

*SPEC NOTE: This master specification section includes SPEC NOTES for information purposes and to assist the design/construction professional in making appropriate decisions. A SPEC NOTE always immediately precedes the text to which it is referring. This specification Section serves only as a guideline for StoPowerwall ci and should be edited with deletions and additions to meet specific project requirements.*

*SPEC NOTE: The incorporation of components indicated in this Section within the wall assembly are not intended to correct faulty design, workmanship, or faulty components of construction such as leaky windows or window installations. As with any exterior wall assembly the proper detailing and integration of components to direct water to the exterior, in particular, the proper use and integration of flashing, is essential.*

*SPEC NOTE: StoPowerwall ci is a foam plastic-based wall assembly consisting of continuous insulation, fluid-applied air/moisture barrier, sheathing membrane, drainage mat, metal lath, portland cement stucco, and acylic-based texture finish coat. It is limited to use on combustible construction and non fire-resistive rated wall assemblies unless approved through analysis.*

## PART 1 GENERAL

### 1.1 SUMMARY

- .1 This section includes materials and installation of exterior stucco with continuous insulation, air/moisture barrier, sheathing membrane, and drainage mat over frame walls.

### 1.2 RELATED SECTIONS

- .1 Section 03 30 00 Cast-In-Place Concrete
- .2 Section 04 20 00 Unit Masonry
- .3 Section 06 16 00 Sheathing
- .4 Section 07 26 00 Vapour Retarders
- .5 Section 07 27 00 Air Barriers
- .6 Section 07 50 00 Membrane Roofing
- .7 Section 07 62 00 Sheet Metal Flashing and Trim
- .8 Section 07 92 00 Joint Sealants
- .9 Section 08 40 00 Entrances, Storefronts, and Curtain Walls
- .10 Section 08 50 00 Windows
- .11 Section 09 21 16 Gypsum Board Assemblies
- .12 Section 10 14 00 Signage

### 1.3 REFERENCES

- .1 American Iron and Steel Institute
  - .1 AISI S201 North American Standard for Cold-Formed Steel Framing – Product Data
- .2 American Society for Testing and Materials (ASTM):
  - .1 ASTM A641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
  - .2 ASTM A653 Specification for Sheet Steel Zinc coated (Galvanized) by the Hot-Dip Process, Commercial Quality
  - .3 ASTM B69 Specification for Rolled Zinc
  - .4 ASTM C144 Specification for Aggregate for Masonry Mortar
  - .5 ASTM C297 Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
  - .6 ASTM C578 Specification for Preformed, Cellular Polystyrene Thermal Insulation
  - .7 ASTM C847 Standard Specification for Metal Lath
  - .8 ASTM C897 Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
  - .9 ASTM C926 Standard Specification for Application of Portland Cement-Based Plaster
  - .10 ASTM C954 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
  - .11 ASTM C1002 Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
  - .12 ASTM C1063 Standard Specification for Installation of Lathing and Furring for Portland Cement Plaster
  - .13 ASTM C1177 Specification for Glass Mat Gypsum for Use as Sheathing
  - .14 ASTM C1513 Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections
  - .15 ASTM D1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
  - .16 ASTM D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
  - .17 ASTM E84 Test Method for Surface Burning Characteristics of Building Materials

- .18 ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
- .19 ASTM E283 Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- .20 ASTM E330 Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- .21 ASTM E331 Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- .22 ASTM E783 Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
- .23 ASTM E2178 Standard Test Method for Air Permeance of Building Materials
- .24 ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- .25 ASTM G154 Recommended Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials
- .3 Canadian Construction Materials Centre (CCMC)
  - .1 CCMC 04888-L STYROFOAM™, Dow Chemical Canada ULC
  - .2 CCMC 13120-R StoGuard® – Air Barrier Material, Sto Corp.
- .4 Canadian General Standards Board Catalogue (CGSB)
  - .1 CGSB-51.32-M77 Breather Type Sheathing Membrane
- .5 Proprietary Publications
  - .1 StoGuard Air Barrier Installation Manual
- .6 Underwriters Laboratories of Canada (ULC)
  - .1 ULC S701 Annex A Standard for Thermal Insulation, Polystyrene Boards and Pipe Covering

#### 1.4 DESIGN REQUIREMENTS

- .1 Design Professional shall provide sufficient details on drawings to demonstrate compliance with National Building Code Canada Division C Sentence 2.2.5.2 (1)
- .2 Structural (wind and axial loads)
  - .1 Design for maximum allowable deflection, normal to the plane of the wall of L/360
  - .2 Design for wind load in conformance with code requirements

- .3 Metal framing: 1.09 mm (18 gage, 0.043 mils) or heavier, maximum 41 mm (1-5/8 inch) flange width, cold formed steel stud framing in conformance with AISI Standard S201
  - .4 Maximum stud spacing: 400 mm (16 inches) on center
  - .5 Sheathing:
    - .1 Minimum 19 mm (5/8 inch) glass mat faced gypsum sheathing in conformance with ASTM C1177
    - .2 Minimum 11 mm (7/16 inch) OSB or 12.7 mm (1/2 inch) plywood in conformance with NBC Table 9.23.17.2A
  - .6 Air Barrier: listed by CCMC as an air barrier material
  - .7 Sheathing Membrane: conforms to CGSB-51.32-M77, Breather Type Sheathing Membrane
  - .8 Insulation board: minimum 25 mm (1 inch), maximum 51 mm (2 inch) XPS (extruded polystyrene) insulation board in conformance with ULC S701 Type 4 requirements.
  - .9 Drainage mat: maximum 6 mm (1/4 inch) thick tangled filament nylon core with fabric facing
  - .10 Metal Lath: minimum 1.4 kg /m<sup>2</sup> (2.5 lb/yd<sup>2</sup>) self-furred galvanized steel diamond mesh metal lath in conformance with ASTM C 847
  - .11 Lath fasteners and plates: corrosion resistant fasteners in conformance with AISI Standard S201 and ASTM C1513 with minimum three thread penetration beyond steel framing members, minimum 25 mm (1 inch) penetration into wood framing, and minimum 32 mm (1-1/4 inch) corrosion resistant lath plates, with minimum fastener size and length of,
    - .1 #8 x 76 mm (3 inch) for 25 mm (1 inch) insulation board thickness
    - .2 #10 x 89 mm (3-1/2 inches) for 38 mm (1-1/2 inch) insulation board thickness
    - .3 #10 x 102 mm (4 inch) for 2 inch (50 mm) insulation board thickness
  - .12 Lath fastener spacing: maximum 150 mm (6 inches) vertically along studs
  - .13 Stucco: minimum 19 mm (3/4 inch) or 22 mm (7/8 inch) portland cement stucco in conformance with ASTM C926 of uniform thickness applied in two coats, scratch and brown coat.
- .3 Moisture Control
- .1 Prevent the accumulation of water into or behind the stucco, either by condensation or leakage into the wall construction, in the design and detailing of the wall assembly:
    - .1 Provide corrosion resistant flashing to protect exposed elements and to direct water to the exterior, including, above window and door heads, beneath window and door sills, at floor lines, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.

- .2 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.
  - .3 Vapour 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 vapour diffusion and condensation. Adjust wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapour retarders on the interior side of the wall in warm, humid climates.
  - .4 Provide StoGuard Air/MoistureBarrier over sheathing.
  - .5 At through wall expansion joints and at joints formed with back-to-back casing beads, back joints with StoGuard Transition Membrane. Refer to Sto Guide Details at [www.stocorp.ca](http://www.stocorp.ca).
  - .6 Seal stucco terminations and accessory butt joints with appropriate sealant. Seal all penetrations through the stucco wall assembly with appropriate sealant, or backer rod and sealant, as dictated by joint type.
- .4 Grade Condition
- .1 Do not specify stucco for use below grade or on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Provide minimum 200 mm (8 inch) clearance above finished ground level.
- .5 Sloped surfaces, Including Foam Trim and Projecting Architectural Features Attached to Stucco
- .1 Avoid the use of stucco on build-outs or weather exposed sloped and horizontal surfaces (see below).
  - .2 Build out trim and projecting architectural features from the stucco wall surface with code compliant EPS foam. All foam trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All foam horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 50 mm (2 inches) from the face of the wall plane, protect the top surface with waterproof base coat. Limit foam thickness to a maximum of 165 mm (6-1/2 inches). Periodic inspections and increased maintenance may be required to maintain surface integrity of finishes on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and to minimize maintenance burden. Refer to Sto Guide Details at [www.stocorp.ca](http://www.stocorp.ca)
  - .3 Do not use foam on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing. Refer to Sto Guide Details at [www.stocorp.ca](http://www.stocorp.ca)
- .6 Joints and Accessories
- .1 Provide two piece expansion joints in the stucco system where building movement is anticipated: at joints in the substrate or supporting construction,

where the system is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, at columns and cantilevered areas.

- .2 Provide one piece expansion joints every 13 m<sup>2</sup> (144 ft<sup>2</sup>). Cut and wire tie lath to the expansion joint accessory so lath is discontinuous at or beneath the accessory. Do not exceed length to width ratio of 2-1/2:1 in expansion joint layout and do not exceed more than 5.5 m (18 feet) in any direction without an expansion joint. Where casing bead is used back-to-back as the expansion joint, back the joint with StoGuard Transition Membrane.
  - .3 Provide one piece expansion joints at through wall penetrations, for example, above and below doors or windows.
  - .4 Provide minimum 9 mm (3/8 inch) wide joints where the system abuts windows, doors and other through wall penetrations.
  - .5 Provide appropriate accessories at stucco terminations and joints.
  - .6 Avoid the use of channel reveal accessories which can interfere with proper drainage and proper stress relief.
  - .7 Provide appropriate sealant at stucco terminations and at stucco accessory butt joints.
  - .8 Indicate location of joints, accessories and accessory type on architectural drawings.
- .7 Fire Protection
- .1 Provide a code compliant thermal barrier, typically minimum 12.7 mm (½ inch) thick interior gypsum wall board mechanically fastened to supports other than the insulation, to separate foam plastic insulation from interior spaces.
  - .2 For non-combustible construction analysis is required for approval.
  - .3 For fire-resistance rated walls analysis is required for approval.
- .8 Stucco Thickness (does not include primer or textured finish coat)
- .1 Application to Metal Plaster Bases: stucco thickness shall be at 19 or 22 mm (¾ or 7/8 inch). Stucco thickness shall not exceed 22 mm (7/8 inch).
  - .2 Stucco shall be applied in 2 coats, scratch and brown coat, to achieve the prescribed thickness.
  - .3 Thickness shall be uniform throughout the wall area.

## 1.5 PERFORMANCE REQUIREMENTS

- .1 Continuous Insulation
  - .1 Compliant with ULC S701 Type 4 requirements.
- .2 Fluid Applied Air and Moisture Barrier
  - .1 Evaluated by CCMC as an air barrier material
  - .2 Material Air Leakage Resistance, ASTM E2178: less than 0.02 L/s·m<sup>2</sup> at 75 Pa (0.004 cfm/ft<sup>2</sup> at 1.57 psf)

- .3 Assembly Air Leakage Resistance, ASTM E2357: less than 0.2 L/s·m<sup>2</sup> at 75 Pa (0.04 cfm/ft<sup>2</sup> at 1.57 psf)
- .4 Tensile Adhesion, ASTM C297:
  - .1 Gypsum Sheathing, exceeds strength of substrate
  - .2 Plywood, > 590 kPa (85 psi)
  - .3 OSB, > 206 kPa (30 psi)
- .5 VOC, calculation:
  - .1 Less than 100 g/L
- .3 Drainage Mat
  - .1 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
- .4 Stucco Base
  - .1 Stucco scratch and brown coat material in compliance with ASTM C926

*SPEC NOTE: Select one of the following primer options, and delete the primers not required on the project.*

- .5 Primers
  - .1 Alkaline Resistant Primer for freshly placed (minimum 4 day old) stucco surfaces:
    - .1 Resistant to alkaline surfaces with pH of 13 or less
    - .2 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
    - .3 VOC: less than 50 g/L
  - .2 Acrylic Primer for fully cured (minimum 28 day old or pH less than 10) stucco surfaces:
    - .1 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
    - .2 VOC: less than 50 g/L

*SPEC NOTE: Select one of the following finish options, and delete the finishes not required on the project.*

- .6 Finishes
  - .1 Lotus-Effect Technology Finish (Stolit Lotusan)
    - .1 Super-hydrophobic textured finish with Lotus-Effect Technology
    - .2 Accelerated Weathering, ASTM G154: 2500 hours, no blistering, checking cracking, crazing, or other deleterious effects
    - .3 Water Vapour Permeability, ASTM E96, Method B: >1172 ng/(Pa·s·m<sup>2</sup>), [30 US perms]

- .4 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
- .5 VOC: less than 50 g/L
- .2 Acrylic Elastomeric Finish (Stolit MAX)
  - .1 Water Vapour Permeability, ASTM E96, Method B:  $> 287 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$ , [5 US perms]
  - .2 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
  - .3 VOC: less than 50 g/L
- .3 Flexible Acrylic Finish (Sto Powerwall)
  - .1 Accelerated Weathering, ASTM G154: 2000 hours, no blistering, checking cracking, crazing, or other deleterious effects
  - .2 Water Vapour Permeability, ASTM E96, Method B:  $> 1861 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$ , [15 US perms]
  - .3 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
  - .4 VOC: less than 50 g/L
- .4 Acrylic Finish (Stolit, Stolit X, Sto Essence DPR)
  - .1 Accelerated Weathering, ASTM G154 or G 155: 2000 hours, no blistering, checking cracking, crazing, or other deleterious effects
  - .2 Water Vapour Permeability, ASTM E96, Method B:  $> 572 \text{ ng}/(\text{Pa}\cdot\text{s}\cdot\text{m}^2)$ , [10 US perms]
  - .3 Surface Burning, ASTM E84: Flame Spread less than 25, Smoke Developed less than 450
  - .4 VOC: less than 50 g/L
- .5 Acrylic Finish (Sto Element)
  - .1 Accelerated Weathering, ASTM G155: 2000 hours, no blistering, checking cracking, crazing, or other deleterious effects
  - .2 VOC: less than 50 g/L

## 1.6 SUBMITTALS

- .1 Manufacturer's guide specifications, guide details, installation instructions and product data.
- .2 Manufacturer's CCMC evaluation report for fluid applied air and moisture barrier
- .3 Manufacturer's standard warranty
- .4 Samples for approval as directed by architect or owner
- .5 Fastener manufacturer's pull-out or withdrawal capacity testing for frame construction



- .6 Prepare and submit project-specific details (when required by contract documents)

## 1.7 QUALITY ASSURANCE

- .1 Manufacturer requirements
  - .1 Stucco and air barrier products manufacturer for a minimum of twenty five (25) years.
  - .2 Stucco finish products and air/moisture barrier products manufactured under ISO 9001:2008 Quality System and 14001:2004 Environmental Management System.
- .2 Contractor requirements
  - .1 Licensed, insured and engaged in application of portland cement stucco for a minimum of three (3) years.
  - .2 Knowledgeable in the proper use and handling of Sto materials.
  - .3 Employ skilled mechanics who are experienced and knowledgeable in portland cement stucco application, and familiar with the requirements of the specified work.
  - .4 Successful completion of minimum of three (3) projects of similar size and complexity to the specified project.
  - .5 Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with Sto's published specifications and details and the project plans and specifications.
- .3 Insulation board manufacturer requirements
  - .1 Maintain current listing by CCMC or other recognized evaluation agency.
  - .2 Label insulation board with information required by the applicable building code.

*SPEC NOTE: Mock-ups establish quality of work and sequence of installation for the materials indicated in this Section. Delete the following paragraph if the scope of work in this section is minimal and a mock-up is not required. Add or delete tests consistent with the size and scope of the project and an appropriate level of field quality control.*

- .4 Testing
  - .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 E283, ASTM E331 and ASTM E330, 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 air barrier adhesion testing in accordance with ASTM D4541.
  - .3 Conduct air barrier assembly testing in accordance with ASTM E783.
  - .4 Verify adequacy of pull-out or withdrawal capacity of fasteners used for frame construction with manufacturer in relation to negative design wind pressures.

- .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 Conduct wet sealant adhesion testing in accordance with sealant manufacturer's field quality control test procedure.
- .7 Notify design professional minimum 7 days prior to testing.
- .5 Inspections
  - .1 Provide independent third party inspection where required by code or contract documents.
  - .2 Conduct inspections in accordance with code requirements and contract documents.

## 1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- .2 Protect insulation materials from prolonged UV exposure, keep away from sources of heat, sparks, flame, flammable or volatile materials. Store on a clean, flat surface, off the ground in a dry area.
- .3 Protect coatings (pail products) from freezing and temperatures in excess of 32° C (90°F). Store away from direct sunlight.
- .4 Protect portland cement-based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
- .5 Handle all products as directed on labeling.

## 1.9 PROJECT/SITE CONDITIONS

*SPEC NOTE: Weather conditions affect application, drying time and curing requirements. Hot or dry conditions limit working time and accelerate drying and may require adjustments in application, scheduling and curing 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.*

- .1 Maintain ambient and surface temperatures above 10°C (50°F) during application and for 48 hours after set of stucco, air/moisture barrier, and finish materials.
- .2 Provide supplementary heat for installation in temperatures less than 50°F (10°C) such that material temperatures are maintained as in 1.9.1. Prevent concentration of heat on uncured stucco and vent fumes and other products of combustion to the outside to prevent contact with stucco.
- .3 Prevent uneven or excessive evaporation of moisture from stucco during hot, dry or windy weather. For installation under any of these conditions provide special measures to properly moist cure the stucco. Do not install stucco if ambient temperatures are expected to rise above 38°C (100°F) within a 24 hour period.

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

#### 1.10 COORDINATION/SCHEDULING

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

- .1 Protect continuous insulation from prolonged UV exposure. Protect with wall covering within 60 days of installation.
- .2 Protect sheathing from climatic conditions to prevent weather damage until the installation of the air/moisture barrier.
- .3 Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
- .4 Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier and continuous moisture protection. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing. Coordinate installation of air/moisture barrier components with window and door installation to provide weather proofing of the structure and to prevent moisture infiltration and excess air infiltration.
- .5 Install window and door head flashing immediately after windows and doors are installed.
- .6 Protect air/moisture barrier with stucco cladding within 180 days of installation.
- .7 Protect drainage mat with stucco cladding within 30 days of installation.
- .8 Commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the walls to prevent excessive deflection (and potential cracking) of the stucco.
- .9 Sequence interior work such as drywall installation prior to stucco installation to prevent stud distortion (and potential cracking) of the stucco.
- .10 Provide site grading such that the stucco terminates with a clearance of minimum 200 mm (8 inches) above finished ground level.
- .11 Install copings and sealant immediately after installation of the stucco and when finish coatings are dry.
- .12 Attach penetrations through stucco to structural support and provide air tight and water tight seals at penetrations.

#### 1.11 WARRANTY

- .1 Provide manufacturer's standard warranty.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- .1 Air/Moisture Barrier, Drainage Mat, Portland Cement Stucco, Stucco Primers, and Stucco Finishes
  - .1 Continuous insulation stucco system specified herein is by:
  - .2 Sto Canada Ltd.
  - .3 1821 Albion Road
  - .4 Unit 1-2
  - .5 Etobicoke, ON M9W 5W8
  - .6 Phone: (800) 221-2397
  - .7 URL: [www.stocorp.ca](http://www.stocorp.ca)

### 2.2 AIR/MOISTURE BARRIER

- .1 StoGuard-- fluid applied air/moisture barrier for sheathing, concrete, and concrete masonry substrates consisting of multiple compatible components:
  - .1 Sto Gold Fill -- ready mixed acrylic-based flexible joint treatment for rough opening protection, joint treatment of wall sheathing, CMU crack repair, and detail component for shiplap connections with flashing, weep screed, and similar ship lap details.
  - .2 Sto Gold Coat -- ready mixed flexible waterproof coating for wall sheathing, concrete and CMU wall surfaces
  - .3 StoGuard Mesh-- nominal 142 g/m<sup>2</sup> (4.2 oz/yd<sup>2</sup>), self-adhesive, flexible, symmetrical, interlaced glass fibre mesh, with alkaline resistant coating for compatibility with Sto materials, used with Sto Gold Fill to reinforce rough openings, inside and outside corners, sheathing joints, and detail component for shiplap connections with flashing, weep screed, and similar ship lap details
  - .4 StoGuard Fabric – nonwoven cloth reinforcement used with Sto Gold Coat for rough opening protection, joint treatment of wall sheathing, and detail component for shiplap connections with flashing, weep screed, and similar ship lap details
  - .5 StoGuard RediCorner – a preformed fabric piece used in the corners of rough openings in tandem with StoGuard Fabric for quicker installation
  - .6 StoGuard Tape – self adhering rubberized asphalt tape for rough opening protection in wood or metal frame construction
  - .7 StoGuard Primer – primer for use with StoGuard Tape
  - .8 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.

- .9 Sto RapidGuard – one component quick drying waterproof air barrier material for rough opening protection, sheathing joints, CMU crack repair, and for sealing fish mouths, wrinkles, seams, gaps, holes, or other voids in StoGuard air barrier materials. Also used as a detail component for shiplap connections to flashing, weep screed, and similar ship lap details

*SPEC NOTE: Continuous insulation component supplied by others.*

### 2.3 CONTINUOUS INSULATION

- .1 Dow STYROFOAM™ XPS rigid insulation board in compliance with ULC S701 Type 4 requirements (See CCMC RR 04888-L)

### 2.4 SPRAY FOAM ADHESIVE, CI SEAM AND GAP FILLER

- .1 Sto TurboStick – single component polyurethane spray foam adhesive for attaching foam insulation and filling seams and gaps in insulation board surface.

*SPEC NOTE: Sheathing membrane component supplied by others.*

### 2.5 SHEATHING MEMBRANE

- .1 Sheet material in compliance with CGSB-51.32-M77, Breather Type Sheathing Membrane

*SPEC NOTE: Some building code jurisdictions require a 3/8" (10 mm) drainage gap. Check applicable code and select Sto DrainScreen 10mm where required.*

### 2.6 DRAINAGE MAT

- .1 Sto DrainScreen 6mm – nominal ¼" (6 mm) tangled filament nylon core drainage mat with fabric facing.
- .2 Sto DrainScreen 10mm – nominal 3/8" (10 mm) tangled filament nylon core drainage mat with fabric facing.

*SPEC NOTE: Metal lath is susceptible to corrosion in coastal environments. Provide weather protection to prevent moisture entry into wall construction as outlined in Design Requirements Section 1.4.3. Consider the use of stainless steel lath for coastal environments. Exercise care when attaching metal lath and accessories through the sheathing membrane so that fasteners go into [not between] framing supports. Do not use power, powder-actuated or other fastening tools/methods that can damage the sheathing, air barrier, sheathing membrane, or CI.*

*SPEC NOTE: Metal lath component supplied by others.*

### 2.7 LATH

- .1 Minimum 1.4 kg/m<sup>2</sup> (2.5 lb./yd<sup>2</sup>) self-furred galvanized steel diamond mesh metal lath in compliance with ASTM C 847

*SPEC NOTE: Pull-out or withdrawal capacity of the selected fastener must be verified with respect to anticipated wind load, desired safety factor and building code requirements. Consult applicable code*

*compliance report for specific assemblies and fastening schedules or conduct project specific testing to verify compliance with design wind pressure requirements.*

*SPEC NOTE: Fastener components supplied by others.*

## 2.8 MECHANICAL FASTENERS FOR METAL LATH

- .1 Non-corroding fasteners in compliance with AISI S200 and ASTM C954, ASTM C1002, or ASTM C1513 with minimum 32 mm (1-1/4 inch) corrosion resistant lath plates:
  - .1 Wood Framing--minimum #10 Type S wafer head fully threaded corrosion resistant screws with minimum 25 mm (1 inch) penetration into studs.
  - .2 Steel Framing – corrosion resistant fasteners and plates with minimum three thread penetration beyond steel framing members, and with minimum fastener size and length of,
    - .1 #8 x 76 mm (3 inch ) for 25 mm (1 inch) insulation board thickness
    - .2 #10 x 89 mm (3-1/2 inches) for 38 mm (1-1/2 inch) insulation board thickness
    - .3 #10 x 102 mm (4 inch) for 51 mm (2 inch) insulation board thickness
- .2 Tie Wire – 18 gauge galvanized and annealed low-carbon steel in compliance with ASTM A 641 with Class I coating.

*SPEC NOTE: Metal accessories are susceptible to corrosion in coastal environments. Consider the use of zinc alloy accessories in these environments. Metal corner beads with solid metal noses are susceptible to corrosion in exposed exterior applications. Consider the use of several layers of woven-wire mesh or other corner accessories in lieu of corner bead and completely encase the metal in stucco. Care must be taken when attaching metal lath or other wall assembly components so that fasteners go into (not between) framing supports. Powder actuated or other fastening devices that can damage the sheathing, air barrier, sheathing membrane, or CI should be avoided. CAUTION: AVOID THE USE OF CHANNEL REVEAL ACCESSORIES THAT INTERFERE WITH PROPER DRAINAGE OR STRESS RELIEF.*

*SPEC NOTE: Accessories supplied by others.*

## 2.9 ACCESSORIES

- .1 Weep screed, casing bead, corner bead, corner lath, expansion and control joint accessories. All accessories shall meet the requirements of ASTM C1063 and its referenced documents
  - .1 Zinc in compliance with ASTM B69.
  - .2 Galvanized metal in compliance with ASTM A653 with G60 coating.
- .2 All accessories shall have perforated or expanded flanges and shall be designed with grounds for the specified thickness of stucco.

*SPEC NOTE: Job mixed ingredients supplied by others.*

## 2.10 JOB MIXED INGREDIENTS

- .1 Water: clean and potable.
- .2 Sand: in compliance with ASTM C897 or ASTM C144, for use with one coat and ASTM C926 stucco concentrates

## 2.11 STUCCO

- .1 Pre-blended portland cement-based scratch and brown coat stucco in conformance with ASTM C926 as furnished by Basalite® Concrete Products

## 2.12 FOAM TRIM AND BUILD-OUTS

*SPEC NOTE: Select one of the following adhesive/base coat options, and delete the adhesives/base coats not required on the project.*

- .1 Adhesive and Base Coat
  - .1 Sto BTS Xtra – light weight one component polymer modified cement-based extra high build base coat material
  - .2 Sto BTS Plus – one component polymer modified cement-based high build base coat material
  - .3 Sto Primer/Adhesive-B – one component polymer modified cement-based base coat material
  - .4 Sto Primer/Adhesive – two component acrylic-based base coat material field mixed with portland cement
  - .5 Sto RFP – ready mixed non-cementitious fibre reinforced base coat material
  - .6 Sto Flexyl – two component fibre reinforced acrylic-based waterproof base coat material field mixed with portland cement (for use as a waterproof base coat to waterproof foundations, parapets, splash areas, trim and other projecting architectural features).

*SPEC NOTE: Minimum required thickness of foam insulation trim is 25 mm (1 inch) and maximum allowable thickness is typically 165 mm (6-1/2 inches).*

- .2 Foam Insulation Board for Trim
  - .1 Sto EPS Insulation Board--nominal 16 kg/m<sup>3</sup> (1.0 lb/ft<sup>3</sup>) Expanded Polystyrene (EPS) Insulation Board in compliance with ULC S701 Annex A
- .3 Reinforcing Mesh
  - .1 Sto Mesh--nominal 153 g/m<sup>2</sup> (4.5 oz./yd<sup>2</sup>) symmetrical, interlaced open-weave glass fibre mesh treated with alkaline resistant coating for compatibility with Sto materials
  - .2 Sto Detail Mesh--nominal 143 g/m<sup>2</sup> (4.2 oz./yd<sup>2</sup>) flexible, symmetrical, interlaced open-weave glass fibre fabric treated with alkaline resistant coating for compatibility with Sto materials (used for standard foam backwrapping and aesthetic detailing).

*SPEC NOTE: Crack Defense is optional. Delete this section if not deploying crack defense.*

*SPEC NOTE: If deploying crack defense select one of the following crack defense base coat options, and delete the base coats not required on the project.*

## 2.13 CRACK DEFENSE

### .1 Base Coat

- .1 Sto BTS Xtra – light weight one component polymer modified cement-based extra high build base coat material
- .2 Sto BTS Plus – one component polymer modified cement-based high build base coat material
- .3 Sto Primer/Adhesive-B – one component polymer modified cement-based base coat material
- .4 Sto Primer/Adhesive – two component acrylic-based base coat material field mixed with portland cement
- .5 Sto RFP – ready mixed non-cementitious fibre reinforced base coat material
- .6 Sto Flexyl – two component fibre reinforced acrylic-based waterproof base coat material field mixed with portland cement (for use as a waterproof base coat to waterproof foundations, parapets, splash areas, trim and other projecting architectural features).

### .2 Reinforcing Mesh

- .1 Sto Mesh – nominal 153 g/m<sup>2</sup> (4.5 oz./yd<sup>2</sup>) symmetrical, interlaced open-weave glass fibre mesh made with alkaline resistant coating for compatibility with Sto materials.

*SPEC NOTE: Priming is recommended to provide uniform substrate absorption and finish colour, to improve adhesion and water resistance, and to retard efflorescence. Sto Hot Prime may be applied 48 hours after moist curing the brown coat. Other Sto primers require 28 days curing of brown coat or pH less than 10 before application.*

*SPEC NOTE: Select one of the following primer options, and delete the primers not required on the project.*

## 2.14 PRIMER

- .1 Sto Hot Prime – acrylic-based primer/sealer for freshly placed (minimum 4 day old) and high pH stucco surfaces.
- .2 Sto Primer Sand – acrylic-based tinted, sanded primer for fully cured (minimum 28 day old or pH less than 10) stucco surfaces.
- .3 Sto Primer Smooth – acrylic-based tinted primer for fully cured (minimum 28 day old or pH less than 10) stucco surfaces.

*SPEC NOTE: Select one of the following finish options, and delete the finishes not required on the project.*



## 2.15 FINISH COAT

- .1 Stolit Lotusan Finish – integrally coloured, factory blended textured Lotus-Effect Technology wall finish with graded marble aggregate
- .2 Stoli MAX – integrally coloured, factory blended, elastomeric textured wall finish with graded marble aggregate
- .3 StoPowerwall Finish – integrally coloured, factory blended, flexible acrylic textured wall finish with graded marble aggregate.
- .4 Stolit Finish – integrally coloured, factory blended, acrylic textured wall finish with graded marble aggregate
- .5 Stolit X Finish – integrally coloured, factory blended, acrylic textured wall finish with graded marble aggregate and enhanced polymer technology for easy spread and float application
- .6 Sto Essence DPR Finish – integrally coloured, factory blended, acrylic textured wall finish with graded marble aggregate
- .7 Sto Element - integrally coloured, factory blended, acrylic textured wall finish with graded marble aggregate

## 2.16 MIXING

- .1 StoGuard
  - .1 Sto Gold Fill – mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin, or dilute with water.
  - .2 Sto Gold Coat – mix with a clean, rust-free electric drill and paddle to a uniform consistency. Do not thin, or dilute with water.
- .2 Portland Cement Stucco
  - .1 Refer to mix instructions on packaging. USE ONLY THE AMOUNT OF WATER NECESSARY FOR A WORKABLE MIX. Use of excess water is detrimental to performance.
- .3 Adhesive and Base Coats for Sto Crack Defense and Foam Build-outs:
  - .1 Refer to applicable Sto Product Bulletin for selected adhesive/base coat material(s).
- .4 Primer--mix with a clean, rust-free high speed mixer to a uniform consistency.
- .5 Finish--mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water (up to 0.4 L [12 ounces]) may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.
- .6 Mix only as much material as can readily be used.
- .7 Do not add lime, anti-freeze compounds, or other additives to any of the materials.

## PART 3 EXECUTION

### 3.1 ACCEPTABLE INSTALLERS

- .1 Pre-qualify under Quality Assurance requirements of this specification (section 1.7.2).

### 3.2 CONTINUOUS INSULATION INSTALLATION

- .1 Attach insulation boards to open framing with corrosion resistant bugle head metal screws and 32 mm (1-1/4 inch) metal lath locks or other corrosion resistant cap fastener. Use only enough fasteners (typically 3 per board mid-span) to temporarily hold the board in place (sheathing attachment is intended to permanently hold it in place).
- .2 Attach in courses with vertical joints staggered.
- .3 Cut insulation board in an “L” shape around openings. Tightly abut insulation board joints and interlock inside and outside corners. Trim or rasp board flush for square corners.
- .4 Seal gaps or open joints with Sto TurboStick spray foam and rasp or shave flush with surface.
- .5 Do not allow insulation board to be exposed to weather from more than 60 days.

*SPEC NOTE: Sheathing attachment can determine ultimate wind load resistance of the assembly. Verify sheathing attachment meets design wind pressure requirements in accordance with the applicable building code and/or by project specific testing. Wood-based sheathing must be gapped 3mm (1/8 inch) at edge and end joints to prevent cracking in the stucco.*

### 3.3 SHEATHING INSTALLATION

- .1 Install sheathing in courses over the continuous insulation to permanently hold the insulation boards in place. Install immediately following or in tandem with the continuous insulation.
- .2 Abut gypsum sheathing joints. Gap wood sheathing 3 mm (1/8 inch) at joints.
- .3 Install in compliance with applicable code and sheathing manufacturer's instructions, except: offset sheathing joints from continuous insulation board joints by a minimum of 150 mm (6 inches). Support all vertical joints with studs, and use #8 or #10 corrosion resistant screw fasteners with minimum three thread penetration into metal studs, minimum 25 mm (1 inch) penetration into wood studs. Space fasteners no greater than 200 mm (8 inches) on center along framing members for gypsum sheathing. Space fasteners in accordance with NBC requirements for wood sheathing.

### 3.4 EXAMINATION

- .1 Inspect sheathing surfaces for:
  - .1 Damage and deterioration.
  - .2 Moisture damage—record any areas of moisture damage.

- .2 Inspect sheathing application for compliance with applicable requirement:
  - .1 Glass Mat Faced Gypsum Sheathing in compliance with ASTM C1177:
    - .1 Refer to manufacturer's instructions and/or CCMC evaluation report
    - .2 Ensure gypsum sheathing joints are butted
  - .2 Wood-based Sheathing - OSB or plywood
    - .1 Refer to NBC Table 9.23.17.2A
    - .2 Ensure wood-based sheathing joints are gapped 3 mm (1/8 inch)
  - .3 Verify attachment and installation conform with NBC requirements to resist design wind pressures.
- .3 Report deviations from the requirements of project specifications, or building code, or other conditions that might adversely affect the air/moisture barrier, CI, or stucco installation to the General Contractor. Do not proceed with air/moisture barrier or stucco installation until deviations are corrected.

### 3.5 SURFACE PREPARATION

- .1 Sheathing
  - .1 Remove surface contaminants and replace damaged sheathing.
  - .2 Installed sheathing must be clean, dry and free from damage, holes (other than those for through-wall penetrations), frost, and all bond-inhibiting materials. Should gaps in sheathing exceed 3 mm (1/8 inch) up to 12.7 mm (1/2 inch) wide, use Sto RapidGuard to fill joints, or apply low expanding urethane foam into joints and rasp or shave flush with sheathing surface in preparation for installation of StoGuard joint treatment.
  - .3 Spot surface defects in sheathing and any over-driven fasteners with joint treatment (Sto Gold Fill, Sto RapidGuard).

### 3.6 AIR/MOISTURE BARRIER INSTALLATION

*SPEC NOTE: The air/moisture barrier installation described below is one component of the air barrier assembly for the building envelope and the moisture protection of the wall construction. Installation of the air/moisture barrier must be integrated with other air and moisture barrier components in the construction. This requires coordination with other trades to ensure proper sequencing of work, to achieve air barrier continuity, and to direct rain water to the exterior, not into the wall assembly. Always protect rough openings in wall construction BEFORE installing windows, doors, louvers, etc. Where water is likely to penetrate the wall assembly, such as windows, flashing must be installed to direct water to the exterior at the leak source. Refer to Sto Guide Details as needed.*

*SPEC NOTE: Windows and doors are typically installed immediately following installation of the air/moisture barrier and work should be sequenced accordingly. Consult with window manufacturer for installation requirements to maintain air barrier continuity and for head, jamb and sill flashing, and perimeter sealant requirements needed to prevent leaks into the wall assembly.*

**SPEC NOTE: DO NOT ALLOW AIR/MOISTURE BARRIER INSTALLATION TO REMAIN EXPOSED MORE THAN 180 DAYS. PROTECT WITH SHEATHING MEMBRANE AND STUCCO WALL COVERING PROMPTLY AFTER INSTALLATION.**

- .1 The following instructions are applicable to glass mat gypsum sheathing and wood-based sheathing:
- .2 Transition Detailing with StoGuard Transition Membrane

At floor line deflection joints up to 25 mm (1 inch) wide, stucco expansion joints formed with back-to-back casing beads, and static joints and transitions such as: sheathing to foundation, dissimilar materials (i.e., CMU to frame wall), flashing shingle-lap transitions, and wall to balcony floor slab or ceiling:

- .1 Apply waterproof coating (Sto Gold Coat) liberally to properly prepared surfaces with brush, roller, or spray.
- .2 Place pre-cut lengths of StoGuard Transition Membrane centred over the transition in the wet coating. At changes in plane crease the membrane and similarly place the membrane material in the wet coating. At floor line deflection joints achieve a slightly concave profile (recessed into the joint) of the membrane.
- .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 50 mm (2 inches) at ends and adhere lap seams together with coating. Shingle lap vertical seams and vertical to horizontal intersections with minimum 50 mm (2 inch) overlap.
- .6 At movement joints up to 25 mm (1 inch) wide with up to 50% movement such as masonry control joints, and through wall joints in masonry or frame construction:
- .7 Insert backer rod sized to friction fit in the joint (diameter 25% greater than joint width).
- .8 Recess the backer rod 12.7 mm (1/2 inch).
- .9 Apply the waterproof coating liberally to properly prepared surfaces with brush, roller, or spray along the outer surface on each side of the joint (not in the joint).
- .10 Immediately place the membrane by looping it into the joint against the backer rod surface to provide slack.
- .11 Embed the membrane in the wet coating along the outer surface on the sides of the joint by top coating with additional coating material and applying pressure with a brush or roller.
- .12 For all applications, after the membrane installation is complete and the waterproof coating is dry:
- .13 Apply a final liberal coat of the waterproof coating to all top horizontal edges on walls to ensure waterproofing integrity. Similarly apply coating at all edges on balcony floor slabs.
- .14 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.

- .15 Seal gaps, holes, and complex geometries at three dimensional corners with StoGuard RapidFill or StoGuard RapidSeal.
- .3 Transition Detailing with Sto RapidGuard

At flashing shingle laps, and through wall penetrations such as pipes, electrical boxes, and scupper penetrations:

- .1 Flashing leg or penetration flange must be seated flat against the wall surface without gaps. Apply Sto RapidGuard liberally with a caulking gun in a zig-zag pattern across the flashing leg or flange/wall surface seam and spread to a thickness that covers the flange and fastener penetrations, and directs water away from the wall. Extend application minimum 25 mm (1 inch) onto both surfaces (flashing leg/flange and wall surface).
- .2 At through wall penetrations without flanges ensure the penetrating element (i.e., pipe or scupper) is fitted snug against abutting wall surfaces. Apply a fillet bead with a caulking gun around the penetration and tool against both surfaces (penetration and wall surface) to create a bead profile that directs water away from the penetration. Extend application minimum 25 mm (1 inch) onto both surfaces.

*SPEC NOTE: Select 3.6.4.1, 3.6.4.2, or 3.6.4.3 for frame construction; for concrete or concrete masonry rough openings with wood bucks and similar openings with complex 3-dimensional geometry, select 3.6.4.3, Sto RapidGuard*

- .4 Rough Opening Protection
  - .1 Sto Gold Fill with StoGuard Mesh: apply 230 mm (9 inch) wide StoGuard Mesh at rough openings. Immediately apply Sto Gold Fill by spray or trowel over the mesh and spread with a trowel to create a smooth surface that completely covers the mesh (refer to Sto Detail 20.20M).
  - .2 Sto Gold Coat with StoGuard Fabric: apply Sto Gold Coat liberally by spray or roller to corners of openings, immediately place StoGuard RediCorners in the wet coating, and apply additional coating over the RediCorners to completely embed them. After all corners have been completed apply Sto Gold Coat liberally to the entire rough opening, immediately place StoGuard Fabric in the wet coating, smooth any wrinkles with a brush or roller, and apply additional coating over the fabric to completely embed it. Overlap all seams minimum 2 inches (51 mm). Once completed top coat with additional coating as needed to completely seal the surface. Allow to dry and inspect for pinholes or voids. If pinholes or voids are present, seal with additional coating or StoGuard RapidSeal (refer to Sto Detail 20.20F).
  - .3 StoGuard RapidGuard: apply a generous bead with a caulking gun in a zig-zag pattern along the inside and outside surface of the rough opening. Spread with a 150 mm (6 inch) wide plastic drywall knife or spreader tool all the way around the opening (refer to Sto Details 20.20R and 21.20R)

*SPEC NOTE: Select one of the following joint treatment options, and delete the joint treatments not required on the project.*

- .5 Sheathing Joint Treatment

- .1 Sto Gold Fill with StoGuard Mesh: place 100 mm (4 inch) wide mesh centred along sheathing joints and minimum 230 mm (9 inch) wide mesh centred and folded at inside and outside corners. Immediately apply Sto Gold Fill by spray or trowel and spread smooth with a trowel to completely cover the mesh.
  - .2 Sto Gold Coat with StoGuard Fabric: apply Sto Gold Coat liberally by spray or roller along sheathing joints and immediately place 100 mm (4 inch) wide fabric centred over the joints into the wet coating, and 150 mm (6 inch) wide fabric centred and folded at inside and outside corners into the wet coating. Smooth any wrinkles with a brush or roller and apply additional coating to completely embed the fabric. Overlap seams minimum 50 mm (2 inches).
  - .3 Sto RapidGuard: apply a thick bead of StoGuard RapidFill with a caulking gun along sheathing joints, or apply in a zig-zag pattern across and down the joints. Spread to a uniform thickness of 0.5-0.8 mm (20-30 mils). Spread 25 mm (1 inch) beyond the sheathing joint on each side. Follow the same procedure for inside and outside corners.
- .6 Air/Moisture Barrier Coating Installation
- .1 Plywood and Gypsum Sheathing: apply waterproof coating by spray or roller over sheathing surface, including the dry joint treatment, rough opening protection, and transition areas, to a uniform wet mil thickness of 0.25 mm (10 mils) in one coat. Use 12.7 mm (1/2 inch) nap roller for plywood. Use 19 mm (3/4 inch) nap roller for glass mat faced gypsum sheathing. Protect from weather until dry.
  - .2 OSB Sheathing: apply waterproof coating by spray or with a 19 mm (3/4 inch) nap roller to sheathing surface to a uniform wet mil thickness of 0.25 mm (10 mils). Allow to dry, inspect surface for raised wood stands, and touch up these areas with a second coat.
- .7 Air /Moisture Barrier Connections and Shingle Laps
- .1 Coordinate installation of connecting air barrier components with other trades to provide a continuous air tight membrane.
  - .2 Coordinate installation of flashing and other moisture protection components with other trades to achieve complete moisture protection such that water is directed to the exterior, not into the wall assembly, and drained to the exterior at sources of leaks (windows, doors and similar penetrations through the wall assembly).
  - .3 Splice-in head flashings above windows, doors, floor lines, roof/sidewall step flashing, and similar locations with StoGuard detail component to achieve shingle lap of the air/moisture barrier such that water is directed to the exterior.

*SPEC NOTE: Code requirements may vary. Always consult the applicable code and the manufacturer's code compliance report. Typically sheathing membrane in compliance with the code is lapped shingle style, upper courses over lower courses, with all joints lapped minimum 100 mm (4 inches). Care must be taken to prevent tears in the membrane and to limit penetrations to only those required for attachment. Flashing must be in place and properly integrated with the sheathing membrane at sills, above windows and doors, at floor lines, decks and at roof/wall intersections such that water is directed to the exterior.*

### 3.7 SHEATHING MEMBRANE INSTALLATION

- .1 Install in compliance with the applicable building code requirement. Lap over foundation weep screed attachment flange, floor line flashing, and window/door head flashings. Refer to Sto Guide Details at [www.stocorp.ca](http://www.stocorp.ca)

### 3.8 DRAINAGE MAT INSTALLATION

- .1 Place drainage mat against the wall surface and unroll horizontally with the fabric facing out. Hammer-tack or staple into place with corrosion-resistant fasteners. Use as few fasteners as needed to hold the mat in place, starting from the bottom of the wall at base flashing or weep screed and working up. Do not fasten through flashing. Shingle lap fabric at horizontal courses. Shingle lap drainage mat over weep screeds, flashing at floor lines, decks, roof lines, window heads, and other areas where flashing is required, to direct water to the exterior. 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. Immediately follow installation of drainage mat with stucco lath installation. Where stucco lath installation will not immediately follow installation of drainage mat, use corrosion-resistant cap nails, cap staples, or cap screws every 400 mm (16 inches) on center along framing for more secure attachment. Cover drainage mat with stucco within 30 days of installation.

### 3.9 STUCCO INSTALLATION

- .1 General Overview
  - .1 Apply the stucco in discrete panels without interruption to avoid cold joints and differences in appearance. Abut wet stucco to set stucco at natural or architectural breaks in the wall such as expansion joints, pilasters, terminations, or changes in plane. Hot or dry conditions accelerate drying and moisture loss from stucco which can diminish strength and resistance to cracking. Under these conditions adjustments in the application, scheduling and curing of stucco to prevent rapid loss of moisture are necessary to achieve a satisfactory stucco installation. Cold temperatures retard drying and strength gain and adjustments may have to be made in the application, scheduling and curing of stucco to prevent damage from frost and other trades. Do not install stucco during extremely hot, dry and/or windy conditions. Do not install stucco during freezing conditions or on frozen substrates. Do not install stucco onto grounds of accessories. Completely embed lath and flanges of accessories and completely cover fastener attachments with stucco. Moist cure stucco minimum 48 hours for optimum strength gain and resistance to cracking. Allow final stucco application to completely dry (28 days) before applying primer or finish or until pH of stucco surface is less than 10 (except in the case of Sto Hot Prime which can be applied 48 hours after completing moist cure of stucco). The finished installation must be true, plumb and square. Should stucco get into control or expansion joints, remove the stucco from within the joint before the stucco sets.
  - .2 After satisfactory inspection of surfaces and correction of any deviations from specification requirements commence the stucco installation as described below:

*SPEC NOTE: Refer to architectural drawings for joint locations and accessory type. Air barrier and moisture protection must be continuous behind joints and accessories – refer to Sto Guide Details.*

- .2 Installation over StoGuard/Sto DrainScreen
  - .1 Weep Screed Installation (may also be done in conjunction with flashing and air/moisture barrier installation to facilitate shingle lapping of components at base of wall)
    - .1 Install foundation weep screed at the base of the wall securely to solid substrate or framing with the appropriate fastener. Locate foundation weep screed so that it overlaps the joint between the foundation and framing by a minimum of 25 mm (1 inch). Locate the foundation weep screed nosing minimum 200 mm (8 inches) above finished ground level. Lap air/moisture barrier, sheathing membrane, and drainage mat over the weep screed attachment flange.
  - .2 Casing Bead and Two Piece Expansion Joint Installation
    - .1 Install casing beads at stucco terminations – doors, windows and other through wall penetrations. Install two piece expansion joints (or back-to-back casing beads) at building expansion joints, thru-wall joints in concrete or CMU, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories (except where horizontal movement joints exist that prevent continuous vertical runs of accessories). Attach at no more than 150 mm (6 inches) into solid substrate/framing with appropriate fasteners.

*SPEC NOTE: The type fastener selected, its layout and pullout or withdrawal value from the supporting construction must be verified and approved by the project engineer/architect with respect to design wind load and local building code requirements. Exercise care when attaching metal lath and accessories through the sheathing membrane so that fasteners go into (not between) framing supports. Do not use power, powder-actuated or other fastening tools/methods that can damage the sheathing, air barrier, sheathing membrane, or CI.*

- .3 Lath Installation
  - .1 Diamond Mesh Metal Lath – conform to ASTM C1063
    - .1 General--install metal lath with the long dimension at right angles to structural framing (horizontally on solid substrates). Terminate lath at expansion joints. Do not install continuously at joints.
    - .2 Seams/Overlaps--overlap side seams minimum 12.7 mm (1/2 inch) and end seams minimum 25 mm (1 inch). Stagger end seams. Overlap casing beads and expansion joints minimum 25 mm (1 inch) over narrow wing accessories, minimum 50 mm (2 inches) over expanded flange accessories. Do not install lath continuously beneath expansion joints.
    - .3 Attachment--fasten securely through sheathing into structural framing at 150 mm (6 inches) on centre maximum vertically and 400 mm (16 inches) on centre horizontally (refer to Section 2.8 for fastener types, lath-locks, and minimum required penetration into framing). Wire tie at no more than 225 mm (9 inches) on centre at:



side laps, accessory overlaps, and where end laps occur between supports.

- .2 Lath Backed with Sheathing Membrane – follow installation as for diamond mesh metal lath. Lap lath over lath, not membrane to membrane overlap. For horizontal overlaps the membrane backing must lap shingle style behind the lath to lath overlap.
- .4 One Piece Expansion Joint Installation
  - .1 Install one piece expansion joints at through wall penetrations, for example, above and below doors and windows. Install one piece expansion joints at every 13 m<sup>2</sup> (144 ft<sup>2</sup>). Wire tie one piece expansion joints to lath at no more than 175 mm (7 inches) on centre. Seal adjoining pieces by embedding ends in sealant. Make certain lath is discontinuous at or beneath joints.
- .5 Inside and Outside Corners
  - .1 Install corner lath at inside corners and corner bead at outside corners over lath. Attach through lath into solid substrate or framing at no more than 150 mm (6 inches) on centre with appropriate fasteners.
- .6 Stucco Installation
  - .1 Scratch Coat: apply stucco with sufficient pressure to key into and embed the metal lath. Apply sufficient material, no less than 6 mm (1/4 inch), to cover and completely embed the metal lath and to permit scoring the surface. Score the stucco upon completion of each panel in preparation for a second coat. Score horizontally.
  - .2 Brown Coat: as soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat and as needed to bring the stucco to a uniform thickness that matches the grounds of the accessories. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco. Final thickness of stucco shall be uniform throughout the wall area and shall be either 19 or 22 mm (3/4 inch or 7/8 inch), and shall not exceed 22 mm (7/8 inch).
  - .3 After the stucco has become slightly firm float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface. The proper time to float is when the wood float no longer sticks to the surface of the stucco.
  - .4 Moist cure after the stucco has set by lightly fogging for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist curing can be diminished.

*SPEC NOTE: Do not install foam build-outs over joints in the stucco wall assembly. Terminate foam build-outs and backwrap in accordance with instructions below.*

- .3 Foam Trim and Build-Outs

- .1 Where foam build-outs terminate at a dissimilar material such as a window, door or other non-stucco surface, backwrap the foam build-out by installing detail mesh onto the terminating edge of the stucco. Embed the mesh in the foam trim adhesive. Allow the mesh to dangle until the backwrapping procedure is completed (3.9.2.4).
- .2 Install foam build-outs directly over hardened stucco with foam trim adhesive. Apply adhesive with the appropriate size notched trowel to the back of the insulation board and immediately place build-out in the proper location on the wall. Press firmly into place and trim or tool excess adhesive from ends and edges of foam trim for a smooth void-free connection to the stucco substrate.
- .3 After the adhesive has cured sufficiently to hold the build-out firmly in place, rasp the entire foam surface smooth.
- .4 Complete the backwrapping procedure by applying the foam trim base coat to the exposed edges of the foam build-out and minimum 65 mm (2-1/2 inches) onto the face. Pull the backwrap mesh around the foam build-out and fully embed it into the base coat. Use a corner trowel for neat straight corners.
- .5 Apply the base coat to the foam build-out and approximately 75 mm (3 inches) onto the adjacent stucco surfaces to an approximate thickness of 3 mm (1/8 inch). Immediately embed the reinforcing mesh in the wet base coat. Trowel from the centre to the edges of the mesh to avoid wrinkles and remove excess base coat. Overlap mesh seams minimum 65 mm (2-1/2 inches). Overlap mesh onto adjacent stucco wall surfaces minimum 65 mm (2-1/2 inches) at terminations of the foam build-out and feather onto the stucco wall surface. Alternatively, If Crack Defense is used apply Crack Defense with its reinforcing mesh continuously from the stucco wall surface over foam build-outs (refer to 3.9.3).

*SPEC NOTE: Crack Defense is optional. It provides additional crack resistance on the stucco wall surface. Delete this section if crack defense is not deployed.*

**.4 Crack Defense**

- .1 Apply base coat over the moist cured stucco (and foam build-outs if not already reinforced with mesh) with appropriate spray equipment or a stainless steel trowel to a uniform thickness of approximately 3 mm (1/8 inch). Work horizontally or vertically in strips of 1000 mm (40 inches), and immediately embed the mesh into the wet base coat by troweling from the centre to the edge of the mesh. Overlap mesh not less than 65 mm (2-1/2 inches) 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 colour shows through the base coat when it is dry. Re-skim with additional base coat if mesh colour is visible. Do not install base coat or mesh over joints or accessories in the stucco wall assembly.

*SPEC NOTE: Select one of the following primer options, and delete the primers not required on the project.*

**.5 Primer Installation**

- .1 Sto Hot Prime – Moist cure stucco 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 foam build-outs, and allow to dry. Final

- age of primed stucco application must be minimum 7 days before application of finish.
- .2 Sto Primer Sand – Moist cure stucco 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. Final age of primed stucco application must be minimum 28 days before application of finish or pH must be below 10.
  - .3 Sto Primer Smooth – Moist cure stucco 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. Final age of primed stucco application must be minimum 28 days before application of finish or the pH must be below 10.
- .6 Finish Installation
- .1 Apply finish to minimum 28 day old stucco or primed stucco and foam build-outs, or when pH of stucco surface is less than 10. If Sto Hot Prime is used as the primer the primed stucco/foam build-out surfaces need only be minimum 7 days old. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
    - .1 Avoid application in direct sunlight.
    - .2 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.
    - .3 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.
    - .4 Float “R” (rilled or swirl texture) finishes with a plastic float to achieve their rilled texture
    - .5 Do not install separate batches of finish side-by-side.
    - .6 Do not apply finish into or over sealant joints. Apply finish to outside face of wall only.
    - .7 Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.
    - .8 Do not install finish over high pH ( $\geq 10$ ) stucco surfaces or surfaces that have not been fully cured.

### 3.10 PROTECTION

- .1 Provide protection of installed materials from water infiltration into or behind them.
- .2 Provide protection of installed stucco from dust, dirt, precipitation, and freezing.
- .3 Provide protection of installed primer and finish from dust, dirt, precipitation, freezing and continuous high humidity until fully dry.

- .4 Provide sealant and backer material at stucco terminations and at fixture penetrations through the stucco to protect against air, water and insect infiltration. Provide weeps at floor lines, window and door heads, and other areas to conduct water to the exterior.

### 3.11 CLEANING, REPAIR AND MAINTENANCE

- .1 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.
- .2 Maintain adjacent components of construction such as sealants, windows, doors, and flashing, to prevent water entry into the wall assembly.
- .3 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.

END OF SECTION 09 24 23

#### ATTENTION

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