

# TESS™ Thinset Exterior Surfacing System

*The Next Generation in Architectural Finishes*

## TESS Finish in an EIFS Type Application Architectural Specification — LF

International Code Council  
Division 07 — Thermal and Moisture Protection, Section: 07240,  
Exterior Insulation and Finish Systems

*This specification is intended for use by design/construction professionals and any user of TESS products to assist in developing project specifications. It provides guidance on the application of TESS Thinset Exterior Surfacing System to sound, vertical, above grade exterior building walls.*

*TESS Thinset Exterior Surfacing System functions as a decorative and protective wall cladding. It consists of multiple components which may include mechanical fasteners, insulation board, reinforcing mesh, base coat, finish coat and sealant. These components, when properly integrated with other components of construction, form a barrier wall which is intended to resist water penetration at its outer surface. Successful construction projects require the proper integration of all components of construction. This specification serves to further that understanding. Most notably for wall claddings, proper use of flashing to redirect water to the building's exterior is essential. Great care has been exercised to provide the best information possible to ensure a quality installation.*

*Throughout the specification, italicized notes such as this are explanatory and intended to guide the designer/user in the proper selection and use of materials.*

*This specification should be modified where necessary to accommodate individual project conditions and local building code.*

*Note to Specifier: This guide specification incorporates CSI MasterFormat™ 2004 Edition Numbers & Titles.*

### **PART 1 — GENERAL**

#### **1.01 SUMMARY**

- A. Provide TESS Thinset Exterior Surfacing System for vertical above grade concrete, masonry and exterior wall cladding.
- B. RELATED SECTIONS - Other specification sections which relate directly to the work of this section include the following:
  - 1. Section 03 30 00: Cast In Place Concrete
  - 2. Section 04 20 00: Unit Masonry
  - 3. Section 06 11 50: Sheathing
  - 4. Section 07 19 00: Vapor Retarders
  - 5. Section 07 19 50: Air Barriers
  - 6. Section 07 50 00: Membrane Roofing
  - 7. Section 07 62 00: Sheet Metal Flashing and Trim

8. Section 07 92 00: Sealants and Caulking
9. Section 08 40 00: Exterior Entrance Doors
10. Section 08 50 00: Exterior Windows
11. Section 09 26 00: Gypsum Board Systems

## **1.02 SUBMITTALS**

- A. Manufacturer's specifications, details, installation instructions and product data.
- B. Manufacturer's code compliance report.
- C. Manufacturer's standard warranty.
- D. Manufacturer's certificate of compliance with ICC standards.
- E. Applicator's certificate of instruction.
- F. Samples for approval as directed by architect or owner.
- G. EPS board manufacturer's certificate of compliance with the current edition of EIMA Guideline Specifications for the use of Expanded Polystyrene (EPS) Insulation Board.
- H. Sealant manufacturer's certificate of compliance with ASTM C 1382.
- I. Prepare and submit project specific details (when required by contract documents).

## **1.03 REFERENCES**

- A. ASTM Standards:
  1. B 117 Test Method for Salt Spray (Fog) Testing
  2. C 79 Standard Specification for Gypsum Board Sheathing
  3. C 150 Specification for Portland Cement
  4. C 297 Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise plane
  5. C 578 Specification for Preformed, Cellular Polystyrene Thermal Insulation
  6. C 1177 Specification for Glass Mat Gypsum for Use as Sheathing
  7. C 1382 Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints
  8. D 2247 Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
  9. D 3273 Test for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
  10. D 4258 Standard Practice for Surface Cleaning Concrete for Coating
  11. D 4261 Standard Practice for Surface Cleaning Concrete Unit Masonry for Coating
  12. E 84 Test Method for Surface Burning Characteristics of Building Materials
  13. E 96 Test Methods for Water Vapor Transmission of Materials
  14. E 283 Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across the Specimen.
  15. E 330 Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
  16. E 331 Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference

17. G 153 Recommended Practice for Operating Light-and Water-Exposure Apparatus (Carbon-Arc Type) for Exposure of Nonmetallic Materials
  18. E 2273 Water Drainage.
  19. D 1117 Tear Resistance
  20. D 882 Breaking Strength
  21. C 920 Sealant Specifications
- B. Building Code Standards
1. 2006 International Building Code (IBC)
  2. 2006 International Residential Code (IRC)
- C. EIMA (EIFS Industry Members Association) Standards and Publications
1. 101.01 Standard Test Method for Freeze Thaw Resistance of Exterior Insulation and Finish Systems (EIFS), Class PB (Modified ASTM C 67)
  2. 101.02 Standard Test Method for Resistance to Water Penetration of Exterior Insulation and Finish Systems (EIFS), Class PB (Modified ASTM E 331)
  3. ASTM E 2134.01 Standard Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS) (101.03 Standard Test Method for Determining Tensile Adhesion Strength of Exterior Insulation and Finish System (EIFS) and Components, Class PB (Modified ASTM C 297)
  4. 101.86 Standard Test Method for Resistance of Exterior Insulation and Finish Systems (CLADDING), Class PB, to the Effects of Rapid Deformation (Impact)
  5. ASTM E 2098 Standard Test Method for Determining Tensile Breaking Strength of Glass Fiber Reinforcing Mesh for Use in Class PB Exterior Insulation and Finish System after Exposure to a Sodium Hydroxide Solution (105.01 Standard Test Method for Alkali Resistance of Glass Fiber Reinforcing Mesh for use in Exterior Insulation and Finishing Systems (EIFS), Class PB)
  6. ASTM E 2430 Standard Specification for Expanded Polystyrene (EPS) Thermal Insulation Boards for use in Exterior Insulation and Finish Systems (EIFS) (EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board)
- D. Gypsum Association
1. GA-253 Recommended Specifications for the Application of Gypsum Sheathing
  2. GA-254 Fire Resistant Gypsum Sheathing
  3. GA-600 Fire Resistance Design Manual
- E. APA Engineered Wood Association
- E 30 Residential and Commercial Construction Guide
- F. Proprietary Specifications
- Tyvek StuccoWrap-Style 1062X as recognized in ICC-ES ESR-2375.
- See “Product Properties for Tyvek StuccoWrap.” Installation as per DuPont’s “Tyvek Water-Resistive Barriers Installation Guidelines” and “Tyvek Weather Barrier Commercial Installation Guidelines.”

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The 2006 International Building Code (Section 1403.2. Weather Protection) requires that exterior walls shall provide the building with a weather resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1405.3. The exterior wall envelope shall be designed and constructed in such a manner as to help prevent the accumulation of water within the wall assembly by providing a weather barrier behind the exterior veneer, as described in Section 1404.2 and a means for draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with the International Energy Conservation Code.

DuPont Tyvek® Weather Barriers meets the following codes and guidelines:

- International Building Code® (IBC) 2006
- International Residential Code® (IRC) 2006
- International Energy Conservation Code® (IECC) 2006
- National Building Code of Canada 2005
- Massachusetts Commercial Energy Code (780 CMR, Ch 13)
- Wisconsin Energy Code
- ASHRAE 90.1 Model Energy Code

DuPont Tyvek® Weather Barriers is recognized by the following code evaluation reports:

- ICC-ES Legacy Report ER-4000: DuPont™ Tyvek® CommercialWrap®, DuPont™ Tyvek® StuccoWrap®
- ICC-ES Legacy Report 98-46: DuPont™ Tyvek® CommercialWrap®, DuPont™ Tyvek® StuccoWrap®
- ICC-ES Legacy Report NER-642: Tyvek® CommercialWrap®, DuPont™ Tyvek® StuccoWrap®
- ICC-ES Legacy Report 95105D: Tyvek® CommercialWrap®, DuPont™ Tyvek® StuccoWrap®

## **1.04 DESIGN REQUIREMENTS**

### **A. Wind Load**

1. Design for maximum allowable system deflection, normal to the plane of the wall, of 1/240.
2. Design for wind load in conformance with code requirements.

### **B. Moisture Control**

Prevent the accumulation of water behind the cladding system, either by condensation or leakage through the wall construction, in the design and detailing of the wall assembly.

- a. Provide flashing to direct water to the exterior where it is likely to penetrate components in the wall assembly, including, above window and door heads, beneath window and door sills, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.

- b. Air Leakage Prevention—See “DuPont Tyvek Water-Resistive Barriers Installation Guidelines” and “DuPont Tyvek Weather Barrier Commercial Installation Guidelines”
- c. Vapor Diffusion and Condensation—perform a dew point analysis of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust insulation thickness and/or other wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.

C. Impact Resistance

Provide high impact resistance to a minimum height of 6'-0" (1.8 m) above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact. Indicate the areas with impact resistance other than “Standard” on contract drawings.

D. Color Selection

Select finish coat with a light reflectance value of 20% or greater. (The use of dark colors is not recommended with claddings that incorporate expanded polystyrene [EPS]. EPS has a service temperature limitation of approximately 160° F [71°C]).

E. Joints

1. Design minimum ¾ inch (19 mm) wide expansion joints in the cladding where they exist in the substrate or supporting construction, where the cladding adjoins dissimilar construction or materials, at changes in building height, and at floor lines in multi-level wood frame construction.
2. Design minimum ½ inch (13 mm) wide sealant joints at all penetrations through the cladding (windows, doors, etc.).
3. Specify compatible backer rod and sealant that has been evaluated in accordance with ASTM C 1382 and that meets minimum 50% elongation after conditioning.
4. Design joints with secondary moisture protection and drain joints to the exterior.

F. Grade Condition

Do not specify cladding below grade (unless designed for use below grade and permitted by code) or for use on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure.

G. Trim, Projecting Architectural Features and Reveals

1. All trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the cladding wall plane, protect the top surface with waterproof base coat. Avoid the use of trim and features that exceed the maximum allowable thickness of EPS permitted by code (typically 4 inches [100 mm]) unless approved by the code official. Periodic inspections and increased maintenance may be required to maintain surface integrity of cladding on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and minimize maintenance. Refer to TESS EIFS Type Application Systems Details.
2. Do not use cladding on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing. Refer to TESS EIFS Type Application System Details.

H. Fire Protection

1. Do not use foam plastic in excess of 4 inches (100 mm) thick unless approved by the code official.
2. Where a fire-resistance rating is required by code use cladding over rated assembly (cladding is considered not to add or detract from the fire-resistance of the rated assembly).
3. Refer to manufacturer's applicable code compliance report for other limitations that may apply.

**1.05 PERFORMANCE REQUIREMENTS**

A. TESS Performance

1. Durability

TEST	METHOD	CRITERIA	RESULTS
1. Accelerated Weathering	ASTM G 153	No deleterious effects at 2,000 hours when viewed under 5X magnification	Passed
2. Freeze/Thaw Resistance	ICC ES AC 235 Section 4.4	ICC ES AC235 Section 4.4.2	Passed at 10 cycles
3. Water Penetration	See ICC ES AC 235 Section 4.8.1	See ICC ES AC235 Section 4.8.2	Passed No water penetration
4. Tensile Adhesion	ASTM C297-94	Insulation board shall fail cohesively	Passed 20 psi average 100% cohesion failure in the foam
5. Water Resistance	ASTM D 2247	See ICC ES AC235 Section 4.5.2	Passed
6. Salt Spray	ASTM B 117	No deleterious effects at 300 hours	Passed

2. Structural

TEST	METHOD	CRITERIA	RESULTS
Wind Load	ASTM E 330	See ICC ES AC235 Section 4.7	Passed Positive Load 180-190 PSF gypsum sheathing cracked Negative Load 63-67 PSF Windlock fastener pulled through the insulation board

B. Cladding Component Performance

1. Durability

TEST	METHOD	CRITERIA	RESULTS
Physical Properties and Requirements for EPS board	ASTM C 578	Refer to EIMA Guide-line Specification for Expanded Polystyrene (EPS) Insulation Board	Passed

2. Fire

TEST	METHOD	CRITERIA	RESULTS
Surface Burning	ASTM E 84-97a	Tyvek StuccoWrap	Passed

**1.06 QUALITY ASSURANCE**

A. Manufacturer requirements

Must provide all proper ICC ES AC 235 documentation and be able to manufacture products to its quality parameters.

B. Contractor requirements

1. Engaged in application of cladding for a minimum of three (3) years.
2. Knowledgeable in the proper use and handling of TESS materials and certified by Formulated Solutions LLC as having attended TESS continuing education.
3. Employ skilled mechanics who are experienced and knowledgeable in cladding application, and familiar with the requirements of the specified work.
4. Successful completion of minimum of three (3) projects of similar size and complexity to the specified project.
5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with TESS's published specifications and details and the project plans and specifications.

C. Insulation board manufacturer requirements

1. Recognized by Formulated Solutions LLC as capable of producing insulation board to meet system requirements, and certified by Formulated Solutions LLC as an approved vendor.
2. Listed by an approved agency.
3. Label insulation board with information as required by Formulated Solutions LLC or the approved listing agency and/or the applicable building code.
4. The insulation board must meet the requirements of ASTM C578, Type I and have a thickness of 1 to 4 inches.

#### D. Mock-up Testing

Construct full-scale mock-up of typical cladding /window wall assembly with specified tools and materials and test air and water infiltration and structural performance in accordance with ASTM E 283, E 331 and E 330, respectively, through independent laboratory. Mock-up shall comply with requirements of project specifications. Where mock-up is tested at job site maintain approved mock-up at site as reference standard. If tested off-site accurately record construction detailing and sequencing of approved mock-up for replication during construction.

#### E. Inspections

1. Provide independent third party inspection where required by code or contract documents.
2. Conduct inspections in accordance with code requirements and contract documents.

### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Protect Portland cement based materials (bag products) from moisture and humidity. TESS bags shall be placed under cover, off the ground in a dry location. Store TESS products out of direct sunlight.

### 1.08 PROJECT/SITE CONDITIONS

*(Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying and may require adjustments in the scheduling of work to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing.)*

- A. Environmental conditions: Comply with manufacturer's recommendations of environmental conditions affecting product performance.
  1. Installation ambient air temperature: Minimum of 40°F (4°C) and rising, and remaining so for 24 hours thereafter.
  2. Substrate temperature: Do not apply TESS products to substrates whose temperatures are less than 40°F (4°C) or contain frost or ice.
  3. Inclement weather: Do not apply TESS products during inclement weather unless appropriate protection is employed that would negate or neutralize environmental conditions and allow compliance with manufacturer's recommendations for installation.
  4. Sunlight exposure: When possible, avoid installation of TESS products and the finish coat in direct sunlight. Schedule finish coat application at times when wall surfaces are in the shade or not exposed to direct sunlight.
  5. TESS materials shall not be applied if ambient temperature exceeds 120°F (49°C) or falls below 40°F (4°C) within 24 hours of application. Protect stucco from uneven and excessive evaporation, especially during hot, dry weather.
  6. Prior to installation, the wall shall be inspected for surface contamination or other defects that may adversely affect the performance of TESS materials, and shall be free of residual moisture.

## 1.09 COORDINATION/SCHEDULING

*(The work in this section requires close coordination with related sections and trades. Sequence work to provide protection of construction materials from weather deterioration.)*

- A. Provide site grading such that cladding terminates above finished grade a minimum of 8 inches (203 mm) or as required by code.
- B. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing.
- C. Install window and door head flashing immediately after windows and doors are installed.
- D. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
- E. Install copings and sealant immediately after installation of the cladding and when coatings are dry.
- F. Attach penetrations through cladding to structural support and provide water tight seal at penetrations.

## 1.10 WARRANTY

- A. Provide manufacturer's standard limited materials warranty.
- B. Provide applicator's warranty.

## PART 2 — PRODUCTS

### 2.01 MANUFACTURERS

- A. Provide cladding and accessories from single source manufacturer or approved supplier complying with specifications throughout this document.
- B. The following are acceptable manufacturers:
  - Formulated Solutions LLC - TESS Systems

### 2.02 SURFACE PREPARATION

See Installing TESS Finish in an EIFS Type Installation

### 2.03 INSULATION BOARD

- A. Nominal 1.0 lb/ft<sup>3</sup> (16 kg/m<sup>3</sup>) Expanded Polystyrene (EPS) Insulation Board in compliance with ASTM C 578 Type I requirements, and EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board. *(Note: minimum required thickness is 1 inch [25 mm] and maximum allowable thickness is typically 4 inches [100 mm] unless thicker dimensions are approved by the code official).*

### 2.04 BASE COAT (select one)

- A. Cementitious Base Coats
  - 1. TESS Base Coat — one-component polymer modified cement based high build base coat capable of achieving minimum 1/16 inch (1.6 mm) thickness in one pass.
  - 2. TESS Base Coat CW — Cold weather application, fast-setting, one-component polymer modified cement based high build base coat capable of achieving minimum 1/16 inch (1.6 mm) thickness in one pass.

## 2.05 REINFORCING MESHES

### A. Standard Mesh

Nominal 4.5 oz./yd<sup>2</sup> (153 g/m<sup>2</sup>), symmetrical, interlaced open-weave glass fiber fabric made with alkaline resistant coating for compatibility with TESS materials (achieves Standard Impact Classification).

### B. High Impact Mesh

Nominal 11.2 oz./yd<sup>2</sup> (380 g/m<sup>2</sup>), high impact, interwoven, open weave glass fiber fabric with alkaline resistant coating for compatibility with TESS materials (achieves High Impact Classification).

## 2.06 PRIMER (optional)

TESS Primer seals TESS One Coat Stucco or other masonry walls to prevent efflorescence and ensure color uniformity in the finish coat. Typically tinted to match the finish coat, the primer, by sealing pores and surface imperfections, increases the yield of the finish thereby reducing the overall cost of the system. TESS Primer is packaged in easily recyclable paper bags, and requires water addition and stirring before application with a short-nap roller.

## 2.07 FINISH COAT

TESS Finish—This newly formulated flexible, thinset exterior finish is the next-generation, superior replacement for both EIFS and conventional stucco finishes. Unlike synthetic, organic acrylic resins used in typical EIFS finishes, TESS Finish's natural mineral makeup neither contains nor produces VOCs and does not release hazardous chemicals into the environment. By design, TESS Finish applies more easily and floats better than most commercial EIFS finishes resulting in less waste and clean-up.

*(Note: specify finish color with a lightness value of 20% or greater)*

## 2.08 JOB MIXED INGREDIENTS

Water—Clean and potable. Use TESS premeasured jug for exact water addition.

## 2.09 MIXING

- A. TESS Base Coat—Each 50lb. (22.7 KG) bag of TESS Base Coat should be mixed with 1 1/2 gallons (5.7 Liters) of clean cool potable water. Add the powder to the water while mixing. The use of a high torque, low speed drill (400-600 RPM) with a paddle attachment or a mortar type mixer with rotating, rubber edged blades is recommended. Mix to a smooth, trowelable consistency. Allow the mix to stand (slake) for 5 minutes. Remix material, adding small amounts of water or Base Coat to achieve the desired working consistency. Do not use any additives. Do not mix more material than can be applied in one hour.
- B. TESS Base Coat CW—Each 50lb. (22.7 KG) bag of TESS Base Coat CW should be mixed with 1½ gallons (5.7 Liters) of clean cool potable water. Add the powder to the water while mixing. The use of a high torque, low speed drill (400-600 RPM) with a paddle attachment or a mortar type mixer with rotating, rubber edged blades is recommended. Mix to a smooth, trowelable consistency. Allow the mix to stand (slake) for 5 minutes. Remix material, adding small amounts of water or Base Coat CW to achieve the desired working consistency. Do not use any additives. Pot life is approximately 30-40 minutes. The higher the ambient temperature, the shorter the pot life and working time.

- C. TESS Primer—1½ gallons (5.7 Liters) of clean, cool, potable water must be added to a 20-pound (9.1 kg) bag of TESS Primer. The best procedure is to pour approximately 2/3 of the measured water into a clean, 5 gallon, empty pail. Add the contents of the bag and stir with an electric drill and mixing blade until smooth, lump-free and uniform. If a color cup addition (liquid pigment additive) is being used to achieve a specific color, now is the time to add it. After emptying the color cup into the mix, rinse the color cup with the remaining pre-measured water to ensure that the full amount of pigment is drained from the color cup; make certain that all pigment and water is emptied into the mix with the contents of the TESS bag. If not using a color cup, simply add remaining water and mix well for approximately 2 minutes to ensure color-uniform, complete and homogenous mixing. Working time is approximately 60 minutes depending on ambient conditions.
- D. TESS Finish—Each 44-pound (20 kg) bag of finish may be mixed with 1 gallon (3.8 Liters) of clean, cool, potable water. Add up to 1 pint (473 ml.) of additional water when applying at temperatures over 80°F. (26°C.) Use a measured cup to ensure a consistent amount of water is added to each bag. Once the desired amount of water is established within the specified range by the first mix, all future mixes must contain EXACTLY the same amount of water to ensure color uniformity. Mix well for approximately 2 minutes to ensure lump-free, complete and homogenous mixing. DO NOT ADD EXTRA WATER BEYOND THE RECOMMENDED AMOUNT. DO NOT RE-TEMPER ONCE MIX BEGINS TO SET UP. Once the mixture is ready, working time is approximately 75 minutes at 75°F (24°C) and 40 minutes at 90°F. (32°C.).
- E. Do not use antifreeze compounds or other additives.

### **PART 3 — EXECUTION**

#### **3.01 ACCEPTABLE INSTALLERS**

Installer must be certified by Formulated Solutions LLC to apply TESS products.

#### **3.02 EXAMINATION**

- A. Inspect surfaces for:
  - 1. Contamination – algae, chalkiness, dirt, dust, efflorescence, form oil, fungus, grease, laitance, mildew or other foreign substances.
  - 2. Surface absorption and chalkiness.
  - 3. Cracks—measure crack width and record location of cracks.
  - 4. Damage and deterioration.
  - 5. Moisture content and moisture damage—use a moisture meter to determine if the surface is dry enough to receive the cladding and record any areas of moisture damage.
  - 6. Compliance with specification tolerances—record areas that are out of tolerance (greater than ¼ inch in 8-0 feet [6mm in 2438 mm] deviation in plane).
- B. Inspect sheathing application for compliance with applicable requirement:
  - 1. Exterior gypsum sheathing – GA 253
  - 2. Exterior Grade and Exposure I wood based sheathing – APA Engineered Wood Association E 30
  - 3. Glass mat faced gypsum sheathing—Georgia Pacific Publication 101514
  - 4. Cementitious sheathing—Consult manufacturer’s published recommendations

- C. Report deviations from the requirements of project specifications or other conditions that might adversely affect the cladding installation to the General Contractor. Do not start work until deviations are corrected.

### 3.03 SURFACE PREPARATION

- A. Remove surface contaminants on concrete and concrete masonry surfaces (refer to ASTM D 4258 and D 4261).
- B. Apply TESS Primer by sprayer or roller to chalking or excessively absorptive surfaces.
- C. Replace weather-damaged sheathing and repair damaged or cracked surfaces.
- D. Level surfaces to comply with required tolerances.

### 3.04 INSTALLATION

*(Note: the coordination of work with other trades is important for the performance of the all assembly, in particular the installation of flashing above window and door heads, beneath window and door sills, at roof/wall intersections, decks, intersections of lower walls with higher walls, able projecting features, and at the base of the wall to ensure that where water is likely to penetrate the wall assembly, it will be drained to the exterior at the source of the leak).*

- A. Installation of Tyvek Stucco Wrap must be done according to specified documents sited here and applied by trained personnel.
- B. Fastener Application and Installation of Insulation Board. Refer to application manual for details. Fasteners used to attach sheathing to framing must comply with the applicable code. The EPS insulation is fastened with mechanical fasteners that consist of a 2-inch-diameter (51 mm) Wind Devil™ plastic washer, manufactured by Wind-lock Corporation, and a No.8, Type S, corrosion-resistant buglehead steel screw having sufficient length to penetrate through the steel framing.
- C. Backwrapping: Apply a strip of detail mesh to the substrate at the base of the wall and at all system terminations (windows, doors, expansion joints, etc.). The mesh must be wide enough to adhere approximately 4 inches (100 mm) of mesh onto the wall, be able to wrap around the insulation board edge and cover a minimum of 2 ½ inches (64 mm) on the outside surface of the insulation board. Adhere mesh strips to the supporting substrate and allow them to dangle until the backwrap procedure is completed.
- D. Slivering and Rasping of Insulation Board Surface

*(Note: EPS insulation board exposed to sunlight will develop a powdery residue on the surface. This residue must be entirely removed by rasping the surface.)*

1. After insulation boards are firmly adhered to the substrate, fill any open joints in the insulation board layer with slivers of insulation or approved spray foam.
2. Rasp the insulation board surface to achieve a smooth, even surface and to remove any ultraviolet ray damage.

- E. Trim, Reveals and Projecting Aesthetic Features

*(Note: Reveals/aesthetic grooves may be designed into the system to accommodate workability on multi-level buildings or lengthy wall sections.)*

1. Attach features and trim where designated on drawings with adhesive to the insulation board or sheathing surface. Slope the top surface of all trim/features minimum 1:2 (27°) and the bottom of all horizontal reveals minimum 1:2 (27°).
2. Cut reveals/aesthetic grooves with a hot-knife, router or groove-tool in locations indicated on drawings.
3. Offset reveals/aesthetic grooves a minimum of 3 inches (75 mm) from insulation board joints.

4. Do not locate reveals/aesthetic grooves at high stress areas such as corners of windows, doors, etc.
5. A minimum ¾ inch (19 mm) thickness of insulation board must remain at the bottom of the reveals/aesthetic grooves.

F. Completion of Backwrapping

Complete the backwrapping procedure by applying base coat to exposed edges of insulation board and approximately 4 inches (100 mm) onto the face of the insulation board. Pull mesh tight around the board and embed it in the base coat with a stainless steel trowel. Use a corner trowel for clean, straight lines. Smooth any wrinkles or gaps in the mesh.

G. Base Coat and Reinforcing Mesh Application

1. Apply minimum 9x12 inch (225x300mm) diagonal strips of detail mesh at corners of windows, doors, and all penetrations through the system. Embed the strips in wet base coat and trowel from the center to the edges of the mesh to avoid wrinkles.
2. Apply detail mesh at trim, reveals and projecting architectural features. Embed the mesh in the wet base coat. Trowel from the base of reveals to the edges of the mesh.
3. High impact mesh application (recommended to a minimum height of 6'-0" [1.8 m] above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact, and where indicated on contract drawings): apply base coat over the insulation board with a stainless steel trowel to a uniform thickness of approximately 1/8 inch (3 mm). Work horizontally or vertically in strips of 40 inches (1016 mm), and immediately embed the mesh into the wet base coat by troweling from the center to the edge of the mesh. Butt the mesh at seams. Allow the base coat to dry.
4. Standard mesh application: Apply base coat over the insulation board, including areas with High impact mesh, with a stainless steel trowel to a uniform thickness of approximately ¾ inch (19 mm). Work horizontally or vertically in strips of 40 inches (1016mm), and immediately embed the mesh into the wet base coat by troweling from the center to the edge of the mesh. Overlap mesh not less than 2-½ inches (64 mm) at mesh seams and at overlaps of detail mesh. Feather seams and edges. Double wrap all inside and outside corners with minimum 2-½ inch (64 mm) overlap in each direction. (Alternate corner treatment: embed corner mat in base coat, allow to dry, then overlap up to corner with standard reinforcing mesh embedded in base coat). Avoid wrinkles in the mesh. The mesh must be fully embedded so that no mesh color shows through the base coat when it is dry. Re-skim with additional base coat if mesh color is visible.
5. Sloped Surfaces: for trim, reveals, aesthetic bands, cornice profiles, sills or other architectural features that project beyond the vertical wall plane more than 2 inches (51 mm) apply waterproof base coat with a stainless steel trowel to the weather exposed sloped surface and minimum four inches (100 mm) above and below it. Embed standard mesh or detail mesh in the base coat and overlap mesh seams a minimum of 2-½ inches (65 mm).
6. Allow base coat to thoroughly dry before applying primer or finish.

*Note: All trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the cladding wall plane, protect the weather exposed sloped surface with waterproof base coat. Avoid the use of trim and features that exceed the maximum allowable thickness of EPS permitted by code (typically 4 inches [100 mm]) unless approved by the code official. Periodic inspections and increased maintenance may be required to maintain surface integrity of cladding on sloped weather exposed surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and minimize maintenance burden.*

*Do not use cladding on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing.*

#### H. Primer Application

*(Note: the primer is an optional component except when installing fine aggregate finishes. It is also required on the waterproof base coat. It may be tinted to match the finish color and enhances finish color and adhesion.)*

Apply primer evenly with brush, roller or proper spray equipment over the clean, dry base coat and allow to dry thoroughly before applying finish.

#### I. Finish Coat Application

Apply finish directly over the base coat (or primed base coat) when dry. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:

- a. Avoid application in direct sunlight.
- b. Apply finish in a continuous application, and work to an architectural break in the wall.
- c. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
- d. Float finishes with a plastic trowel to achieve the desired texture.
- e. Do not install separate batches of finish side-by-side.
- f. Do not apply finish into or over sealant joints. Apply finish to outside face of wall only.
- g. Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.

### **3.05 PROTECTION**

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed materials from dust, dirt, precipitation, freezing and continuous high humidity until they are fully dry.

## ATTENTION

Formulated Solutions LLC (FS) products are intended for use by qualified professional contractors, not D-I-Y consumers or handymen. TESS systems and components must be specified by a qualified design professional, general contractor or builder as an element of a larger construction project. It must be installed in accordance with FS's instructions, the designer's specifications and local building code. Improper use of FS products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components.

FS disclaims all, and assumes no, liability for

- Products improperly applied by unqualified persons or entities
- An improperly designed or constructed building
- The nonperformance of adjacent building components or assemblies
- Other construction activities beyond FS's control
- On-site inspections

FS has provided the enclosed Instructions and Recommendations [I/R] to assist the USER in the application of this product. These I/Rs are not warranted to be comprehensive, complete, thorough or conclusive as regards any specific installation. It is the USER'S obligation to ensure that the product is suitable for its intended use and that it is compatible with existing conditions or applications of other coincident or adjoining materials. The liability of the SELLER and MANUFACTURER, whether express or implied, whether in contract or in tort, arising out of warranties, representations, instructions or defects from any cause shall be limited exclusively to replacing the product, provided the same is proved defective, or refunding the purchase price upon return of the unused product. In no event will SELLER or MANUFACTURER be liable for consequential damages, including but not limited to loss of materials, costs of labor, loss of profits, costs of replacement goods, or other commercial loss. The USER accepts the product AS IS, and without warranties express or implied.

Subject to FS approval, certain installations of TESS may be eligible for a limited warranty provided by FS. For further information, please contact your Distributor.

For the most current and complete information on proper application, clean-up, mixing, specifications, warranties, cautions and disclaimers, please refer to the company manual or our website at [www.TESSFinishes.com](http://www.TESSFinishes.com).

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