SECTION 07 27 26

AIR AND MOISTURE BARRIERS

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\*\* NOTE TO SPECIFIER \*\* Sto Corp.; Integrated exterior wall systems; air and moisture barriers.  
This section is based on the products of Sto Corporation, which is located at:  
3800 Camp Creek Parkway  
Building 1400, Suite 120  
Atlanta, GA 30331  
Toll Free: 800-221-2397  
Phone: 404-346-3666  
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Web: www.stocorp.com  
[Click Here] for more information  
Sto is the leading global producer of a broad range of next-generation building envelope solutions and coating systems for building construction, maintenance and restoration. For more than 35 years, we have led the way in building technology, while providing customers with the most experienced technical support in the industry.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Fluid applied gun-grade air barrier sealant for sheathing joints, system transitions and rough opening protection. (StoGuard RapidSeal)
    2. Fluid applied air and moisture barrier membrane; high build vapor permeable. (Sto AirSeal)
    3. Fluid applied air and moisture barrier membrane; vapor permeable. (Sto EmeraldCoat)
    4. Fluid applied air and moisture barrier membrane; vapor permeable. (Sto Gold Coat)
    5. Fluid applied air and moisture barrier membrane; vapor permeable. (Sto VaporSeal)
    6. Fluid applied air and moisture barrier membrane; vapor permeable. (Sto Energy Guard)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
    2. Section 04 22 00 - Concrete Unit Masonry.
    3. Section 06 16 36 - Wood Panel Product Sheathing.
    4. Section 07 27 00 - Air Barriers.
    5. Section 07 27 19 - Plastic Sheet Air Barriers .
    6. Section 07 50 00 - Membrane Roofing.
    7. Section 07 60 00 - Flashing and Sheet Metal.
    8. Section 07 90 00 - Joint Protection.
    9. Section 08 50 00 - Windows.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. The Air Barrier Association of America (ABAA).
    2. American Association of Textile Chemists and Colorists (AATCC):
       1. AATCC 127 - Water Resistance: Hydrostatic Pressure Test
    3. APA - The Engineered Wood Association:
       1. E30W - Engineered Wood Construction Guide.
       2. E30U - Engineered Wood Construction Guide.
    4. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Incorporated (ASHRAE):
       1. ASHRAE - Handbook-Fundamentals.
       2. ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings.
       3. ASHRAE 189.1 - Standard for the Design of High Performance Green Buildings Except Low-Rise Residential Buildings.
    5. ASTM International (ASTM):
       1. ASTM C297 - Test Method for Tensile Strength of Flat Sandwich Constructions in Flat wise Plane.
       2. ASTM C1177 - Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
       3. ASTM C1305 - Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane.
       4. ASTM D412 - Standardized Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
       5. ASTM D522 - Test Methods for Mandrel Bend Test of Attached Organic Coatings.
       6. ASTM D783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
       7. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
       8. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
       9. ASTM D4541 - Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
       10. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
       11. ASTM E96 - Test Method for Water Vapor Transmission of Materials.
       12. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
       13. ASTM E779 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
       14. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
       15. ASTM E1186 - Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
       16. ASTM E1827 - Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door.
       17. ASTM E2178 - Test Method for Air Permeance of Building Materials.
       18. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
    6. ICC Evaluation Service, LLC. A Subsidiary of the International Code Council.
       1. AC 212 - Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing.
       2. ICC ESR 1233 -
    7. International Building Code (IBC).
    8. International Energy Conservation Code (IECC).
    9. International Residential Code (IRC).
    10. National Fire Protection Association (NFPA):
        1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
    11. South Coast Air Quality Management District (SCAQMD):
        1. Rule 1113 - Architectural Coatings.
    12. United States Environmental Protection Agency (EPS):
        1. 40 CFR Part 59 - National Volatile Organic Compound Emission Standards for Architectural Coatings.
  1. DEFINITIONS
     1. Air Barrier Material: A primary element that provides a continuous barrier to the movement of air.
     2. Air Barrier Accessory: A transitional component of the air barrier that provides continuity.
     3. Air Barrier Auxiliary Material: A transitional component that provides air barrier continuity furnished by a source other than the primary air barrier manufacturer.
     4. Air Barrier Assembly: The collection of air barrier materials, accessory and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.
  2. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets and specifications on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern and color.
    2. Shop drawings: Substrate joints, cracks, flashing transitions, penetrations, corners, terminations, and tie-ins with adjoining construction, and interfaces with separate materials that form part of the air barrier assembly.
    3. Manufacturer's ICC evaluation report confirming compliance with the IBC, IRC, and IECC as an air barrier and water-resistive barrier.
    4. Manufacturer's standard warranty.
  1. QUALITY ASSURANCE
     1. Manufacturer Requirements:
        1. Manufacturer of exterior wall air and moisture barrier materials for a minimum of 30 years in North America.
        2. Maintain current registered ISO 9001:2008 Certified Quality System and ISO 14001:2004 Certified Environmental Management System.
     2. Contractor Requirements:
        1. Knowledgeable in the proper use and handling of manufacturer's materials.
        2. Employ skilled mechanics who are experienced and knowledgeable in waterproofing and air barrier application, and familiar with the requirements of the specified work.
        3. Provide the proper equipment, manpower and supervision on the job-site to install the air barrier assembly in compliance with the project plans and specifications, shop drawings, and manufacturer's published specifications and details.
     3. Regulatory Compliance: Primary air barrier and joint treatment materials.
        1. VOC requirements for Building Envelope Coatings of SCAQMD Rule 1113.
        2. Material requirements of ASHRAE 90.1.
        3. Material requirements of ASHRAE 189.1.
        4. IRC requirement for a continuous air barrier.
        5. Material requirements of IBC and IECC.
        6. Requirements of ICC-ES AC 212 for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing.

\*\* NOTE TO SPECIFIER \*\* Applies to Sto EmeraldCoat No. A1000E.

* + - 1. Listed by IBC and recognized for use on all types of construction. Refer to ICC ESR 1233 for limitations.
      2. Evaluated and Listed by ABAA as an air barrier material.
    1. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  2. PRE-CONSTRUCTION TESTING
     1. Conduct site testing by qualified test agency or building envelope consultant.
        1. Conduct assembly air leakage testing in accordance with ASTM E783.
        2. Conduct adhesion testing to substrates in accordance with ASTM D4541.
        3. Conduct wet sealant compatibility testing in accordance with sealant manufacturer's field quality control test procedure.
        4. Notify design professional minimum 7 days prior to testing.
  3. DELIVERY, HANDLING, AND STORAGE
     1. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product, batch number and shelf life.
     2. Handle products in accordance with manufacturer's printed recommendations.

\*\* NOTE TO SPECIFIER \*\* The first storage paragraph refers to StoGuard RapidSeal No. 80270. The second paragraph refers to other products specified. Delete storage paragraph not required.

* + 1. Storage: Store products in a dry area with temperature maintained between 40 and 80 degrees F (4 and 27 degrees C). Protect from direct sunlight. Protect from freezing. Protect from extreme heat (greater than 100 degrees F (37.7 degrees C).
    2. Storage:
       1. Protect coatings (pail products) from freezing temperatures and temperatures in excess of 90 degrees F (32 degrees C). Store away from direct sunlight.
       2. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
       3. Protect and store accessory and auxiliary products in accordance with manufacturer's written instructions.
  1. PROJECT SITE CONDITIONS
     1. Maintain ambient and surface temperatures between 40 degrees F (4 degrees C) and 100 degrees F (38 degrees C), during application and drying period, and for minimum 24 hours after application of air/moisture barrier materials.
     2. Provide supplementary heat for installation in temperatures less than 40 degrees F (4 degrees C) or if surface temperature is likely to fall below 40 degrees F (4 degrees C).
     3. Provide protection of surrounding areas and adjacent surfaces from application of materials.
     4. Prevent water infiltration into walls or behind the applied materials.
  2. COORDINATION AND SCHEDULING
     1. The work in this section requires close coordination with related sections and trades. Sequence work to provide protection of construction materials from weather deterioration.
     2. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier, vapor barrier, and WRB.
     3. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall.
     4. Provide sill flashing to direct water to the exterior before windows and doors are installed.
     5. Install window and door head flashing immediately after windows and doors are installed.
     6. Install diverter flashings wherever water can enter the assembly to direct water to the exterior.
     7. Install parapet cap flashing and similar flashing at copings and sills to prevent water entry into the wall assembly.

\*\* NOTE TO SPECIFIER \*\* Applies to Sto AirSeal No. A1000A, StoGuard with Sto EmeraldCoat No. A1000E, StoGuard with Sto Gold Coat No. A1000G. Delete cladding installation paragraph if not required.

* + 1. Cladding Installation: Install cladding within 180 days of air and moisture barrier installation
       1. In the case of StoTherm ci, install insulation board with adhesive within 30 days of Sto Gold Coat installation.
       2. Refer to StoTherm ci specifications for EIFS cladding.

\*\* NOTE TO SPECIFIER \*\* Applies to A1000V. Delete cladding installation paragraph if not required.

* + 1. Cladding Installation: Install cladding within 90 days of air and moisture barrier installation.
  1. WARRANTY
     1. Provide manufacturer's standard warranty.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturers: Sto Corp. which is located at: 3800 Camp Creek Parkway, Building 1400, Suite 120; Atlanta, GA 30331; ASD Toll Free: 800-221-2397; Phone: 404-346-3666; Fax: 404-346-3119; Email: \_\_\_\_\_\_\_\_; Web: www.stocorp.com

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* StoGuard functions as an air and moisture barrier component in wall assemblies. Flashing must always be integrated with the air and moisture barrier in the wall assembly to direct water to the exterior of the cladding, not into the wall assembly, particularly at potential leak sources such as windows. Delete article if not required.

* 1. FLUID APPLIED GUN-GRADE AIR BARRIER SEALANT FOR SHEATHING JOINTS, SYSTEM TRANSITIONS AND ROUGH OPENING PROTECTION
     1. Basis of Design Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction such as through-wall flashing and foundations.
        1. Transition Membrane: StoGuard Transition Membrane. Pre-cured, fabric faced waterproof air barrier transition membrane for system transitions at flashing, dissimilar substrates, and at joints where building movements are anticipated.
           1. Performance and Physical Properties: Meet or exceed the following values for material cured at 77 degrees F (25 degrees C) and 50 percent relative humidity, unless otherwise specified.

Water Penetration Resistance per AATCC-127: Resist 21.6 inches (550 mm) head for 5 hours with no leakage.

Elongation per ASTM D412: minimum 260 percent

Tensile Strength per ASTM D412: Minimum 60 psi (0.41 MPa), perpendicular to length of roll.

Water Vapor Permeability per ASTM E96: 1.48 perms (85 ng/Pa/s/sq m), wet cup.

Air Leakage per ASTM E2178: Less than or equal to 0.004 cfm per sq ft at 1.57 psf (0.02 L per sq m per s at 75 Pa).

Tear and Adhesion at 25 Percent Elongation per ASTM C1523: No tearing or loss of adhesion after conditioning. Pass in dry, wet, frozen and heat-aged conditions.

Cyclic elongation: No loss of continuity of membrane or bond at joint after 500 cycles elongation from 0 to 50 percent and return.

* + - 1. Self-Adhesive Glass Fiber Reinforcing Mesh. StoGuard Mesh.
         1. Performance and Physical Properties: Meet or exceed the following values for material cured at 77 degrees F (25 degrees C) and 50 percent relative humidity, unless otherwise specified.

Weight: 5.0 oz per sq yd (169 g per sq m)

Tensile Strength per ASTM E 2098:

Warp Direction: 150 lbs per inch (267.5 g per mm).

Weft Direction: 165 lbs per inch (294 g per mm).

Tensile Strength, Post Alkaline Exposure per ASTM E2098: greater than 120 lbs per inch (214 g per mm).

* + 1. Performance and Physical Properties: Meet or exceed the following values for material cured at 77 degrees F (25 degrees C) and 50 percent relative humidity (unless otherwise specified).
       1. Water Penetration Resistance per AATCC-127: Resist 21.6 inches (550 mm) head for 5 hours with no leakage.
       2. Adhesion (bond strength) per ASTM D4541: Minimum 100 psi (689 kPa).
       3. Elongation per ASTM D412: minimum 400 percent.
       4. Tensile Strength: Minimum 170 psi (827 kPa).
       5. Water Vapor Permeability per ASTM E96: 21.0 perms (1205 ng/Pa/s/sq m), wet cup.
       6. Surface Burning per ASTM E84: ICC Class A building material.
          1. Flame Spread: Less than 25.
          2. Smoke Developed: Less than 450.
       7. VOC: Comply with SCAQMD and U.S. EPA 24 requirements for architectural coatings. Less than (50 g/L).

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. FLUID APPLIED AIR AND MOISTURE BARRIER MEMBRANE; HIGH BUILD VAPOR PERMEABLE
     1. Basis of Design: Sto AirSeal No. A1000A. Ready-mixed flexible spray applied waterproof air and moisture barrier material.
     2. Performance Requirements:
        1. Crack Bridging per ASTM C1305: No cracking after 10 cycles at minus 15 degrees F (minus 26 degrees C).
        2. Tensile Strength per ASTM D412: Greater than 15 psi (103 kPa).
        3. Elongation per ASTM D412:
           1. Greater than 500 percent at 40 mil DFT.
           2. Greater than 450 percent at 30 mil DFT.
        4. Mold Growth Resistance per ASTM D3273: Rating of 10; no growth at 70 days.
        5. Adhesion per ASTM D4541: Joint treatment and primary air barrier material; greater than 15 psi (103 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates.
        6. Surface Burning per ASTM E84: Class A building material.
           1. Flame Spread: Less than 25.
           2. Smoke Developed: Less than 100.
        7. Water Vapor Permeance per ASTM E96: Method B, greater than 12 perms (689 ng/Pa/s/sq m).
        8. Air Permeance per ASTM E2178: Less than or equal to 0.004 cfm/sq ft (0.02 L/s/sq m) air leakage at 1.57 psf (75 Pa).
        9. Assembly Air Leakage per ASTM E2357: Less than or equal to 0.04 cfm/sq ft (0.2 L/s/sq m) air leakage after conditioning protocol.
        10. Durability, water penetration resistance per ICC-ES AC 212.
        11. Fire Propagation: per NFPA 285: For use on Types I-IV construction by test or engineering analysis.
        12. Volatile Organic Compounds per SCAQMD Rule 1113: Joint treatment and primary air barrier material less than or equal to (100 g/L).
        13. Water-Resistive Barrier per ICC ES 212: Joint treatment and primary air barrier material comply.
     3. Design Criteria:
        1. Structural Wind and Axial Loads:
           1. Design for maximum allowable deflection normal to plane of wall: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
           2. Design for wind load in conformance with code requirements.
        2. Moisture Control:
           1. Prevent accumulation of water in wall assembly and behind exterior wall cladding.
           2. Minimize condensation within the assembly.
           3. Drain water directly to exterior where it is likely to penetrate components in wall assembly (windows and doors, for example).
           4. Provide corrosion resistant flashing to direct water to exterior per code requirements, including above window and door heads, beneath window and door sills, at roof and wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.
        3. Air Barrier Continuity: Provide continuous air barrier assembly of compatible air barrier components.
        4. Substrates:
           1. Concrete Masonry Units: Comply with applicable building code such that a void and pinhole free air barrier is achieved. Provide normal weight units with flush joints (struck flush with the surface) and allow for a minimum of one coat of the primary air barrier material applied by spray at minimum 50 wet mils (30 mil DFT). Alternatively, for "rough" CMU wall surfaces allow for a cementitious parge coat to fill and level irregular surfaces, prior to one coat of the primary air barrier material.
           2. Concrete: Provide concrete in conformance with applicable building code.
           3. Gypsum Sheathing per ASTM C1177: APA Exterior or Exposure 1 wood-based sheathing, and provide frame and sheathing assembly that meets required design wind pressures.
        5. Mechanical Ventilation: Maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE. See ASHRAE Handbook - Fundamentals.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. FLUID APPLIED AIR AND MOISTURE BARRIER MEMBRANE; VAPOR PERMEABLE
     1. Basis of Design: StoGuard with Sto EmeraldCoat No. A1000E. Ready-mixed flexible spray or roller applied air and moisture barrier material.
        1. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete sheathing joint treatments options not required.

* + - * 1. Sheathing Joint Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife over nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh.
        2. Sheathing Joint Treatments: Sto EmeraldCoat with StoGuard Fabric. Flexible air and moisture barrier membrane material for embedding non-woven integrally reinforced cloth reinforcement.

\*\* NOTE TO SPECIFIER \*\* Delete rough opening treatments options not required.

* + - * 1. Rough Opening Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other static transitions in above grade wall construction such as: shingle lap over flashing, wall to balcony floor slab or ceiling, and through wall penetrations; pipes, electrical boxes, and scupper penetrations.
        2. Rough Opening Treatments: Sto EmeraldCoat with StoGuard Fabric and StoGuard Redicorner. Flexible waterproof air barrier membrane material with non-woven integrally reinforced cloth reinforcements. Also used as a detail component for shingle lap transition at flashing.
        3. Rough Opening Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife with nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh. Also used as a detail component for shingle lap transition at flashing.
        4. Rough Opening Treatments: StoGuard Tape. Self-adhered rubberized asphalt tape for frame walls with polyester fabric facing.
        5. Transition Membrane: StoGuard Transition Membrane. Flexible air barrier membrane for continuity at transitions: sheathing to foundation, dissimilar materials (CMU to frame wall), wall to balcony floor slab or ceiling, flashing shingle lap transitions, floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.
        6. Sealant: Sto RapidGuard One component STPE rapid drying gun-applied treatment for sealing fish mouths, wrinkles, seams, gaps, holes, or other voids in StoGuard air barrier materials.
        7. Primer: StoGuard Primer. Rubber resin emulsion primer for use with StoGuard Tape to enhance adhesion.
      1. Patch and Leveling Material for Concrete and Masonry:
         1. Sto Leveler: Polymer modified cementitious patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/4 inch (6 mm).
         2. Sto BTS-Xtra: Polymer modified lightweight cementitious patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/8 inch (3 mm).
      2. Auxiliary Materials:
         1. Wet sealant: Dow Corning 758, 790, 791, and 795 sealants.
         2. Pre-Cured Sealant Tape: Dow 123.
         3. Spray Adhesive: 3M Super 77 spray adhesive.
         4. Spray Foam: Dow Great Stuff for gaps and cracks
         5. Sto TurboStick Mini.
    1. Performance Requirements:
       1. Durability per ICC ES AC 212: Resistance to aging, water and water penetration resistance, structural loading. Joint treatment and primary air barrier material.
       2. Flexibility per ASTM D 522: Primary air barrier material, no cracking or delamination before and after aging using 1/8 inch (3 mm) mandrel at 14 degrees F (10 degrees C).
       3. Nail Sealability per ASTM D1970 7.9.1: Primary air barrier passes.
       4. Mold Resistance per ASTM D 3273: No mold growth after 28 day exposure.
       5. Adhesion per ASTM C 297 or D 4541: Joint treatment and primary air barrier material; greater than or equal to 30 psi (207 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates.
       6. Surface Burning per ASTM E 84: Joint treatment and primary air barrier material. Class A building material.
          1. Flame Spread: Less than or equal to 25.
          2. Smoke Developed: Less than or equal to 450.
       7. Water Vapor Permeance per ASTM E 96: Method B, greater than 10 perms (570 ng/Pa/s/sq m).
       8. Field Adhesion Testing per ASTM D 4541: Greater than 30 psi (207 kPA) or exceeds strength of glass mat facing on glass mat gypsum substrates.
       9. Fire Resistance for ASTM E 119: Permitted for use in exterior walls of fire-resistance-rated construction assemblies. Refer to ICC-ESR 1233.
       10. Building Envelope Air Leakage per ASTM E779 or ASTM E1827: Less than 0.4 cfm/sq ft (2 L/s/sq m).
       11. Material Air Leakage per ASTM E 2178: Primary air barrier and joint treatment to be less than 0.004 cfm per sq ft at 1.57 psf (0.02 L/s/sq m at 75 Pa).
       12. Assembly Air Leakage per ASTM E 2357: Less than 0.04 cfm per sq ft (0.2 L/s/sq m) air leakage after conditioning protocol.
       13. Fire Propagation per NFPA 285: Meets requirements for use on all types of construction. Refer to ICC-ESR 1233.
       14. Volatile Organic Compounds per SCAQMD Rule 1113: Joint treatment and primary air barrier material less than (100 g/L).
       15. Water-resistive Barrier per ICC ES 212, joint treatment and primary air barrier comply and are listed in a valid ICC ESR.
    2. Design Criteria:
       1. Structural Wind and Axial Loads:
          1. Design for maximum allowable deflection normal to plane of wall: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
          2. Design for wind load in conformance with code requirements.
       2. Moisture Control:
          1. Prevent accumulation of water in wall assembly and behind exterior wall cladding:

Minimize condensation within the assembly.

Drain water directly to exterior where it is likely to penetrate components in wall assembly such as windows and doors.

Provide corrosion resistant flashing to direct water to exterior in accordance with code requirements, including above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.

* + - 1. Air Barrier Continuity: Provide continuous air barrier assembly of compatible air barrier components.
      2. Substrates:
         1. Concrete Masonry Units: CMU surfaces in conformance with applicable building code, and such that a void and pinhole free air barrier is achieved. Provide normal weight units with flush joints (struck flush with the surface) and allow for a minimum of 2 coats of the primary air barrier material applied by spray or roller Alternatively, for "rough" CMU wall surfaces allow for a cementitious parge coat to fill and level irregular surfaces, prior to 1 coat of the primary air barrier material.
         2. Concrete: Provide concrete in conformance with the applicable building code.
         3. Sheathing per ASTM C1177: Gypsum sheathing and APA Exterior or Exposure 1 wood-based sheathing, and provide sheathing that meets required design wind pressures.
      3. Mechanical Ventilation: Maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE. See ASHRAE Handbook - Fundamentals.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. FLUID APPLIED AIR AND MOISTURE BARRIER MEMBRANE; VAPOR PERMEABLE
     1. Basis of Design: StoGuard with Sto Gold Coat No. A1000G. Ready-mixed flexible spray or roller applied air and moisture barrier material.
        1. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete sheathing joint treatments options not required.

* + - * 1. Sheathing Joint Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction
        2. Sheathing Joint Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife over nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh.
        3. Sheathing Joint Treatments: Sto Gold Coat with StoGuard Fabric. Flexible air and moisture barrier membrane material for embedding non-woven integrally reinforced cloth reinforcement.

\*\* NOTE TO SPECIFIER \*\* Delete rough opening treatment options not required.

* + - * 1. Rough Opening Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction
        2. Rough Opening Treatments: Sto Gold Coat with StoGuard Fabric and StoGuard Redicorner. Flexible air and moisture barrier membrane material with non-woven integrally reinforced cloth reinforcements. Also used as a detail component for shingle lap transition at flashing.
        3. Rough Opening Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife with nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh. Also used as a detail component for shingle lap transition at flashing.
        4. Rough Opening Treatments: StoGuard Tape. Self-adhered rubberized asphalt tape for frame walls with polyester fabric facing.
        5. Transition Detail Components:

\*\* NOTE TO SPECIFIER \*\* Delete components not required or keep all.

StoGuard Transition Membrane: Flexible air and moisture barrier membrane for continuity at static transition such as sheathing to foundation, dissimilar materials (CMU to frame wall), wall to balcony floor slab or ceiling, and shingle lap transitions to flashing. Also used for dynamic joints such as floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.

Sto RapidGuard: One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other static transitions in above grade wall construction such as shingle lap transition to flashing, wall to balcony floor slab or ceiling, and through wall penetrations; pipes, electrical boxes, and scupper penetrations.

* + - * 1. Primers: StoGuard Primer. Rubber resin emulsion primer for use with StoGuard Tape to enhance adhesion.
      1. Patching and Leveling Material for Concrete and Masonry:

\*\* NOTE TO SPECIFIER \*\* Delete leveler option not required.

* + - * 1. Sto Leveler: Polymer modified cementitious patch and leveling material for prepared concrete and masonry surfaces up to 1/4 inch (6 mm).
        2. Sto BTS Xtra: Polymer modified lightweight cementitious patch and leveling material for prepared concrete and masonry surfaces up to 1/8 inch (3 mm).
      1. Auxiliary Materials: Not supplied by Manufacturer.
         1. Wet sealant: Dow Corning 758, 790, 791, and 795 sealants.
         2. Pre-cured sealant tape: Dow 123.
         3. Spray adhesive: 3M Super 77 Spray Adhesive .
         4. Spray foam: Dow Great Stuff for Gaps and Cracks.
    1. Performance Requirements:
       1. Durability per ICC ES AC 212: Resistance to aging, water and water penetration resistance, structural loading. Joint treatment and primary air barrier material.
       2. Flexibility per ASTM D 522: Primary air barrier material, no cracking or delamination before and after aging using 1/8 inch (3 mm) mandrel at 14 degrees F (10 degrees C).
       3. Nail Sealability per ASTM D1970 7.9.1: Primary air barrier passes.
       4. Mold Resistance per ASTM D 3273: No mold growth after 28 day exposure.
       5. Adhesion per ASTM C 297 or D 4541: Joint treatment and primary air barrier material; greater than or equal to 30 psi (207 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates.
       6. Surface Burning per ASTM E 84: Joint treatment and primary air barrier material. Class A building material.
          1. Flame Spread: Less than or equal to 25.
          2. Smoke Developed: Less than or equal to 450.
       7. Water Vapor Permeance per ASTM E 96: Method B, greater than 10 perms (570 ng/Pa/s/sq m).
       8. Field Adhesion Testing per ASTM D 4541: Greater than 30 psi (207 kPA) or exceeds strength of glass mat facing on glass mat gypsum substrates.
       9. Fire Resistance for ASTM E 119: Permitted for use in exterior walls of fire-resistance-rated construction assemblies. Refer to ICC-ESR 1233.
       10. Building Envelope Air Leakage per ASTM E779 or ASTM E1827: Less than 0.4 cfm/sq ft (2 L/s/sq m).
       11. Material Air Leakage per ASTM E 2178: Primary air barrier and joint treatment to be less than 0.004 cfm per sq ft at 1.57 psf (0.02 L/s/sq m at 75 Pa).
       12. Assembly Air Leakage per ASTM E 2357: Less than 0.04 cfm per sq ft (0.2 L/s/sq m) air leakage after conditioning protocol.
       13. Fire Propagation per NFPA 285: Meets requirements for use on all types of construction. Refer to ICC-ESR 1233.
       14. Volatile Organic Compounds per SCAQMD Rule 1113: Joint treatment and primary air barrier material less than (100 g/L).
       15. Water-resistive Barrier per ICC ES 212, joint treatment and primary air barrier comply and are listed in a valid ICC ESR.
    2. Design Criteria:
       1. Structural Wind and Axial Loads:
          1. Design for maximum allowable deflection normal to plane of wall: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
          2. Design for wind load in conformance with code requirements.
       2. Moisture Control:
          1. Prevent accumulation of water in wall assembly and behind exterior wall cladding:

Minimize condensation within the assembly.

Drain water directly to exterior where it is likely to penetrate components in wall assembly such as windows and doors.

Provide corrosion resistant flashing to direct water to exterior in accordance with code requirements, including above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.

* + - 1. Air Barrier Continuity: Provide continuous air barrier assembly of compatible air barrier components.
      2. Substrates:
         1. Concrete Masonry Units: CMU surfaces in conformance with applicable building code, and such that a void and pinhole free air barrier is achieved. Provide normal weight units with flush joints (struck flush with the surface) and allow for a minimum of 2 coats of the primary air barrier material applied by spray or roller Alternatively, for "rough" CMU wall surfaces allow for a cementitious parge coat to fill and level irregular surfaces, prior to 1 coat of the primary air barrier material.
         2. Concrete: Provide concrete in conformance with the applicable building code.
         3. Sheathing per ASTM C1177: Gypsum sheathing and APA Exterior or Exposure 1 wood-based sheathing, and provide sheathing that meets required design wind pressures.
      3. Mechanical Ventilation: Maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE. See ASHRAE Handbook - Fundamentals.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. FLUID APPLIED AIR AND MOISTURE BARRIER MEMBRANE; VAPOR IMPERMEABLE
     1. Basis of Design: StoGuard VaporSeal, No. A1000V. Ready-mixed flexible spray or roller applied air and moisture barrier material.
        1. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete sheathing joint treatments options not required.

* + - * 1. Sheathing Joint Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction
        2. Sheathing Joint Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife over nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh.
        3. Sheathing Joint Treatments: Sto Gold Coat with StoGuard Fabric. Flexible air and moisture barrier membrane material for embedding non-woven integrally reinforced cloth reinforcement.

\*\* NOTE TO SPECIFIER \*\* Delete rough opening treatment options not required.

* + - * 1. Rough Opening Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction
        2. Rough Opening Treatments: StoGuard VaporSeal with StoGuard Fabric and StoGuard Redicorner. Flexible waterproof air barrier membrane material with non-woven integrally reinforced cloth reinforcements. Also used as a detail component for shingle lap transition at flashing.
        3. Rough Opening Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife with nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh. Also used as a detail component for shingle lap transition at flashing.
        4. Rough Opening Treatments: StoGuard Tape. Self-adhered rubberized asphalt tape for frame walls with polyester fabric facing.
        5. Transition Detail Components:

\*\* NOTE TO SPECIFIER \*\* Delete detail components not required or keep all.

StoGuard Transition Membrane: Flexible air and moisture barrier membrane for continuity at static transition such as sheathing to foundation, dissimilar materials (CMU to frame wall), wall to balcony floor slab or ceiling, and shingle lap transitions to flashing. Also used for dynamic joints such as floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.

Sto RapidGuard: One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other static transitions in above grade wall construction such as shingle lap transition to flashing, wall to balcony floor slab or ceiling, and through wall penetrations; pipes, electrical boxes, and scupper penetrations.

* + - * 1. Primers: StoGuard Primer. Rubber resin emulsion primer for use with StoGuard Tape to enhance adhesion.
      1. Patching and Leveling Material for Concrete and Masonry:

\*\* NOTE TO SPECIFIER \*\* Delete leveler option not required.

* + - * 1. Sto Leveler: Polymer modified cementitious patch and leveling material for prepared concrete and masonry surfaces up to 1/4 inch (6 mm).
        2. Sto BTS Xtra: Polymer modified lightweight cementitious patch and leveling material for prepared concrete and masonry surfaces up to 1/8 inch (3 mm).
      1. Auxiliary Materials: Not supplied by Manufacturer.
         1. Wet sealant: Dow Corning 758, 790, 791, and 795 sealants
         2. Pre-cured sealant tape: Dow 123
         3. Spray adhesive: 3M Super 77 Spray Adhesive
         4. Spray foam: Dow Great Stuff for Gaps and Cracks
    1. Performance Requirements:
       1. Low Temperature Crack Bridging per ASTM C1305: No cracking after 10 cycles at -15 degrees F (minus 26 degrees C).
       2. Elongation per ASTM D412: Primary air barrier and vapor barrier material, greater than 500 percent.
       3. Tensile Strength per ASTM D412: Greater than 200 psi (1378 kPa).
       4. Nail Sealability per ASTM D1970 7.9.1: Primary air barrier passes.
       5. Mold Resistance per ASTM D 3273: No mold growth after 90 days.
       6. Adhesion per ASTM D4541: Joint treatment and primary air barrier and vapor barrier material, greater than or equal to 15 psi (103 kPa) over glass mat gypsum sheathing, greater than 50 psi (344 kPa) over concrete, OSB and plywood substrates.
       7. Field Adhesion Testing per ASTM D4541: Greater than 15 psi (103 kPA) or exceeds strength of glass mat facing on glass mat gypsum substrates.
       8. Water Vapor Permeance per ASTM E96: Method A, less than 0.1 perms (5.7 ng/Pa/s/sq m).
       9. Building Envelope Air Leakage per ASTM E779 or ASTM E1827: Less than 0.4 cfm/sq ft (2 L/s/sq m).
       10. Material Air Leakage per ASTM E 2178: Primary air barrier and joint treatment to be less than 0.004 cfm per sq ft at 1.57 psf (0.02 L/s/sq m at 75 Pa).
       11. Assembly Air Leakage per ASTM E 2357: Less than 0.04 cfm per sq ft (0.2 L/s/sq m) air leakage after conditioning protocol.
       12. Fire Propagation per NFPA 285: Meets requirements for use on all types of construction. Refer to ICC-ESR 1233.
       13. Volatile Organic Compounds per SCAQMD Rule 1113: Joint treatment and primary air barrier material less than (100 g/L).
    2. Design Criteria:
       1. Structural Wind and Axial Loads:
          1. Design for maximum allowable deflection normal to the plane of the wall: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
          2. Design for wind load in conformance with code requirements.
       2. Moisture Control: Prevent the accumulation of water in the wall assembly and behind the exterior wall cladding:
          1. Minimize condensation within the assembly.
          2. Drain water directly to the exterior where it is likely to penetrate components in the wall assembly (windows and doors, for example).
          3. Provide corrosion resistant flashing to direct water to the exterior in accordance with code requirements, including: above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.
       3. Air Barrier Continuity: Provide continuous air barrier assembly of compatible air barrier components.
       4. Substrates:
          1. Concrete Masonry Units:

CMU surfaces in conformance with the applicable building code, and such that a void and pinhole free air barrier is achieved.

Normal weight units with flush joints (struck flush with the surface) and allow for a minimum of 1 coat of the primary air barrier material applied by spray at 80 wet mils (40 DFT).

Alternatively, for "rough" CMU wall surfaces allow for a cementitious parge coat to fill and level irregular surfaces prior to 1 coat of the primary air barrier material.

* + - * 1. Concrete: Provide concrete in conformance with the applicable building code.
        2. Sheathing: Provide gypsum sheathing in compliance with ASTM C 1177, provide APA Exterior or Exposure 1 wood-based sheathing, and provide sheathing attachment that meets required design wind pressures.
      1. Mechanical Ventilation: maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE (see 2005 ASHRAE HandbookFundamentals).
  1. FLUID APPLIED AIR AND MOISTURE BARRIER MEMBRANE; VAPOR PERMEABLE (Sto Energy Guard)
     1. Basis of Design: Primary Air Barrier Material: Sto Energy Guard No A5000E; StoGuard with Sto EmeraldCoat. Ready-mixed flexible spray or roller applied air and moisture barrier material.
        1. Accessory Materials:

\*\* NOTE TO SPECIFIER \*\* Delete sheathing joint treatments options not required.

* + - * 1. Sheathing Joint Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife over nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh.
        2. Sheathing Joint Treatments: Sto Gold Coat with StoGuard Fabric. Flexible air and moisture barrier membrane material for embedding non-woven integrally reinforced cloth reinforcement.

\*\* NOTE TO SPECIFIER \*\* Delete rough opening treatments options not required.

* + - * 1. Rough Opening Treatments: Sto RapidGuard. One component STPE rapid drying gun-applied treatment for sheathing joints, rough openings, seams, cracks, penetrations and other transitions in above grade wall construction.
        2. Rough Opening Treatments: Sto EmeraldCoat with StoGuard Fabric and StoGuard Redicorner. Flexible waterproof air barrier membrane material with non-woven integrally reinforced cloth reinforcements. Also used as a detail component for shingle lap transition at flashing.
        3. Rough Opening Treatments: Sto Gold Fill with StoGuard Mesh. Ready mixed coating applied by trowel or knife with nominal 4.2 oz per sq yd (142 g per sq m) self-adhesive, flexible, symmetrical, interlaced glass fiber mesh. Also used as a detail component for shingle lap transition at flashing.
        4. Rough Opening Treatments: StoGuard Tape. Self-adhered rubberized asphalt tape for frame walls with polyester fabric facing.
        5. Transition Detail Components:

\*\* NOTE TO SPECIFIER \*\* Delete detail components not required or keep all.

StoGuard Transition Membrane: Flexible air and moisture barrier membrane for continuity at static transition such as sheathing to foundation, dissimilar materials (CMU to frame wall), wall to balcony floor slab or ceiling, and shingle lap transitions to flashing. Also used for dynamic joints such as floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.

* + - * 1. Primer: StoGuard Primer. Rubber resin emulsion primer for use with StoGuard Tape to enhance adhesion.
      1. Patch and Leveling Material for Concrete and Masonry:

\*\* NOTE TO SPECIFIER \*\* Delete leveler option not required.

* + - * 1. Sto Leveler: Polymer modified cementitious patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/4 inch (6 mm).
        2. Sto BTS-Xtra: Polymer modified lightweight cementitious patch and leveling material for prepared concrete and masonry surfaces for leveling up to 1/8 inch (3 mm).
      1. Auxiliary Materials: Not supplied by the Manufacturer.
         1. Wet sealant: Dow Corning 758, 790, 791, and 795 sealants.
         2. Pre-Cured Sealant Tape: Dow 123.
         3. Spray Adhesive: 3M Super 77 spray adhesive.
         4. Spray Foam: Dow Great Stuff for gaps and cracks

\*\* NOTE TO SPECIFIER \*\* Delete CI adhesive not required.

* + - 1. CI Adhesive: Sto TurboStick Mini. Single component polyurethane spray foam adhesive.
      2. CI Adhesive: Sto TurboStick. Single component polyurethane spray foam adhesive
      3. CI Adhesive: Sto ExtraSeal. Single component polymer modified portland cement-based adhesive.
      4. Continuous Insulation (CI): Dow STYROFOAM. Type IV extruded polystyrene (XPS) rigid insulation board scored longitudinally at 16 and 24 inches (406 and 610 mm) on center.
    1. Performance Requirements:
       1. Durability per ICC ES AC 212: Resistance to aging, water and water penetration resistance, structural loading. Joint treatment and primary air barrier material.
       2. Flexibility per ASTM D 522: Primary air barrier material, no cracking or delamination before and after aging using 1/8 inch (3 mm) mandrel at 14 degrees F (10 degrees C).
       3. Nail Sealability per ASTM D1970 7.9.1: Primary air barrier passes.
       4. Mold Resistance per ASTM D 3273: No mold growth after 28 day exposure.
       5. Adhesion per ASTM C 297 or D 4541: Joint treatment and primary air barrier material; greater than or equal to 30 psi (207 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates.
       6. Surface Burning per ASTM E 84: Joint treatment and primary air barrier material. Class A building material.
          1. Flame Spread: Less than or equal to 25.
          2. Smoke Developed: Less than or equal to 450.
       7. Water Vapor Permeance per ASTM E 96: Method B, greater than 10 perms (570 ng/Pa/s/sq m).
       8. Field Adhesion Testing per ASTM D 4541: Greater than 30 psi (207 kPA) or exceeds strength of glass mat facing on glass mat gypsum substrates.
       9. Fire Resistance per ASTM E119: Capable of maintaining a 1 hour fire-resistance rating with maximum 3 inch (76 mm) Dow STYROFOAM Type IV XPS insulation board and minimum 3/4 inch (22 mm) ASTM C 926 compliant stucco in a non-load bearing assembly. Refer to Sto for assembly details and ICC-ESR 1233.
       10. Building Envelope Air Leakage per ASTM E779 or ASTM E1827: Less than 0.4 cfm/sq ft (2 L/s/sq m).
       11. Material Air Leakage per ASTM E 2178: Primary air barrier and joint treatment to be less than 0.004 cfm per sq ft at 1.57 psf (0.02 L/s/sq m at 75 Pa).
       12. Assembly Air Leakage per ASTM E 2357: Less than 0.04 cfm per sq ft (0.2 L/s/sq m) air leakage after conditioning protocol.
       13. Fire Propagation per NFPA 285: Meets requirements for use on all types of construction. Refer to ICC-ESR 1233.
       14. Volatile Organic Compounds per SCAQMD Rule 1113: Joint treatment and primary air barrier material less than (100 g/L).
       15. Water-resistive Barrier per ICC ES 212, joint treatment and primary air barrier comply and are listed in a valid ICC ESR.
    2. Design Criteria:
       1. Structural Wind and Axial Loads:
          1. Design for maximum allowable deflection normal to plane of wall: L/240. Where cladding dictates stiffer deflection criteria use cladding design criteria for maximum allowable deflection.
          2. Design for wind load in conformance with code requirements.
       2. Moisture Control: Prevent the accumulation of water in the wall assembly and behind the exterior wall cladding.
          1. Minimize condensation within assembly.
          2. Drain water directly to exterior where it is likely to penetrate components in wall assembly (windows and doors, for example).
          3. Provide corrosion resistant flashing to direct water to exterior in accordance with code requirements including above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.
       3. Air Barrier Continuity: Provide continuous air barrier assembly of compatible air barrier components.
       4. Substrates:
          1. Concrete Masonry Units: CMU surfaces in conformance with applicable building code, and such that a void and pinhole free air barrier is achieved. Provide normal weight units with flush joints (struck flush with the surface) and allow for a minimum of 2 coats of the primary air barrier material applied by spray or roller Alternatively, for "rough" CMU wall surfaces allow for a cementitious parge coat to fill and level irregular surfaces, prior to 1 coat of the primary air barrier material.
          2. Concrete: Provide concrete in conformance with the applicable building code.
          3. Sheathing per ASTM C1177: Gypsum sheathing and APA Exterior or Exposure 1 wood-based sheathing, and provide sheathing that meets required design wind pressures.
       5. Fire Protection:
          1. Thermal Barrier: 15 minute, typically minimum 1/2 inch (13 mm) thick interior gypsum wall board, to separate foam plastic insulation from interior.
          2. Noncombustible Type Construction per NFPA 285:

Wall assembly that has been tested or evaluated for compliance acceptance criteria.

Limit foam plastic insulation thickness to that tested or evaluated per NFPA 285.

Provide minimum 4 pcf semi-rigid mineral wool fire stops at floor lines where metal framing runs continuously past floor line.

* + - * 1. For construction that requires an hourly fire resistance rating: provide wall assembly that has been tested or evaluated for required rating in conformance with ASTM E 119.
      1. Mechanical Ventilation: Maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE. See ASHRAE Handbook - Fundamentals.

1. EXECUTION
   1. EXAMINATION

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to Gun-Grade Sto RapidGuard No. 81571. Delete paragraph if not required.

* + 1. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected by the appropriate trade.
       1. The following substrates are acceptable when properly prepared to receive Sto RapidGuard No. 81571.
          1. Concrete.
          2. Concrete masonry.
          3. ASTM C 1177 glass mat faced gypsum sheathing.
          4. Wood framing.
          5. Exterior-grade plywood.
          6. Exposure 1 OSB.
          7. Fire-retardant treated plywood.
          8. Pressure treated plywood.
          9. Metal flashing; copper, aluminum, galvanized steel.
          10. Primed structural steel.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph if not required.

* + 1. Inspect Concrete and Concrete Masonry Surfaces:
       1. Contamination: Algae, dirt, dust, efflorescence, form oil, fungus, grease, mildew or other foreign substances.
       2. Surface Deficiencies: Weak, friable, chalkiness, laitance, bugholes, and spalls.
       3. Cracks: Measure crack width and record location of cracks.
       4. Damage or deterioration.
       5. Moisture Content and Damage: Use a moisture meter to determine if surface is dry enough to receive waterproof air barrier and record any areas of moisture damage or excess moisture.
       6. Flush masonry mortar joints completely filled with mortar.

\*\* NOTE TO SPECIFIER \*\* Delete paragraph if not required.

* + 1. Inspect sheathing application for compliance with applicable requirements.
       1. Exterior Grade and Exposure I Wood Based Sheathing: E30W-2017, Engineered Wood Construction Guide, and the requirements of the applicable building code.
       2. Glass Mat Faced Gypsum Sheathing per ASTM C1177: Consult manufacturer's published recommendations and ICC ES Report. Conform with project requirements for wind load resistance.
       3. Cementitious Sheathing: Consult manufacturer's published recommendations and ICC ES Report. Conform with project requirements for wind load resistance.
    2. Do not begin installation until substrates have been properly constructed and prepared.
    3. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
  1. SURFACE PREPARATION

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to Gun-Grade Sto RapidGuard 81571. Delete paragraph if not required.

* + 1. Comply with Manufacturer's Printed Instructions and the Following:
       1. Remove bond-inhibiting materials including oil, mildew, dust, dirt, efflorescence, laitance, coatings, and other foreign matter.
       2. Surface must be frost-free, and between 33 degrees F (0.6 degrees C) and 100 degrees F (37.7 degrees C). Do not apply if temperatures below 33 degrees F (0.6 degrees C) are anticipated within 24 hours of application.
       3. Do not apply to wet surfaces or surfaces with standing water. Wood, concrete or concrete masonry may be damp.
       4. Wipe galvanized metal with mild solvent such as isopropyl alcohol to remove oils and bond inhibiting materials.

\*\* NOTE TO SPECIFIER \*\* Delete any of the following paragraphs not required.

* + 1. Concrete Masonry:
       1. Surface must be structurally sound and free of weak or damaged surface conditions such as laitance or spalls. Surface must be clean, dry, frost-free, and free of any bond-inhibiting materials such as dust, dirt, oil, algae, mildew, salts, efflorescence, or any other surface contamination. Mortar joints must be struck flush with the surface.
       2. Remove excess mortar from masonry ties, lintels and shelf angles.
       3. Remove loose or damaged material by water-blasting, sandblasting or mechanical wire brushing. Remove surface contamination such as dirt or efflorescence by chemical or mechanical means. Repair surface defects such as spalls, voids and holes with Sto BTS Xtra (up to 1/8 inch (3 mm) thick) or Sto Leveler (up to 1/4 inch (6 mm) thick).
       4. Repair non-structural cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply joint treatment material over crack, embed reinforcement (where applicable), and smooth joint treatment material with a trowel, drywall or putty knife to cover the reinforcement.

Important: For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air and moisture barrier membrane and transition materials. Use the mock-up and site tests as the basis for the work.

* + 1. Concrete:
       1. Surface must be structurally sound and free of weak or damaged surface conditions such as laitance, bugholes, or spalls. Surface must be clean, dry, frost-free, and free of any bond-inhibiting materials such as dust, dirt, oil, form release, algae, mildew, salts, efflorescence, or any other surface contamination.
       2. Remove projecting fins, ridges, form ties, and high spots by mechanical means.
       3. Remove loose or damaged material by water-blasting, sandblasting or mechanical wire brushing. Remove form release by chemical or mechanical means. Repair surface defects such as honeycombs, pitting, spalls, voids or holes with Sto BTS Xtra (up to 1/8 inch (3 mm) thick) or Sto Leveler (up to 1/4 inch (6 mm) thick).
       4. Repair non-structural cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply joint treatment material over crack, embed reinforcement (where applicable), and smooth joint treatment material with a trowel, drywall or putty knife to cover the reinforcement.
    2. Sheathing:
       1. Remove and replace damaged sheathing.
       2. Spot surface defects such as over-driven fasteners, knot holes, or other voids in sheathing with knife grade joint treatment material.
       3. Spot surface defects and over-driven fasteners with knife grade joint treatment material or air/moisture barrier coating.
  1. INSTALLATION
     1. Install products in accordance with manufacturer's recommendations, approved submittals and in proper relationship with adjacent construction. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing, handling and application of materials.

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to Gun-Grade Sto RapidGuard No. 81571. Delete paragraph if not required.

* + 1. Application: Comply with manufacturer's printed instructions and the following:
       1. Mixing not required.
       2. Rough Openings:
          1. Apply Sto RapidGuard with caulk gun.
          2. Apply generous bead of Sto RapidGuard and spread to minimum 12 wet mils (0.3 mm) using plastic spreader.
          3. Coat the entire rough opening surface and return onto exterior face of sheathing minimum 2 inches (51 mm) around perimeter of opening.
       3. Sheathing Joints in Field of Wall:
          1. Fill joints that are wider than 1/4 inch (6.4 mm) with low-expanding spray foam. Trim excess spray foam flush with sheathing.

b.ApplySto RapidGuard using a caulk gun and spread to minimum 12 wet mils (0.3 mm) using plastic spreader to achieve and void and pinhole free surface.

* + - 1. Sheathing Joints at Corners:
         1. Fill sheathing joints that are wider than 1/4 inch (6.4 mm) with low-expanding spray foam. Trim excess spray foam flush with sheathing.

b.ApplySto RapidGuard using a caulk gun and spread to minimum 12 wet mils (0.3 mm) using plastic spreader to achieve a void and pinhole free surface.

* + - 1. Movement Joints: Joints up to 1 inch (25 mm) wide and up to 50 percent movement, masonry control joints, through-wall joints in masonry or frame construction. Requires StoGuard Transition Membrane.
         1. Insert backer rod sized to friction fit in the joint (diameter 25 percent greater than width of joint. Recess backer rod 1/2 inch (13 mm).
         2. Apply Sto RapidGuard using a caulk gun along both sides of joint.
         3. Center StoGuard Transition Membrane along the joint and immediately press into freshly applied Sto RapidGuard.
         4. Loop StoGuard Transition Membrane into joint minimum against the backer rod surface to provide slack.
         5. Minimum bonded width of StoGuard Transition Membrane shall be 1 inch (25.4 mm) on both sides of joint.
         6. Tool both sides of the Sto RapidGuard and StoGuard Transition Membrane to seal and fully adhere transition membrane.
         7. Where horizontal and vertical expansion joints intersect, install StoGuard Transition Membrane at horizontal joints first. Stop membrane at edge of vertical expansion joints. Install vertical expansion joints to be continuous.
         8. Inspect the installed membrane for fish-mouths, wrinkles, gaps, holes or other deficiencies.
         9. Correct fish mouths by cutting then embedding the area with additional Sto RapidGuard under and over the membrane.
         10. Seal gaps, holes and complex geometries at three-dimensional corners with additional Sto RapidGuard as needed to provide a continuous seal.
      2. Transitions to Flashing:
         1. StoGuard Mesh:

Apply strip of StoGuard Mesh along upper leg of flashing and extending minimum 2 inches (51 mm) onto wall surface.

Apply Sto RapidGuard to minimum thickness of 12 wet mils (0.3 mm) and fully coating the reinforcing mesh.

* + - * 1. StoGuard Transition Membrane:

Apply Sto RapidGuard to vertical flashing leg and surface of wall to receive transition membrane.

Place StoGuard Transition Membrane in wet Sto RapidGuard and tool flat, using excess StoGuard RapidGuard to embed edges of transition membrane.

Apply additional Sto RapidGuard along top edge of StoGuard Transition Membrane and tool to provide a continuous lap onto the transition membrane.

Inspect the installed membrane for fish-mouths, wrinkles, gaps, holes or other deficiencies.

Correct fish mouths by cutting then embedding the area with additional Sto RapidGuard under and over the membrane.

Seal gaps, holes and complex geometries at three-dimensional corners with additional Sto RapidGuard as needed to provide a continuous seal.

* + - 1. Transitions to Dissimilar Substrates (no expansion joint in substrate construction):

\*\* NOTE TO SPECIFIER \*\* The requirement for expansion joints and locations of expansion joints to accommodate anticipated structural movement must be determined by a qualified design professional. Inclusion of this section in the specification is not intended to imply that the options listed below function as or should be used to replace expansion joints where they are called for by the design professional.

* + - * 1. Sto RapidGuard:

1)Apply Sto RapidGuard to minimum thickness of 12-20 wet mils (0.3-0.5 mm).

* + - * 1. StoGuard Transition Membrane:

Apply Sto RapidGuard to substrates on both sides of the joint between dissimilar substrates.

Place StoGuard Transition Membrane in wet Sto RapidGuard and tool flat, using excess Sto RapidGuard to embed edges of transition membrane.

Apply additional Sto RapidGuard along top edge of StoGuard Transition Membrane and tool to provide a continuous lap onto the transition membrane.

Inspect the installed membrane for fish-mouths, wrinkles, gaps, holes or other deficiencies.

Correct fish mouths by cutting then embedding the area with additional Sto RapidGuard under and over the membrane.

Seal gaps, holes and complex geometries at three-dimensional corners with additional Sto RapidGuard as needed to provide a continuous seal.

StoGuard Transition Membrane Overlaps:

Shingle-lap, minimum 2 inches (51 mm), StoGuard Transition Membrane where required for vertically oriented applications.

Overlap horizontal applications of StoGuard Transition Membrane minimum 2 inches (51 mm).

Use Sto RapidGuard to bond layers of StoGuard at overlaps.

* + - 1. Top-Coating Sto RapidGuard:
         1. Apply the specified StoGuard waterproof air-barrier coating to Sto RapidGuard within 48 hours after Sto RapidGuard has achieved initial cure. Sto RapidGuard may have a tacky feel, but material will be firm and will not transfer with firm pressure and contact.

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to Sto AirSeal No. A1000A Delete paragraph if not required.

* + 1. Air/Moisture Barrier Installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing per ASTM C 1177, concrete, and concrete masonry (CMU) wall construction.
       1. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
       2. Transition Detailing: Detail transition areas with Sto RapidGuard or StoGuard Transition Membrane to achieve air barrier continuity. For illustrations of installation, refer to Sto Guide Details and Sto RapidGuard Installation Guide or StoGuard Transition Membrane Installation Guide ( HYPERLINK "file:///C:\\\%20Internet%20Files.IE5.stocorp.com"www.stocorp.com).
       3. Rough Opening Protection: Install rough opening protection. Refer to Sto details and applicable Sto product bulletins.
       4. Sheathing Joints: Install joint treatment material over sheathing joints. Refer to Sto details and applicable Sto product bulletins.
       5. Air and Moisture Barrier Coating:

\*\* NOTE TO SPECIFIER \*\* Sto AirSeal is formulated for airless spray or roller application and can be applied by spray to as much as 66 wet mils to achieve 40 DFT thickness if required by specifications. Performance properties are based on a minimum 50 wet mil application to achieve minimum 30 DFT. Roller application typically requires multiple coats to achieve required minimum mil thickness of 30 DFT.   
Important: For concrete masonry the number of coats and thickness of Sto AirSeal is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. CMU surfaces may require back rolling of the first pass with a 3/4 or 1 inch (19 or 25 mm) synthetic nap roller. For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air and moisture barrier and transition materials. Use the mock-up and site tests as the basis for the work. Avoid excess film build-up of wet material to prevent sag, especially on non-porous surfaces and during cold or damp weather.

* + - * 1. Concrete, Concrete Masonry, and Sheathing:

Airless Spray Application: Apply Sto AirSeal to prepared substrate using airless spray equipment that pumps a minimum 1 gallon (3.8 L) per minute. Suggested tip size is .029. Pressure and tip size may vary depending on equipment used. Spray uniformly at thickness of approximately 50 wet mils to achieve minimum 30 DFT. Spray at approximately 66 wet mils where 40 mil DFT is specified. If necessary, allow material to set slightly (up to 1 hour depending on weather and substrate conditions), and double back with a second pass to achieve total thickness. Alternatively, apply in two coats, allowing the first coat to fully dry.

\*\* NOTE TO SPECIFIER \*\* Applies to StoGuard with Sto EmeraldCoat No. A1000E. Delete paragraph if not required.

* + 1. Air/Moisture Barrier Installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing per ASTM C 1177, concrete, and concrete masonry (CMU) wall construction.
       1. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
       2. Transition Membrane Detailing: Detail transition areas with StoGuard Transition Membrane to achieve air barrier continuity. For illustrations of installation, including complex geometries such as inside and outside corners, refer to Sto Guide Details and StoGuard Transition Membrane Installation Guide ( HYPERLINK "file:///C:\\\%20Internet%20Files.IE5.stocorp.com"www.stocorp.com).
       3. Floor line deflection joints up to 1 inch (25 mm) wide, static joints and transitions; sheathing to foundation, dissimilar materials (CMU to frame wall), flashing shingle lap transitions, wall to balcony floor slab or ceiling.
          1. Apply air and moisture barrier coating (Sto EmeraldCoat) liberally to properly prepared surfaces with brush, roller, or spray.
          2. Place pre-cut lengths of StoGuard Transition Membrane centered over the transition in the wet coating. At changes in plane crease the membrane and similarly place the membrane material in the wet coating.
          3. Immediately top coat the membrane with additional coating and apply pressure with brush or roller to fully embed the membrane in the coating and achieve a smooth and wrinkle-free surface without gaps or voids.
          4. Apply coating liberally along all top horizontal edges on walls and along all edges on balcony floor slabs to fully seal the edges.
          5. Overlap minimum 2 inches (51 mm) at ends and adhere lap seams together with coating. Shingle lap vertical seams and vertical to horizontal intersections with minimum 2 inch (51 mm) overlap.
       4. Movement joints up to 1 inch (25 mm) wide and up to plus or minus 50 percent movement; masonry control joints, through wall joints in masonry or frame construction.
          1. Insert backer rod sized to friction fit in the joint (diameter 25 percent greater than joint width).
          2. Recess the backer rod 1/2 inch (13 mm).
          3. Apply the waterproof coating liberally to properly prepared surfaces with brush, roller, or spray along each side of the joint (not in the joint).
          4. Immediately place the membrane by looping it into the joint against the backer rod surface to provide slack.
          5. Embed the membrane in the wet coating along the sides of the joint by top coating with additional coating material and applying pressure with a brush or roller.
       5. After membrane Installation is Complete and Air and Moisture Barrier Coating is Dry:
          1. Apply a final liberal coat of the coating to all top horizontal edges on walls to ensure waterproofing integrity. Similarly apply coating at all edges on balcony floor slabs.
          2. Inspect the installed membrane for fish mouths, wrinkles, gaps, holes or other deficiencies. Correct fish mouths or wrinkles by cutting, then embedding the area with additional coating applied under and over the membrane.
          3. Seal gaps, holes, and complex geometries at three dimensional corners with Sto RapidGuard.
       6. Rough Opening Protection: Install rough opening protection. Refer to Sto details and applicable Sto product bulletins.
       7. Sheathing joints: Install joint treatment material with applicable reinforcement over sheathing joints. Refer to Sto detail 22s.00 and applicable Sto product bulletins.
       8. Air and Moisture Barrier Coating:
          1. Concrete: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous wet film of 10 mils to the prepared concrete substrate. Do not install over working or moving joint sealants.
          2. Concrete Masonry: Install one liberal coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film to the prepared concrete masonry substrate. Backroll spray applications. Allow to dry. Install a second liberal coat in a uniform, continuous film, and backroll spray applications, to achieve a void and pinhole free surface. Depending on the condition of the surface a minimum of 10 wet mils up to a maximum of 30 wet mils per coat is required. Apply additional coats if needed to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Important: The number of coats and thickness is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air barrier coating and transition materials. When a skim coat of the leveling material is installed only one coat of the air and moisture barrier coating is typically required. Use the mock-up and site tests as the basis for the work.

* + - * 1. Sheathing:

Glass Mat Faced Gypsum Sheathing: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared glass mat gypsum substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Plywood Sheathing: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

OSB Sheathing: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate and to a void and pinhole free surface. Inspect surface and touch-up with a second coat at raised wood strands. Do not install over working or moving joint sealants.

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to StoGuard with Sto Gold Coat No. A1000G Delete paragraph if not required.

* + 1. Air/Moisture Barrier Installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing per ASTM C 1177, concrete, and concrete masonry (CMU) wall construction.
       1. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
       2. Transition Detailing: detail transition areas with Sto RapidGuard or StoGuard Transition Membrane to achieve air barrier continuity. For illustrations of installation, refer to Sto Guide Details and Sto RapidGuard Installation Guide or StoGuard Transition Membrane Installation Guide ( HYPERLINK "file:///C:\\.stocorp.com"www.stocorp.com).
       3. Rough Opening Protection: Install rough opening protection. Refer to Sto details and applicable Sto product bulletins.
       4. Sheathing Joints: Install joint treatment material over sheathing joints. Refer to Sto details and applicable Sto product bulletins.
       5. Air and Moisture Barrier Coating:
          1. Concrete: Install one coat of Sto Gold Coat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared concrete substrate. Do not install over working or moving joint sealants.
          2. Concrete Masonry: Install one liberal coat of Sto Gold Coat by spray or roller in a uniform, continuous film to the prepared concrete masonry substrate. Backroll spray applications. Allow to dry. Install a second liberal coat in a uniform, continuous film, and backroll spray applications, to achieve a void and pinhole free surface. Depending on the condition of the surface a minimum of 10 wet mils up to a maximum of 30 wet mils per coat is required. Apply additional coats if needed to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Important: The number of coats and thickness is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air and moisture barrier coating and transition materials. When a skim coat of the leveling material is installed only one coat of the air and moisture barrier coating is typically required. Use the mock-up and site tests as the basis for the work.

* + - * 1. Sheathing:

Glass Mat Faced Gypsum Sheathing: Install one coat of Sto Gold Coat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared glass mat gypsum substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Plywood Sheathing: Install one coat of Sto Gold Coat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

OSB Sheathing: Install one coat of Sto Gold Coat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate and allow to dry. Install a second coat in a uniform, continuous film of 10 wet mils to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

\*\* NOTE TO SPECIFIER \*\* Paragraph applies to StoGuard VaporSeal No. A1000V Delete paragraph if not required.

* + 1. Air/Moisture Barrier Installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing per ASTM C 1177, concrete, and concrete masonry (CMU) wall construction.
       1. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
       2. Transition Detailing: Detail transition areas with Sto RapidGuard or StoGuard Transition Membrane to achieve air barrier continuity. For illustrations of installation, refer to Sto Guide Details and Sto RapidGuard Installation Guide or StoGuard Transition Membrane Installation Guide ( HYPERLINK "file:///C:\\.stocorp.com"www.stocorp.com).
       3. Rough Opening Protection: Install rough opening protection. Refer to Sto details and applicable Sto product bulletins.
       4. Sheathing Joints: Install joint treatment material over sheathing joints. Refer to Sto details and applicable Sto product bulletins.
       5. Air and Moisture Barrier Coating:

\*\* NOTE TO SPECIFIER \*\* Important; for concrete masonry the number of coats and thickness of StoGuard VaporSeal is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. CMU surfaces may require back rolling of the first pass with a 3/4 or 1 inch (19 or 25 mm) synthetic nap roller. For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air and moisture barrier and transition materials. Use the mock-up and site tests as the basis for the work.   
Avoid excess film build-up of wet material to prevent sag, especially on non-porous surfaces and during cold or damp weather.

* + - * 1. Concrete, Concrete Masonry, and Sheathing:

Airless Spray Application: Apply StoGuard VaporSeal to the prepared substrate using spray equipment such as Graco 1095 that can support a minimum 1-1/4 to 1-1/2 gallons (4.7 to 5.7 L) per minute.

Suggested Setting: .025 tip size.

Adjust fan, tip and pressure settings as needed to accommodate site and substrate conditions. Spray uniformly at a thickness of approximately 40 wet mils. Allow material to set slightly (up to 1 hour depending on weather and substrate conditions), and double back with a second pass to achieve a total of 80 wet mils (40 DFT). Alternatively, apply in two coats, allowing the first coat to fully dry.

\*\* NOTE TO SPECIFIER \*\* The next three Paragraphs applies to Sto Guide No A5000E; StoGuard with Sto EmeraldCoat. Delete paragraph if not required.

* + 1. Air/Moisture Barrier Installation over Exterior or Exposure I Wood-Based Sheathing (Plywood and OSB), Glass Mat Faced Gypsum Sheathing per ASTM C 1177, concrete, and concrete masonry (CMU) wall construction.
       1. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
       2. Transition Membrane Detailing: Detail transition areas with StoGuard Transition Membrane to achieve air barrier continuity. For illustrations of installation, including complex geometries such as inside and outside corners, refer to Sto Guide Details and StoGuard Transition Membrane Installation Guide ( HYPERLINK "file:///C:\\\%20Internet%20Files.IE5.stocorp.com"www.stocorp.com).
       3. Floor line deflection joints up to 1 inch (25 mm) wide, static joints and transitions; sheathing to foundation, dissimilar materials (CMU to frame wall), flashing shingle lap transitions, wall to balcony floor slab or ceiling.
          1. Apply air and moisture barrier coating (Sto EmeraldCoat) liberally to properly prepared surfaces with brush, roller, or spray.
          2. Place pre-cut lengths of StoGuard Transition Membrane centered over the transition in the wet coating. At changes in plane crease the membrane and similarly place the membrane material in the wet coating.
          3. Immediately top coat the membrane with additional coating and apply pressure with brush or roller to fully embed the membrane in the coating and achieve a smooth and wrinkle-free surface without gaps or voids.
          4. Apply coating liberally along all top horizontal edges on walls and along all edges on balcony floor slabs to fully seal the edges.
          5. Overlap minimum 2 inches (51 mm) at ends and adhere lap seams together with coating. Shingle lap vertical seams and vertical to horizontal intersections with minimum 2 inch (51 mm) overlap.
       4. Movement joints up to 1 inch (25 mm) wide and up to plus or minus 50 percent movement; masonry control joints, through wall joints in masonry or frame construction.
          1. Insert backer rod sized to friction fit in the joint (diameter 25 percent greater than joint width).
          2. Recess the backer rod 1/2 inch (13 mm).
          3. Apply the waterproof coating liberally to properly prepared surfaces with brush, roller, or spray along each side of the joint (not in the joint).
          4. Immediately place the membrane by looping it into the joint against the backer rod surface to provide slack.
          5. Embed the membrane in the wet coating along the sides of the joint by top coating with additional coating material and applying pressure with a brush or roller.
       5. After Membrane Installation is Complete and Air and Moisture Barrier Coating is Dry:
          1. Apply a final liberal coat of the coating to all top horizontal edges on walls to ensure waterproofing integrity. Similarly apply coating at all edges on balcony floor slabs.
          2. Inspect the installed membrane for fish mouths, wrinkles, gaps, holes or other deficiencies. Correct fish mouths or wrinkles by cutting, then embedding the area with additional coating applied under and over the membrane.
          3. Seal gaps, holes, and complex geometries at three dimensional corners with Sto RapidGuard.
       6. Rough Opening Protection: Install rough opening protection. Refer to Sto details and applicable Sto product bulletins.
       7. Sheathing Joints: Install joint treatment material with applicable reinforcement over sheathing joints. Refer to Sto detail 22s.00 and applicable Sto product bulletins.
       8. Air and Moisture Barrier Coating:
          1. Concrete: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous wet film of 10 mils to the prepared concrete substrate. Do not install over working or moving joint sealants.
          2. Concrete Masonry: Install one liberal coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film to the prepared concrete masonry substrate. Backroll spray applications. Allow to dry. Install a second liberal coat in a uniform, continuous film, and backroll spray applications, to achieve a void and pinhole free surface. Depending on the condition of the surface a minimum of 10 wet mils up to a maximum of 30 wet mils per coat is required. Apply additional coats if needed to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Important: The number of coats and thickness is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. For "rough" CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the air barrier coating and transition materials. When a skim coat of the leveling material is installed only one coat of the air and moisture barrier coating is typically required. Use the mock-up and site tests as the basis for the work.

* + - * 1. Sheathing:

Glass Mat Faced Gypsum Sheathing: Install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared glass mat gypsum substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

Plywood sheathing: install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

OSB sheathing: install one coat of Sto EmeraldCoat by spray or roller in a uniform, continuous film of 10 wet mils to the prepared substrate and to a void and pinhole free surface. Inspect surface and touch-up with a second coat at raised wood strands. Do not install over working or moving joint sealants.

* + 1. CI Installation:

\*\* NOTE TO SPECIFIER \*\* Select one attachment method. IMPORTANT: Adhesive or mechanical attachment of Dow STYROFOAM Type IV XPS is temporary attachment intended to hold the insulation board in place prior to permanent attachment with cladding fasteners or clips. Maximum recommend board size for adhesive attachment is 2 x 8 ft (0.6 x 2.4 m).

* + - 1. General Rules for Installation of CI:
         1. Cut boards at 16 or 24 inch (406 or 610 mm) score lines as needed to accommodate spacing of clips, ties, or furring in wall assembly.
         2. Install boards in a running bond pattern with vertical joints offset. Stagger joints minimum 6 inches (152 mm) from sheathing joints. Cut insulation in an "L" shape around openings in the wall to avoid alignment of joints with corners. Tightly abut insulation board joints and interlock boards at inside and outside corners.
         3. Trim or rasp boards for flush, square corners.
         4. Where brick ties or other elements penetrate the insulation pre-fit and cut the insulation, or install in a manner to avoid breakage and gaps in the insulation.
         5. Seal gaps and open joints in insulation with StoTurboStick Mini or Sto TurboStick spray foam. After adhesive sets, rasp or shave expanded foam flush with the surface if necessary for cladding attachment. Do not install CI over working or moving joints or joint sealants.
      2. Adhesive Attachment Methods with Sto ExtraSeal:
         1. Notched Trowel Method (where drainage behind the insulation board is required):

Apply a uniform coat of Sto ExtraSeal at approximately 3/8 inch (9 mm) thick by spray or trowel to the wall surface.

Form vertical ribbons of adhesive with a 1/2 x 1/2 x 2 inch (13 x 13 x 51 mm) "U"- notched trowel.

Alternatively, apply adhesive uniformly to the back of the insulation board and form vertical ribbons of adhesive with the notched trowel.

* + - * 1. Dab Method:

Apply dabs of adhesive to the back of insulation boards with a minimum 4 inch (102 mm) drywall knife or trowel in 2 rows of minimum 7 dabs per row.

Space adhesive dabs evenly across the length of the board at no more than 16 inches (406 mm) on center.

Space dabs in rows of no more than 16 inches (406 mm) on center and no more than 3 inches (76 mm) from board ends and edges.

* + - * 1. Immediately place insulation boards against the wall surface before adhesive "skins". If adhesive "skins" remove and apply fresh material. Install insulation with firm, even pressure applied along the full dimension of the boards in courses starting from the base of the wall in a running bond pattern.
      1. Adhesive Attachment Method with Sto TurboStick Mini or Sto TurboStick (where drainage behind the insulation board is required):
         1. Apply uniformly spaced vertical ribbons of adhesive at no more than 7 inches (178 mm) on center and spaced approximately 3/4 inch (19 mm) from board ends and 1/2 inch (13 mm) from board edges.
         2. Install boards with light even pressure across the face of the boards.
         3. Several minutes after the boards are placed it may be necessary to re-apply light even pressure with a straight edge to maintain the plane of the insulation boards, as the adhesive expands slightly while curing.
      2. Mechanical Attachment Method:
         1. Attach insulation boards to solid substrate or framing with corrosion resistant metal screws and 1-1/4 inch (32 mm)metal lath locks or other corrosion resistant cap fastener.
         2. Use only enough fasteners (typically 3 per board mid-span) to temporarily hold the board in place, as cladding attachment is intended to permanently hold it in place.
         3. If cladding installation is delayed, use additional fasteners to attach CI.
    1. Cavity Wall Component Installation:

\*\* NOTE TO SPECIFIER \*\* Add or delete depending on wall assembly design. Cavity wall component is intended for use with claddings that do NOT have a discrete cavity such as portland cement stucco, adhered masonry veneer, and siding (where approved by siding manufacturer). For claddings or veneers that incorporate a cavity such as brick veneer, siding installed over furring, and some metal panels, the cavity wall component may not be applicable.

* + - 1. Install Cavity Wall Component Over Continuous Insulation:
         1. Place drainage mat against the wall surface and unroll horizontally with the fabric facing out, starting from the bottom of the wall at base flashing or weep screed and working up.
         2. Use "foam tacs" to temporarily hold the mat in place. Do not fasten through flashing.
         3. Shingle lap fabric at horizontal courses. Shingle lap drainage mat over flashing at floor lines, decks, roof lines, window heads, and other areas where flashing is required, to direct water to the exterior.
         4. Butt ends of rolls and vertical seams. Trim around windows, doors, vents, or other penetrations through the wall. Do not install behind window nail flanges.
         5. Immediately follow installation of drainage mat with cladding installation.
  1. FIELD QUALITY CONTROL
     1. Owner's qualified testing agency or building envelope consultant shall perform inspections and tests.
     2. Inspections: Air barrier materials are subject to inspection to verify compliance with requirements.
        1. Condition of substrates and substrate preparation.
        2. Installation of primary air barrier material, accessory materials, and compatible auxiliary materials over structurally sound substrates and in conformance with architectural design details, contractor's shop drawings, project mock-up, and manufacturer's written installation instructions.
        3. Air barrier continuity and connections without gaps and holes at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
     3. Tests: Air barrier materials and assembly are subject to tests to verify compliance with performance requirements.
        1. Qualitative air leakage test: ASTM E1186
        2. Quantitative air leakage test: ASTM E779, E783, and E1827.
        3. Adhesion test: ASTM D4541
        4. Qualitative adhesion and compatibility testing: wet sealant manufacturer's field quality control adhesion test
     4. Repair non-conforming substrates and air barrier material installation to conform with project requirements.
     5. Take corrective action to repair and replace, or reinstall materials, seal openings, gaps, or other sources of air leakage to conform with project performance requirements.
  2. CLEANING AND PROTECTION
     1. Protect air barrier materials from damage during construction caused by wind, rain, freezing, continuous high humidity, or prolonged exposure to sun light.
     2. Protect air barrier materials from damage from trades, vandals, and water infiltration during construction.
     3. Repair damaged materials to meet project specification requirements.
     4. Clean spills, stains, soiling from finishes or other construction materials that will be exposed in the completed work with compatible cleaners.
     5. Remove all masking materials after work is completed.

END OF SECTION