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Sto Guide Specification S6500
StoPowerwall® ExtraSeal™
Air and Moisture Barrier with Direct Applied Stucco

Section 09 24 23
Portland Cement Stucco

This specification is intended for use by the design/construction professional and user of Sto products to assist in developing project specifications for the direct application of Sto ExtraSeal and StoPowerwall Stucco to exterior or interior vertical above grade concrete or concrete masonry wall construction. Sto ExtaSeal is designed for use as an air barrier, moisture barrier, and stucco scratch coat on prepared concrete and CMU beneath StoPowerwall Stucco (ICC ESR 2323) or any other Sto listed ASTM C926 compliant stucco brown coat.

An air barrier system minimizes the risk of condensation within the building envelope by eliminating mass transfer of warm moisture laden air into the wall assembly to a cold surface where it can condense. A complete air barrier system consists of individual air barrier components and the connections between them. The air barrier components must be continuous to become an effective air barrier assembly. The design/construction professional must take material compatibility and construction sequencing into account when designing an "air tight" assembly to ensure continuity and long term durability. The effects of air tightness on mechanical ventilation should also be included in the overall project evaluation.

The function of an air barrier should not be confused with that of a vapor retarder (vapor impermeable). A vapor retarder is placed in the wall to resist differential vapor pressures, whereas the air barrier is designed to resist the structural live loads induced by air pressure difference. Generally a vapor retarder is placed on the warm side of the wall. Specifically, it is placed on the interior side of the insulation in cold climates and on the exterior side of the insulation in warm humid climates to minimize condensation within the wall assembly. A vapor retarder may not be necessary depending on the wall components, the range of temperature/humidity conditions inside and outside, and the mechanical ventilation of the building. A vapor retarder should not be used on the interior side of walls in warm humid climates.

StoPowerwall Stucco is a portland cement plaster that serves as a base for Sto primers and textured finishes. It functions as a decorative and protective exterior wall covering. Like all building materials, Portland cement stucco has limitations. For example, efflorescence is a normal occurrence in portland cement-based products and can affect final appearance of finish products installed over stucco. Some degree of cracking is normal in portland cement stucco and should be expected. Cracking is generally not caused by a material defect in the stucco and can be minimized by following sound design and construction practice such as: proper incorporation of stress relief joints in the construction, properly graded sand for field mixed stucco, proper proportioning of stucco mix ingredients, use of the minimum amount of water in the stucco mix for placement and avoiding the use of excess water, moist curing of the stucco after it has been applied, and proper sequencing of construction to avoid stresses in the freshly placed stucco. Surface alkalinity (pH) is an important consideration for stucco surfaces to receive acrylic or elastomeric finishes and should be checked to verify pH less than 10 before primer or finish is applied. StoPrime Hot is the preferred primer for use on stucco surfaces to "mask" surface alkalinity. Refer to Sto Tech Hotline No. 1202-CF, Alkaline Substrates and Polymeric Finishes.

StoPowerwall ExtraSeal, as with any exterior wall assembly, requires proper design detailing and integration with other components, in particular flashing and air barrier transition materials, to provide a wall assembly that resists air and water infiltration. The weather protection afforded by StoPowerwall ExtraSeal should be evaluated by the design/construction professional in relation to building design, height, orientation, climate zone, and any other factors that affect the severity of exposure to rain and the risk of water intrusion. Flashing must always be integrated in the wall assembly to direct water to the exterior of the wall, not into the wall assembly, particularly at potential leak sources such as windows. Refer to Sto guide details and Sto Tech Hotline Nos. 0403-BSc, Critical Detail Checklist for Wall Assemblies, and 0603-BSc, Moisture Control Principles for Design and Construction of Wall Assemblies.

Notes in italics, such as this one, are explanatory and intended to guide the design/construction professional and user in the proper selection and use of materials. Modifications should be made to this specification as deemed necessary by the design/construction professional to ensure a watertight building envelope without water entry or accumulation anywhere within the wall assembly, an airtight building envelope, and control of condensation from water vapor diffusion. For complete technical information on Sto components and other reference materials, refer to product bulletins, guide details, and other technical information available at www.stocorp.com. Verify that section titles in this specification are correct for the Project Specifications. Verify that table headers and spacing are aligned after final edit, including table header repeated at top of table, at any new pages.

Table of Contents

PART 1 GENERAL

1.1 RELATED DOCUMENTS

Retain or delete this article in all sections of the Project Manual

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes materials and installation of trowel applied air barrier and stucco brown coat over vertical above grade concrete and concrete masonry walls.

B. Related Requirements (add/delete, depending on specific project requirements):

1. Section 03 30 00: Cast-In-Place Concrete
2. Section 04 22 00: Concrete Unit Masonry
3. Section 06 16 00: Sheathing
4. Section 07 21 13: Board Insulation
5. Section 07 25 00: Weather Barriers
6. Section 07 26 00: Vapor Retarders
7. Section 07 27 00: Air Barriers
8. Section 07 50 00: Membrane Roofing
9. Section 07 60 00: Flashing and Sheet Metal
10. Section 07 90 00: Joint Protection
11. Section 08 50 00: Windows

1.3 DEFINITIONS

A. Air Barrier Material: A primary element that provides a continuous barrier to the movement of air.

B. Air Barrier Accessory: A transitional component of the air barrier that provides continuity.

C. Air Barrier Auxiliary Material: A transitional component that provides air barrier continuity furnished by a source other than the primary air barrier manufacturer.

D. 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.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference

1. Review air barrier and stucco installation requirements and installation details, mock-ups, testing requirements, protection, and sequencing of work.

1.5 REFERENCES

A. Building Codes and Standards

2015, 2018 IBC	International Building Code
2015, 2018 IRC	International Residential Code
2015, 2018 IECC	International Energy Conservation Code
ICC ES AC 11	Acceptance Criteria for Cementitious Exterior Wall Coatings

B. ASTM Standards

C 926	Standard Specification for Application of Portland Cement-Based Plaster
D 4541-09	Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
E 96-00	Test Method for Water Vapor Transmission of Materials
E 283-04 (2012)	Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E 330-14	Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
E 331- 00 (2009)	Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
E 514	Standard Test Method for Water Penetration and Leakage Through Masonry
E 779-10	Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
E 783-02	Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
E 1186-03 (2009)	Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
E 1827-96 (2007)	Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
E 2178-03	Test Method for Air Permeance of Building Materials

C. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)

2013 ASHRAE Handbook – Fundamentals

ASHRAE 90.1	2016, Energy Standard for Buildings Except Low-Rise Residential Buildings

D. South Coast Air Quality Management District (SCAQMD)

Rule 1113 (2016)	Building Envelope Coatings

1.6 COORDINATION/SCHEDULING

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

A. Provide minimum 28 day cure of concrete and concrete masonry units before the installation of air barrier and stucco components.

B. Sequence work such that placement of stucco, stucco primers and finish coats closely follow air barrier installation (90 days maximum between coats) to prevent surfaces from being contaminated by atmospheric conditions, dust, dirt, salts, trades, or other sources of surface contamination.

C. Commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the wall to prevent excessive deflection (and potential cracking) of the stucco.

D. Provide site grading such that stucco terminates above earth grade minimum 4 inches (100 mm) and above finished grade (pavers/sidewalk) minimum 2 inches (51 mm). Provide increased clearance in freeze/thaw climate zones.

E. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier.

F. Install primary air barrier and connecting air barrier components at BEFORE installing stucco accessories.

G. Provide protection of rough openings before installing windows, do ors, and other penetrations through the wall.

H. Provide sill flashing before windows and doors are installed to direct water beyond the finished exterior wall surface.

I. Install window and door head flashing immediately after windows and doors are installed.

J. Install diverter flashings wherever water can enter the assembly to direct water beyond the finished exterior wall surface.

K. Install sealants, parapet cap flashing and similar flashing at copings and sills to prevent water entry into the wall assembly immediately after installation of stucco and after finish coatings are dry. Do not install sealant against stucco finish coat in dynamic joint conditions.

L. Attach penetrations through stucco into structural support and provide water tight seal at penetrations.

1.7 SUBMITTALS

A. Manufacturer’s specifications, details and product data.

B. Manufacturer’s standard warranty.

C. Samples for approval as directed by architect or owner.

D. Shop drawings: substrate joints, cracks, flashing transitions, penetrations, corners, terminations, and tie-ins with adjoining construction, interfaces with separate materials that form part of the air barrier and stucco wall assembly.

1.8 QUALITY ASSURANCE

A. Manufacturer requirements

1. Manufacturer of exterior wall air barrier materials for a minimum of 30 years in North America.

2. Current ISO 9001 Certified Quality System and ISO 14001 Certified Environmental Management System

B. Contractor requirements

1. Knowledgeable in the proper use and handling of Sto materials.
2. Employ skilled mechanics who are experienced and knowledgeable in waterproofing, air barrier, and stucco 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, and stucco assembly in compliance with the project plans & specifications, shop drawings, and Sto's published specifications and details.

C. Regulatory Compliance

1. Primary air barrier material:
   a. Comply with VOC requirements of SCAQMD Rule 1113.
   b. Comply with allowable air leakage requirements of ASHRAE 90.1 – 2016
   c. Comply with IRC, IBC, and IECC – 2015 or 2018
2. Stucco brown coat
   a. Comply with ASTM C926

D. Mock-ups

1. Build stand-alone site mock up or sample wall area on as-built construction to incorporate back-up wall construction, typical details covering substrate joints, cracks, flashing transitions, penetrations, corners, terminations, tie-ins with adjoining construction, and interfaces with separate materials that form part of the air barrier and stucco wall assembly. Apply air barrier and scratch coat, stucco brown coat, and stucco primer and finish coat consistent with specified materials and methods of construction. For stucco wall assemblies applied directly to concrete build full assembly for field adhesion tests as determined by design professional.

1.9 TESTING

A. Conduct site testing by qualified test agency or building envelope consultant as directed by design professional

1. Construct full-scale mock-up of typical stucco/window wall assembly with specified tools and materials and test air and water infiltration and structural performance in accordance with ASTM E 283, ASTM E 331 and ASTM E 330, respectively, through independent laboratory. Mock-up shall comply with requirements of project specifications. Where mock-up is tested at job site maintain approved mock-up at site as reference standard. If tested off-site accurately record construction detailing and sequencing of approved mock-up for replication during construction.
2. Conduct assembly air leakage testing in accordance with ASTM E783.
3. Conduct adhesion testing to substrates in accordance with ASTM D4541.
4. Conduct wet sealant adhesion testing in accordance with sealant manufacturer's field quality control test procedure.
5. Conduct pH testing to check stucco surface alkalinity before application of primer or finish materials. Where alkaline resistant primer is used pH testing may be waived.

6. Notify design professional minimum 7 days prior to testing.

1.10 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.

B. Protect coatings (pail products) from freezing temperatures and temperatures in excess of 90 degrees F (32 degrees C). Store away from direct sunlight.

C. Protect portland cement-based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.

D. Protect and store accessory and auxiliary products in accordance with manufacturer's written instructions.

1.11 PROJECT/SITE CONDITIONS

A. Maintain ambient and surface temperatures above 40 degrees F (4 degrees C) and below 100 degrees F (38 degrees C), during application and drying period, minimum 24 hours after application of materials.

B. 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).

C. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.12 WARRANTY

A. Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Sto Corp.

B. Obtain primary air barrier, accessory air barrier materials, stucco, stucco primer and finish coat from single source, except stucco brown coat may be any Sto listed ASTM C926 compliant material.

2.2 MATERIALS

A. Primary Air Barrier Material: Sto ExtraSeal – single component polymer modified portland cement-based air barrier material.

B. Accessory Materials

1. Rough Opening Protection *(Select one. Refer to Sto Detail 65c.25)*

   a. 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 laps over flashing, wall to balcony floor slab or ceiling, and through wall penetrations – pipes, electrical boxes, and scupper penetrations

2. Transition Detail Component *(Select one or more materials as needed for project details and conditions)*

    a. 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, shingle lap transitions to flashing, floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.

    b. 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 laps over flashing, wall to balcony floor slab or ceiling, and through wall penetrations – pipes, electrical boxes, and scupper penetrations.

C. Auxiliary Materials *(by others)*

1. Wet sealant: low modulus silicone sealant for expansion joints, medium-low modulus silicone sealant for perimeter seals around windows, doors, and similar through wall penetrations, as determined by design professional

2. Pre-cured sealant tape: pre-cured silicone sealant tape for expansion joints or other dynamic joint conditions, as determined by design professional

3. Spray foam:

    a. Sto TurboStick Adhesive

    b. Dow Great Stuff for Gaps and Cracks

D. Patching and Leveling Material for Prepared Concrete and Masonry

1. Sto Leveler and Skim Coat: polymer modified cement-based patch and leveling material for applications up to 1/4 inch in (6 mm) in depth.

E. Stucco Brown Coat *(select one)*

1. 102 StoPowerwall Stucco Pre-Blended: fiber reinforced one coat portland cement stucco pre-blended with graded sand, and in compliance with ICC AC 11. See ICC ESR 2323.

2. 103 StoPowerwall Stucco: fiber reinforced one coat portland cement stucco concentrate in compliance with ICC AC 11. See ICC ESR 2323.

3. ASTM C926 compliant stucco brown coats as listed by Sto Corp. (Refer to Addendum to StoPowerwall Specifications).

F. Stucco Crack Defense *(optional component for added crack resistance of stucco wall surface)*

1. Sto Mesh with any Sto Base Coat Product: nominal 4.5 oz/yd^2 (153 g/m^2) glass fiber reinforcing mesh with alkaline resistant coating for compatibility with Sto materials for embedment in Sto base coats (refer to base coat product bulletins)

G. Stucco Primers *(select one)*

1. StoPrime Hot – acrylic based primer/sealer for freshly placed (minimum 4 day old) and high pH stucco surfaces.

2. StoPrime Sand – acrylic based tinted, sanded primer for fully cured (minimum 28 day old or pH less than 10) stucco surfaces.

3. StoPrime – acrylic based tinted primer for fully cured (minimum 28 day old or pH less than 10) stucco surfaces.

H. Stucco Finish

1. Any Sto exterior decorative and protective textured finish as selected and approved by design professional or owner on basis of job site installed mock-ups.

NOTE: Surface alkalinity (pH) is an important consideration for stucco surfaces that receive acrylic or elastomeric finishes and should be checked to verify pH less than 10 before primer or finish is applied. StoPrime Hot is the preferred primer for use on stucco surfaces to "mask" surface alkalinity. Priming is also recommended to provide uniform substrate absorption and finish color, to improve adhesion and water resistance, and to retard efflorescence. StoPrime Hot may be applied 48 hours after moist curing the brown coat. Other Sto primers and finishes require 28 days curing of brown coat or pH less than 10 before application. Refer to Sto Product Bulletins for complete information on textured finish options.

2.3 PERFORMANCE REQUIREMENTS (AIR BARRIER)

A. Water Penetration: ASTM E 514, no water penetration through concrete masonry after 4-hour spray period

B. Adhesion: ASTM D 4541, $\geq$ 50 psi (345 kPA) on prepared CMU substrates

C. Water vapor permeance: ASTM E 96 Method B, minimum 5 perms (286 ng/Pa·s·m^2)

D. Air permeance: ASTM E 2178, $\leq$ 0.004 cfm/ft^2 (0.02 L/s·m^2) air leakage at 1.57 psf (75 Pa)

E. Field adhesion testing: ASTM D 4541, strength requirements as dictated by design professional based on exposure conditions such as building height, orientation, climate, and building design

F. Surface burning: ASTM E 84, $\leq$ 25 flame spread and $\leq$ 450 smoke developed

G. Building envelope air leakage: ASTM E 779 or 1827, $\leq$ 0.4 cfm/ft^2 (2.0 L/s·m^2)

H. Volatile Organic Compounds: SCAQMD Rule 1113, primary air barrier material, < 50 g/L

2.4 DESIGN REQUIREMENTS

A. Concrete Masonry (CMU)

1. Specify CMU with flush joints for best results and to improve air barrier material coverage

B. Structural (Wind and Axial Loads)

1. Design for maximum allowable deflection normal to the plane of the wall: L/360
2. Design for wind load in conformance with code requirements.

C. Moisture Control

1. Prevent the accumulation of water in the wall assembly and behind the exterior wall cladding:
   a. Minimize condensation within the assembly.

b. Drain water directly to the exterior where it is likely to penetrate components in the wall assembly (windows and doors, for example).

c. 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.

d. Air Leakage Prevention – prevent excess air leakage in the design and detailing of the wall assembly. Provide continuity between air barrier components in the wall assembly.

e. Vapor Diffusion and Condensation – perform a dew point analysis of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.

f. Protect rough openings with StoGuard rough opening treatment extended no further than the stucco termination accessory expanded flange (as Sto ExtraSeal will not adhere to some StoGuard rough opening treatments). Refer to Sto Guide Details.

g. Where casing bead is used back-to-back at expansion joints, back joints with appropriate StoGuard Transition Membrane. Refer to Sto Guide Details.

h. Seal accessory butt joints with sealant.

D. Air Barrier Continuity: provide continuous air barrier assembly of compatible air barrier components.

E. Substrates

1. Provide surface plane tolerance not to exceed ¼ inch in 10 feet (6 mm in 3.0 m).

2. Remove form ties, trim projecting concrete and fill honeycombs or other surface defects with appropriate patch or levelling material.

3. Concrete – provide for removal of form oil, curing compounds, efflorescence, coatings, salts, or other surface contamination, laitance or other surface conditions that could interfere with adhesion. Provide an absorbent surface, slightly scarified or with surface roughness, or both (refer to Section 3.2A1).

4. Concrete Masonry – provide open texture concrete masonry units with flush joints, free of efflorescence, coatings, salts, or other surface contamination, weak surfaces or other surface conditions that could interfere with adhesion (refer to Section 3.2B1).

5. Do not install air barrier, stucco, primers or finishes over efflorescence, laitance or weak surface conditions, painted, coated, salt-contaminated, non-absorbent, smooth, or any concrete or CMU substrate where adhesion is in question, or when total stucco thickness – skim coat, scratch coat, and brown coat – will exceed 5/8 inch (16 mm). Use appropriate metal plaster base in these cases for the stucco assembly.

F. Mechanical Ventilation: maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE (see 2016 ASHRAE Handbook – Fundamentals).

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect concrete and concrete masonry surfaces for:

1. Contamination – algae, dirt, dust, efflorescence, form oil, fungus, grease, mildew or other foreign substances.
2. Surface deficiencies – weak, friable, chalkiness, laitance, bugholes, honeycombs, and spalls.
3. Cracks – measure crack width and record location of cracks.
4. Damage or deterioration.
5. Moisture damage – record any areas of moisture damage or excess moisture.

B. Report deviations from the requirements of project specifications or other conditions that might adversely affect the air barrier installation. Do not start work until deviations are corrected.

3.2 SURFACE PREPARATION

A. Concrete

1. Remove form ties and trim projecting concrete so it is even with the plane of the wall. Fill honeycombs or other surface defects with patch or leveling material. Remove form release agents or other surface contamination by chemical or mechanical means. Provide a surface that is structurally sound, free of laitance and other surface defects, absorbent, and slightly scarified or with surface roughness, or both. Ensure that the surface is structurally sound and free of all dust, dirt, grease, efflorescence, coatings, salts or other surface contamination before proceeding with work. Ensure that the surface is sufficiently absorbent and roughened for adequate adhesion. Pre-moisten highly absorbent surfaces with water just prior to placement of air barrier, especially during hot, dry conditions. Verify adhesion with load tests after air barrier/stucco assembly has fully cured (28 days) on mock-up wall, and throughout the project as directed in 1.9, Testing.

B. Concrete Masonry Units *(Specify CMU with flush joints for best results and to improve air barrier material coverage)*

1. Remove projecting joint mortar so it is even with the plane of the wall. Remove surface contaminants such as efflorescence, existing paint or coatings, or any other surface contamination by chemical or mechanical means. Pre-moisten the surface with water just prior to placement of air barrier. Verify adhesion with load tests after stucco/air barrier assembly has fully cured (28 days) on mock-up wall, and throughout the project as directed in 1.9, Testing.

C. For A and B above, where bond inhibiting material cannot be removed, where concrete or masonry surface irregularities are such that more than 5/8 inch (16 mm) of stucco (including Sto ExtraSeal skim coat and scratch coat, stucco brown coat) must be applied, or where the surface is too smooth, dense, or non-absorbent to receive the air barrier or stucco components, install furred or self-furred lath as specified by the design professional. Verify adequacy of lath attachment with respect to design wind pressures. Do not install stucco over unprepared substrates or any substrate where adhesion is in question. (Note: where metal lath is used Sto Flexyl or Sto Watertight Coat may be installed over the stucco brown coat as an air/moisture barrier with proper integration of other air barrier materials).

3.3 INSTALLATION

A. 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.

B. Install materials only when surface and ambient temperature are minimum 40 degrees F (4 degrees C) and rising during application and drying period and below 100 degrees F (38 degrees C). Install air barrier material to dry or damp surfaces (no standing or glistening water).

C. Mix, apply, store, and handle materials in accordance with manufacturer's written instructions.

D. Rough Opening Protection:

1. Install Sto RapidGuard over wood buck and lap onto Sto ExtraSeal minimum 2 inches (51 mm). Do not install Sto ExtraSeal over Sto RapidGuard. Limit extension of Sto RapidGuard to coincide with ends of expanded flange accessories. Refer to Sto Guide Detail 65c.25.

E. Skim Coat

1. Concrete – install one coat of Sto ExtraSeal by trowel in a uniform, continuous application at nominal1/8 inch (3 mm) thick. Do not install over working or moving joints or joint sealants.

2. Concrete Masonry – install one liberal coat of Sto ExtraSeal in a uniform, continuous application by trowel at 1/16-1/8 inch (1.6-3 mm) thick. Surface must be free of voids and pinholes when dry. Final application must not show CMU surface texture or joints. Do not install over working or moving joints or joint sealants.

F. Transitions

1. Install air barrier accessory material or auxiliary material at transition areas: 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. Refer to Sto Guide Details 65c.xx. Limit extension of transition materials to limit of expanded flange accessories at stucco terminations.

G. Stucco Accessories

1. Install stucco accessories – casing beads, expansion and control joints – over air barrier with appropriate fasteners into supporting construction as required by ASTM C926.

H. Scratch Coat

1. Scratch coat: apply an approximate 14 inch (6 mm) scratch coat of Sto ExtraSeal by trowel minimum 24 hours after the skim coat application is dry. Scratch the surface horizontally with a stucco rake tool.

I. Brown Coat

1. Brown coat: allow scratch coat to dry minimum 24 hours and install stucco brown coat in accordance with applicable codes and manufacturer's requirements. Limit total thickness, including Sto ExtraSeal skim coat and scratch coat, and stucco brown coat, to 5/8 inches (16 mm) maximum. Moist cure the brown coat in accordance with ASTM C926.

J. Crack Defense *(optional, for added crack resistance of the stucco wall surface)*

1. Apply base coat over the moist cured stucco brown coat with appropriate spray equipment or a stainless steel trowel to a uniform thickness of approximately ⅛ inch (3 mm). Work horizontally or vertically in strips of 40 inches (1016mm), and immediately embed the mesh into the wet base coat by troweling from the center to the edge of the mesh. Overlap mesh not less than 2-½ inches (64 mm) at mesh seams and at overlaps of detail mesh. Feather seams and edges. Avoid wrinkles in the mesh. The mesh must be fully embedded so that no mesh color shows through the base coat when it is dry. Re-skim with additional base coat if mesh color is visible. Do not install base coat or mesh over joints or accessories in the stucco wall assembly.

K. Primer Installation

1. StoPrime Hot – Moist cure stucco brown coat for a minimum of 48 hours. Allow stucco to dry an additional 48 hours, then apply primer evenly with brush, roller or proper spray equipment over the clean, dry stucco, and allow to dry. Age of stucco must be minimum 7 days before application of finish.
2. StoPrime Sand – Moist cure stucco brown coat for a minimum of 48 hours. Wait until stucco is 28 days old or the pH level of the surface is below 10 before applying primer. Age of stucco must be minimum 28 days before application of finish or pH must be below 10.
3. StoPrime – Moist cure stucco brown coat for a minimum of 48 hours. Wait until stucco is 28 days old or the pH level of the surface is below 10 before applying primer. Age of stucco must be minimum 28 days before application of finish or pH must be be below 10.

L. Finish Installation

1. Apply finish to primed stucco and foam build-outs when dry. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
    a. Allow 28 day stucco age or check for pH < 10 before applying finish. If StoPrime Hot is used, allow minimum 7 day age of stucco.
    b. Avoid application in direct sunlight.
    c. Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
    d. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
    e. Float “R” (rilled or swirl texture) finishes with a plastic float to achieve their rilled texture
    f. Do not install separate batches of finish side-by-side.
    g. Do not apply finish into or over sealant joints or joint accessories. Apply finish to outside face of wall only.
    h. Do not apply finish over irregular, high pH, or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.

3.4 FIELD QUALITY CONTROL

A. Owner's qualified testing agency or building envelope consultant shall perform inspections and tests.

B. 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.

C. Tests: air barrier materials and assembly are subject to tests to verify compliance with performance requirements:

1. Qualitative air leakage test: ASTM E 1186
2. Quantitative air leakage test: ASTM E 779, ASTM E 783, and ASTM E 1827
3. Adhesion test: ASTM D 4541

IMPORTANT: For direct applications to concrete establish testing frequency to verify adhesion to prepared substrates as determined by design professional.

4. Qualitative adhesion and compatibility testing: wet sealant manufacturer's field quality control adhesion test

D. Repair non-conforming substrates and air barrier material installation to conform with project requirements.

E. 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.

3.5 PROTECTION

A. Provide protection of installed materials from water infiltration into or behind them.

B. Provide protection of installed materials from dust, dirt, salts, or other surface contamination, precipitation, and freezing.

C. Provide protection of installed primer and finish from dust, dirt, salts, precipitation, freezing and continuous high humidity until fully dry.

3.6 CLEANING, REPAIR AND MAINTENANCE

A. Clean and maintain the stucco finish for a fresh appearance and to prevent water entry into and behind the stucco. Repair cracks, impact damage, spalls or delamination promptly.

B. Maintain adjacent components of construction such as sealants, joints in construction, windows, doors, and flashing, to prevent water entry into the wall assembly.

C. Refer to Sto reStore Repair and Maintenance Guide (reStore Program) for detailed information on stucco restoration – cleaning, repairs, recoating, resurfacing and refinishing, or re-cladding.

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