possible after the finish coat has been applied.

- C. Install all sealants in a timely fashion. Protect open joints from water intrusion with backer rod or other means until the sealant has been installed.
- D. When required by code or job requirements, contract with a certified 3rd party EIFS inspector prior to any TOTAL WALL EIFS installation. The inspector shall be certified by EDI (Exterior Design Institute) or other applicable certifying agency as approved by TOTAL WALL and the local code official. The inspector will make a minimum of three on-site inspections, which will include the following examinations:
 - 1. material storage and environmental application conditions;
 - 2. substrate -- material(s) and condition;
 - 3. moisture barrier -- type and installation;
 - 4. flashings -- kick-out diverters, decks, window and door heads;
 - 5. drainage channel material and trim accessories (if applicable);
 - 6. rigid EPS foam -- labeling, dimensions, installation, rasping;
 - 7. fasteners -- type, labeling, size, installation;
 - 8. trims and architectural enhancements -- configuration and installation;
 - 9. base coat -- type, labeling, mixing, application;
 - 10. mesh -- type, labeling, back-wrapping, corner reinforcement, general installation;
 - 11. finish -- type, labeling, mixing, application;
 - 12. sealant and backer rod -- type, labeling, joint dimensions, joint preparation, joint placement, sealant application.

The inspector shall provide a minimum of three interim text reports and one final report, which will include photographs. The inspected items shall be compared with job documents and TOTAL WALL specifications and reported accordingly. Report copies shall be issued to TOTAL WALL within three days of each inspection phase. The payment of monies for the inspection process will be allocated prior to the bidding process.

1.08 SYSTEM WARRANTY

- A. A Total Wall Warranty application form shall be completed prior to the EIFS installation.
- B. Upon completion of the EIFS installation in accordance with specifications and payment of monies due Total Wall, Total Wall shall issue a system WARRANTY. The type of warranty issued will be determined by the applicator qualifications, presence of a 3rd party inspector, and the type of warranty applied for.

PART 2: PRODUCTS

2.01 MANUFACTURERS

- A. All materials related to EIFS shall be obtained from TOTAL WALL, 390 Viking Circle, Rio, WI 53960 [888-702-9915] or an approved TOTAL WALL supplier.

2.02 EXTERIOR INSULATION SYSTEM COMPONENTS

- A. The moisture barrier shall be as listed in Section 3.03. C.1.
- B. The drainage channel shall be created from the use of proprietary moisture barrier (StuccoWrap, RainDrop, or Weather Trek); OR from a 1/8" (3.18 mm) thick PVC spacer lath, available in 4' X 8' (1.2192 M by 2.4384 M) sheets over Grade D paper or equal; OR from grooves cut in the back of the EPS boards, with 33.5 grooves cut per board at 1/4" (6.35 mm) deep and beveled outward from 0.5542" (14.08 mm) to 1.024" (26.01 mm) for each groove. If grooved EPS boards are used, the minimum thickness of the boards is 1.5" (38.1mm) over Grade D paper or equal,
- C. Rigid insulation board shall be 2' x 4' (0.6096M by 1.2192 M) Grade 1 EPS, meeting ASTM C578 performance standards, an average density of 1 pound per cubic foot (16.02 g/L), cured for 6 weeks at 68 F (20 C) or equivalent accelerated conditions, labeled with Total Wall and code markings, and with a minimum of 1" (25.4 mm) thickness, and a maximum thickness of 4" (101.6 mm), as specified by drawings.
- D. Fasteners shall be TOTAL WALL or Wind-Lock of proper size and type to accommodate the substrate and thickness of the system.
- E. Base Coat shall be TOTAL WALL T-2000 (or T-2000 Journeyman Series), a dry polymer modified Portland cement based mixture that is mixed with water at the job site; or TOTAL WALL Foam N' Base Coat (or Journeyman Series Foam N' Base), a wet acrylic polymer slurry that is mixed with Portland cement at the job site; or EZ Base NCB, a pre-mixed, ready-to-use base coat. The selected mixture is used to embed the TOTAL WALL reinforcing fabric to the face of the polystyrene board.
- F. Reinforcing Mesh -- A plastic coated fiberglass reinforcing fabric as required and supplied by TOTAL WALL:
1. 4 oz -- Standard, 25-35 in-lbs (2.8-4.0 Newton-M) impact
 2. 6 oz -- Standard Plus, 35-40 in-lbs (4.0-4.5 Newton-M) impact
 3. 11 oz -- Intermediate, 75-90 in-lbs (8.5-10.1 Newton-M) impact
 4. 15 oz -- High, 180-220 in-lbs (20-25 Newton-M) impact
 5. 20 oz -- Ultra High, 230-240 in-lbs (26-27 Newton-M) impact
 6. The High and Ultra High meshes require a second layer of Standard mesh and base coat.
- G. Portland cement shall be Type I, I-II, or II meeting ASTM C150, fresh, and free of lumps.
- H. Water shall be clear, potable, and free of foreign matter.
- I. Sealant Systems:
1. Shall be one of the following:
 - a. Tremco, Inc.:

- (1). Sealant: "Dymeric"
- (2). Prime: Use manufacturer's recommended primer.
- (3). Backer rod: Dow "Ethafoam"
- (4). Bond breaker: 3M #226, 481, 710
- b. Pecora Corporation:
 - (1). Sealant: "Dynatrol II"
 - (2). Prime: Use manufacturer's recommended primer.
 - (3). Backer rod: Dow "Ethafoam"
 - (4). Bond Breakers: 3M #480 or Valley Industrial Products #90
- c. Dow Corporation:
 - (1). Dow 790 series sealants (790, 791, 795)
 - (2). Prime: Use manufacturer's recommended primer.
 - (3). Backer rod: Dow "Ethafoam"
- d. Pecora Corporation:
 - (1). Pecora 890 sealant
 - (2). Prime: Use manufacturer's recommended primer.
 - (3). Backer rod: Dow "Ethafoam"
- e. Sonneborn Corporation:
 - (1). Sonnelastic 150 or 150LM sealant
 - (2). Prime: Use manufacturer's recommended primer.
 - (3). Backer rod: Dow "Ethafoam"
- f. Sika Corporation:
 - (1). Sika LM 15 sealant
 - (2). Prime: Use manufacturer's recommended primer.
 - (3). Backer rod: Dow "Ethafoam"
- 2. Sealant shall be applied to the base coat layer of the system, not to the finish.
- 3. System materials shall be dried prior to sealant installation.
- 4. Color shall be selected by the architect.
- 5. Other sealant as approved in writing by TOTAL WALL.
- J. Accessories, if required by Total Wall and job specifications, shall be of proper size and configuration for their function and shall be manufactured from rigid PVC, solid zinc alloy, or galvanized steel.
- K. Fasteners shall have the necessary pull-out strength, corrosion resistance, length, and design as supplied by Total Wall or Wind-Lock Corporation to meet the system design loads.

2.03 MIXING AND PREPARATION

A. TOTAL WALL T-2000 Base Coat

1. Obtain a clean container for mixing. Do not use contaminated or dirty containers.
 2. Add 5 quarts (4.7 Liters) of fresh, potable water to the container.
 3. Open a new 50-lb. (22.7 Kg) bag of TOTAL WALL EIFS dry base coat.
 4. Using a low speed mechanical mixer, begin stirring while adding the TOTAL WALL EIFS dry base coat. After all of the TOTAL WALL EIFS T-2000 Base Coat is added, continue mixing an additional minute, being sure to scrape the sides and bottom of the mixing container. Add up to 1 quart (.95 Liters) of additional water to adjust the mixture to a creamy, trowel-grade consistency.
 5. Allow the mixture to stand for 5 minutes, and mix again on low speed for an additional minute.
 6. Begin using product immediately.
- A2. TOTAL WALL Foam N' Base Coat (an alternative to TOTAL WALL T-2000 Base Coat)
1. Obtain a clean container for weighing and mixing. Do not use contaminated or dirty containers.
 2. Open a new pail of TOTAL WALL EIFS Foam N' Base Coat and stir with a low speed mechanical mixer for one minute.
 3. In separate containers, weigh equal quantities of TOTAL WALL Foam N' Base Coat and Portland cement.
 4. Using a low speed mechanical mixer, begin stirring the TOTAL WALL Foam N' Base Coat while adding the Portland cement in small increments. Up to 1 quart (.95 Liters) of clean water may be added to enhance workability. After all of the Portland cement is added, continue mixing on low speed an additional two minutes, being sure to scrape the sides and bottom of the mixing container.
 5. Allow the mixture to stand for 5 minutes. Mix again on low speed for an additional minute.
 6. Begin using product immediately.
- A3. TOTAL WALL EZ Base NCB (an alternative pre-mixed base coat)
1. The TOTAL WALL EZ Base NCB shall be stirred for 1 minute with a low speed mixer until a uniform, workable consistency is obtained.
 2. A small amount of water may be added to adjust workability. Maximum water addition is not to exceed 6 oz. (0.177 liters) per 5 gal. (18.93 Liter) pail. The water must be clean and potable.
 3. No additives or material of any kind, such as rapid binders, antifreeze, accelerators, fillers, pigments, etc., shall be added unless specified by TOTAL WALL.
 4. The TOTAL WALL Base NCB shall be used immediately

after mixing. The container shall be kept closed when not in use.

5. The mixing tool shall be cleaned immediately after use.

B. TOTAL WALL EIFS Finish Coat

1. The TOTAL WALL finish coat shall be thoroughly stirred with a clean mixer until a uniform, workable consistency is obtained.
2. A small amount of water may be added to adjust workability. Maximum water addition is not to exceed 12 oz. (0.355 Liter) per 5 gal. (18.93 Liter) pail. The water must be clean and potable.
3. No additives or material of any kind, such as rapid binders, antifreeze, accelerators, fillers, pigments, etc., shall be added unless specified by TOTAL WALL.
4. The TOTAL WALL finish coat shall be used immediately after mixing. The container shall be kept closed when not in use.
5. The mixing tool shall be cleaned immediately after use.

2.04 PERFORMANCE REQUIREMENTS

The TOTAL WALL system and its components shall meet the following performance requirements:

ASTM E84 Surface Burning	FSI = 10, SDI = 35
ASTM E108 mod. Full Scale Fire Test	Pass (No flame spread)
MIL STD 810D Mildew Resistance (Method 508.3)	28 days -- no growth
ASTM E695 Full Scale Impact Loading	No Damage
ASTM D968 Sand Abrasion, 500 liters	260 L/ml, No deleterious effects
ASTM D2247 Water Resistance	No deleterious effects
ASTM B117 Salt Spray (300 hours)	No deleterious effects
ASTM E96 Water Vapor Transmission	1.79 perms
ASTM C67 Mod. Saturated Freeze/Thaw (50 cycles)	No deleterious effects
ASTM C297 Tensile Adhesion	No failure in adhesive, base or finish
ASTM E330 Modified By E72-80, Negative and Positive Wind Load	(Pos 0.079, Neg 0.079 Kg/cm ²)
ASTM E331 Wind Driven Rain	

(5 gal/sq.ft./hour rain fall plus 65 mph wind)	No penetration
ASTM D2797 Impact Resistance	2.5 Newton-Meters
ASTM G23 Accelerated Weathering (2000 hrs)	No deleterious effects
ASTM C209 Tensile Bond	26 PSI (1.846 Kg/cm ²)
ASTM C203 Flexural Strength	1.41 cm deflection at 33.4 Kg load
Radiant Heat Fire Test, NFPA 268	Pass
ISMA Multi-story Fire Test UBC 26-9	Pass

PART 3 EXECUTION

3.01 COMPLIANCE

- A. The installation shall be performed strictly in accordance with TOTAL WALL's current literature and current job specifications.

3.02 INSPECTION

- A. Examination of Substrate
 - 1. Prior to installation of the system, the substrate shall be examined by the applicator as follows:
 - a. The substrate shall be a type approved for the system (see Section 1.02.C.3.a).
 - b. The substrate shall be examined for compliance with contract documents.
 - c. The substrate shall be examined for soundness, such as tightness of connections, crumbling or looseness of surface, voids, and projections.
 - d. The substrate shall be examined for dimensional correctness.
 - 2. The architect and general contractor shall be advised of all discrepancies. Work shall not proceed until unsatisfactory conditions are addressed.

3.03 INSTALLATION

- A. Mixing -- All materials requiring preparation shall be labeled accordingly; the contractor shall follow all instructions.
- B. System Terminations -- At all system terminations, the insulation board shall be back-wrapped with reinforcing mesh and base coat.
 - 1. Reinforcing mesh and base coat shall be applied so that it will encapsulate the terminated edge of the insulation board. This back-wrapping shall extend a minimum of 2 1/2" (63.5 mm) on the face and the back of the insulation board.
 - 2. The encapsulated edge of the insulation board may be completed either prior to board attachment, or after board

attachment by first attaching the reinforcing mesh to the substrate.

3. System details may also be terminated with approved system accessories.

C. Installation of Moisture Resistive Barrier

1. Tyvek StuccoWrap, RainDrop HouseWrap, and Weather Trek Wrap are approved self-venting moisture barriers. Grade D paper or equal may be used only with grooved EPS foam or spacer lath.

- a. All window and door openings receive a layer of moisture barrier that is wrapped back into the opening. Lap runs of moisture barrier starting at the bottom and working up, so that water running down the wall cannot get behind the moisture barrier. Runs of moisture barrier should be lapped 6" (15 cm) on vertical laps and 2" (5 cm) on horizontal laps. If the structure already has an approved house wrap that is wrapped back into the window and door openings, this will satisfy the requirement. The window or door nailing flange should receive a bead of approved sealant between it and the moisture barrier. For attachment to sheathing, staple the moisture barrier approximately every 6". Avoid over-stapling the moisture barrier.
- b. Install head flashing over windows and doors. Install sill pan flashing at window sills. Use self-stick weatherproofing tape, where appropriate, to seal the moisture barrier at the terminations.
- c. If you are using an optional PVC vented starter strip, attach the vented PVC starter strip with drip edge along the bottom edge of the wall (at the lowest point where the system will be installed). The weep base strip should be firmly attached to the wall using corrosion resistant screws. The system should terminate a minimum of 6" (15 cm) above grade and 1" - 2" (2 - 5 cm) below the sheathing. If this is not possible, contact TOTAL WALL at 888-702-9915 for assistance.
- d. Attach moisture barrier to the entire wall sheathing or substrate. Be sure to lap the building paper so that water running down the wall will not get behind the paper. If a starter strip is being used, lap the building paper over the back vertical edge of the starter strip. The moisture barrier should start a minimum of 1" (2.5 cm) below the sheathing. At the window sills, tuck the second layer of moisture barrier under the first layer that was already wrapped into the window opening.

2. Optional PVC Spacer Lath
 - a. Attach the optional TOTAL WALL PVC spacer lath over the moisture barrier using staples. Butt the edges of the PVC spacer lath. Do not cover any horizontal or vertical expansion joints with the PVC spacer lath, but allow a gap approximately equal to the width of the expansion joint. The PVC spacer lath is not used if vented or grooved EPS boards are being used.
- D. Installation of Rigid Insulation
 1. Grade 1 EPS
 - a. Grade 1 EPS shall be applied to the substrate surface starting from the bottom.
 - b. The Grade 1 EPS shall be applied with the long edge oriented horizontally, with its joints offset with respect to the sheathing joints, using a running bond pattern, and with interlocking insulation boards at inside and outside corners.
 - c. Grade 1 EPS pieces shall be precut to fit openings, corners, and projections prior to application of the back-wrapping and TOTAL WALL fasteners.
 - d. Grade 1 EPS pieces smaller than 2' x 4' (0.61 M by 1.22 M) may be used at corners, etc. In all cases, an average fastener density of approximately 1 fastener per square foot (1 fastener per 0.0929 square meter) shall be maintained. Every piece of foam board shall have at least one fastener.
 - e. If grooved (vented) EPS is used, the vents must run vertically and the minimum EPS thickness is 1.5" (38.1 mm).
 2. TOTAL WALL or Wind-Lock Mechanical Fasteners
 - a. TOTAL WALL mechanical fasteners are available in four types as follows: Type W for wood, Type M for masonry, Type S for steel, and Type LS for light gauge metal. The fastener length is determined by the foam thickness plus minimum penetration into a substrate or stud. Masonry requires a minimum 1" (25.4 mm) penetration, and studs require a minimum 1/2" (12.7 mm) penetration. The plastic heads are a special design for optimum performance and are constructed of polypropylene for corrosion resistance. For masonry, fastener holes must be pre-drilled with a proper size masonry bit so that the fastener shall have a firm attachment to the substrate.
 3. Attach the Grade 1 EPS using TOTAL WALL mechanical fasteners as follows:

- a. Select the appropriate length and type of fastener.
 - b. For masonry, pre-drill fastener holes using a masonry bit 1/32" (0.79 mm) smaller in diameter than the fastener screw.
 - c. Install fasteners at the rate of 1 fastener per square foot (1 fastener per 0.0929 sq meter) of EPS board. Fasteners may be installed on the board joints, but they do not count toward the fastener density.
 - d. Fastener heads should be countersunk slightly, approximately 1/16" (1.5875 mm).
4. If gaps in the Grade 1 EPS boards occur, slivers of Grade 1 EPS shall be cut and shaped to fit the gaps and inserted without using any adhesive or filler between EPS boards. As an alternative, gaps may be filled with EnerFoam low expanding urethane foam.
 5. Once the boards are properly secured, all surfaces of the Grade 1 EPS boards shall be sanded or rasped until flush. Low areas shall not be filled with base coating to produce a level surface.
 6. Grooves, which may be required as a design feature, shall be routed into the outside surface of the Grade 1 EPS, using a high speed router, Hot-Groover, or hot knife and proper blade. The remaining thickness of the Grade 1 EPS at any point in the routed groove or feature shall not be less than 3/4" (19 mm).
 7. Foam shapes of Grade 1 EPS, if used, shall be applied directly to the surface of the system's EPS layer, either before or after it is coated with the base coat and mesh.
 8. TOTAL WALL's latest published detailed instructions and special instructions for this project shall be followed regarding installation of the Grade 1 EPS.
- E. TOTAL WALL Soft Coat Base Coat
1. Surface of the Grade 1 EPS shall be inspected as follows:
 - a. For flatness, use a straight edge. High areas and out of plane Grade 1 EPS joints shall be sanded flat. Low areas shall not be built up with base coating to form a flat surface.
 2. Damaged areas and foreign materials shall be addressed prior to application of the base coat or finish.
 3. For deterioration due to weathering or any other cause, refinish the EPS surface by sanding, while maintaining the flatness of the surface.
 4. Using a steel trowel, apply the TOTAL WALL soft coat base coat to the surface of the Grade 1 EPS to a uniform thickness of approximately 1/16" (1.5875 mm).

5. The reinforcing mesh shall be embedded immediately into the wet base coating using a steel trowel. Working from the center to the edges while smoothing out wrinkles, the surface of the base coating shall be smoothed with a trowel until the reinforcing mesh is fully embedded. Apply additional TOTAL WALL soft coat base coat as necessary so that the pattern of the reinforcing mesh is not visible beneath the surface of the base coating.
 6. The reinforcing fabric pieces shall be lapped a minimum of 2 1/2" (63.5 mm) on all sides.
 7. A period of 18 hours shall elapse to allow the TOTAL WALL base coat to cure. The base coat shall be protected from damage and weather while curing.
 8. Details of the installation of the base coat at the ends of walls, windows, insulation board edges, corners, etc., shall be in accordance with TOTAL WALL's latest detailed installation instructions and current job drawings.
- F. High Impact or Ultra High Impact Mesh (optional -- see drawings for areas required)
1. Using a steel trowel, the TOTAL WALL EIFS base coat shall be applied to the surface of the Grade 1 EPS to a uniform thickness of 3/32" (2.38 mm).
 2. The High Impact Mesh shall be embedded immediately into the wet base coating using a stainless steel trowel. The surface of the wet base coating shall be smoothed with the trowel until the High Impact Mesh is fully embedded. The pattern of the mesh shall not be visible beneath the surface of the base coating.
 3. Ends of adjacent High Impact Mesh pieces shall be tightly abutted. High Impact Mesh pieces shall not be lapped. High Impact Mesh sections shall be worked into the wet base coating from the center to the edges while smoothing out wrinkles.
 4. A period of 18 hours shall elapse to allow the first layer of base coat to form a positive bond, and shall be protected from damage and weather while curing.
 5. The surface of the first layer shall be examined after curing for projections and loose strands of mesh and corrected to produce a flat surface.
 6. A second layer consisting of TOTAL WALL EIFS base coat and standard reinforcing mesh shall be applied over the high impact layer per Section 3.03.E.4-8 above.
 7. Details of the installation of the High Impact Mesh base coat at the ends of walls, windows, panel edges, corners, etc., shall be in accordance with TOTAL WALL's latest published detailed installation instructions.

G. Finish

1. The TOTAL WALL Synthetic Finish Coat shall be applied continuously and in one operation to the entire wall surface, or to a logical break point. A wet edge shall be maintained. The TOTAL WALL Finish Coat shall not be allowed to set up in a distinct area. Sufficient manpower, scaffolding, and equipment shall be employed to insure a continuous operation and a uniform appearance.
2. Work shall proceed toward natural wall stops and corners.
3. A clean stainless steel trowel shall be used.
4. Apply the TOTAL WALL finish to the dry base coat, maintaining a wet edge at all times. The thickness of the TOTAL WALL Finish Coat shall be in accordance with TOTAL WALL specifications and job requirements.
5. Immediately texture the finish with the appropriate float, trowel, or other tool required to achieve the specified texture and appearance. All mechanics shall use the same design tool, equipment, timing, and technique to achieve uniformity.
6. Certain finishes may be spray applied. TOTAL WALL shall be contacted for specific information for this project if a spray application is indicated.
7. The finish shall be protected from contamination, weather, and damage for a minimum of 24 hours.
8. Do not wrap finish into expansion joints or isolation joints. The primer and sealant should be bonded directly to the base coat in the joint.

H. Sealant

Insure that proper backer rod, primer, and sealant are installed at all required locations, such as expansion joints and isolation joints, in accordance with TOTAL WALL details and the sealant manufacturer's specifications.

3.04 JOB SITE CLEANUP

- A. All excess TOTAL WALL system materials shall be removed from the job site by the applicator.
- B. All surrounding areas where TOTAL WALL EIFS has been applied shall be left free of debris and foreign substances.

3.05 INSPECTION

- A. The TOTAL WALL applicator, a representative of the property owner's team, and a TOTAL WALL representative shall inspect the EIFS installation and prepare an inspection summary with a copy to TOTAL WALL.
- B. If an EIFS 3rd Party Inspector is used, a copy of the final report shall be submitted to TOTAL WALL.

End of Specification