

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 StoTherm 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: This specification includes Sto IMPACT, an optional fortification layer that enhances impact resistance of the cladding assembly from both blunt impact and from repetitive and concentrated impacts (e.g., bird strikes).

SPEC NOTE: StoTherm ci meets the requirements of CAN/ULC S716.1, and the 2010 and 2015 National Building Code of Canada for use of Combustible Claddings on Exterior Walls on buildings required to be of non-combustible construction, NBC Article 3.1.5.5., and for Protection of Exterior Building Façade, NBC Clause 3.2.3.8.(1)(b). Refer to CCMC Evaluation Report 12416-R and Intertek listings STO/WEIFS 25-01 and STO/WEIFS 15-01 as referenced in this document for conforming products. Where occupancy and set-back conditions dictate the use of all non-combustible components refer to StoTherm ci Mineral specification no. CA-5600M.

SPEC NOTE: StoTherm ci incorporates a geometrically defined drainage cavity (GDDC) in the insulation board, which is configured on the back with drainage grooves to comply with Ontario Building Code Part 9 requirements and is consistent with Pro-Demnity Insurance Company endorsement requiring Primary and Secondary planes of protection with a 10 mm drainage cavity. Where such requirements are not in place flat stock insulation board may be used in lieu of GDDC board.

PART 1 GENERAL

1.1 SUMMARY

- .1 This Section includes requirements for supply and installation of a continuous insulation (ci) cladding system applied to concrete, masonry, wood or gypsum sheathing substrates, complete with air and moisture barrier, adhesive, continuous insulation, mesh reinforcement, base coat, primer and finish coating.

SPEC NOTE: Include in this paragraph only those sections and documents that directly affect the work of this section. Do not include Division 00 Documents or Division 01 Sections since it is assumed that all technical sections are related to all project Division 00 Documents and Division 01 Sections to some degree. Refer to other documents with caution since referencing them may cause them to be considered a legal part of the Contract. Edit the following paragraphs to suit specific project conditions.

1.2 RELATED REQUIREMENTS

- .1 Section 03 30 00: Cast-In-Place Concrete

.2	Section 04 20 00:	Unit Masonry
.3	Section 06 10 00:	Rough Carpentry
.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 Society for Testing and Materials	
.1	ASTM C1382	Standard Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish Systems (EIFS) Joints
.2	ASTM C1481	Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS)
.3	ASTM D4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
.4	ASTM E283	Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
.5	ASTM E331	Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
.6	ASTM E2178	Standard Test Method for Air Permeance of Building Materials
.7	ASTM E2357	Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
.2	Underwriters Laboratories of Canada (ULC)	
.1	ULC S101	Standard Methods of Fire Endurance Tests of Building Construction and Materials

- .2 ULC S114 Standard Method of Test for Determination of Non-Combustibility in Building Materials
- .3 ULC S134 Standard Method of Fire Test of Exterior Wall Assemblies
- .4 ULC S701 Annex A, Standard for Thermal Insulation, Polystyrene Boards and Pipe Covering
- .5 ULC S716.1 Standard for Exterior Insulation and Finish Systems (EIFS) – Materials and Systems
- .6 ULC S716.2 Standard for Exterior insulation and Finish Systems (EIFS) – Installation
- .7 ULC S716.3 Standard for Exterior Insulation and Finish Systems (EIFS) – Design Application

- .3 Building Codes
 - .1 National Building Code (NBC), 2010, 2015
 - .2 Ontario Building Code (OBC), 2012

- .4 Product Evaluations and Listings
 - .1 Canadian Construction Materials Centre (CCMC): Evaluation Report 12416-R, StoTherm ci Lotusan, StoTherm ci Classic, StoTherm ci Essence
 - .2 Intertek Listing STO/EIFS 25-01 StoTherm ci and StoTherm ci XPS: wall assembly tested per CAN/ULC S134 and compliant with Article 3.1.5.5 of the National Building Code of Canada, 2010 and 2015
 - .3 Intertek Listing STO/EIFS 15-01 StoTherm Classic NC and StoTherm Lotusan NC: Non Load Bearing Wall Assembly tested per CAN/ULC S101 and compliant with Clause 3.2.3.8.(1)(b) of the National Building Code of Canada, 2010.

- .5 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A3001 Cementitious Materials for Use in Concrete

- .6 Industry Publications
 - .1 EIFS Council of Canada EIFS Practice Manual Version

- .7 Proprietary Publications
 - .1 StoGuard® Air Barrier Installation Manual
 - .2 Sto Canada Installation Guide
 - .3 StoTherm EIFS Reference Guide: Repair and Maintenance

SPEC NOTE: Refer to EIFS Practice Manual for a list of relevant terms and definitions. Include definitions deemed necessary below for this Section or reference the Manual.

1.4 DEFINITIONS

- .1 Refer to EIFS Practice Manual

1.5 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate the Work of this Section with the installation of substrate. Sequence work so that installation of ci cladding system coincides with installation of substrate materials without causing delay to the Work. Comply with ci cladding system manufacturer's written recommendations for sequencing construction operations with other Work.
- .2 Pre-Installation Conference: Conduct on-site pre-installation conference in accordance with Section 01 31 19 – Project Meetings before installing ci cladding system and in conjunction with installation of mock-up attended by Contractor, Consultant, Owner, ci Cladding System Contractor, Adjacent Trades and ci Cladding System Manufacturer's Representative to:
 - .1 Review methods and procedures related to installation, including manufacturer's written instructions.
 - .2 Coordinate sequence of installation in connection with adjacent trades.
 - .3 Examine substrate conditions for compliance with manufacturer's installation requirements.
 - .4 Review temporary protection measures required during and after installation.

1.6 SUBMITTALS

- .1 Provide requested information in accordance with Section 01 33 00 Submittals Procedures.
- .2 Action Submittals: Provide the following submittals before starting any work of this Section:
 - .1 Product Data: Submit manufacturer's product data for each type of product specified and manufacturer's guide details.
 - .2 Samples for Initial Selection: Submit one (1) sample panel, 150 mm x 150 mm (6" x 6") for each colour and texture, for review by the Consultant, on backing of manufacturer's choice.
 - .3 Samples for Verification: Submit two (2) samples 300 mm x 300 mm (12" x 12") for colour and texture verification for each finish specified in this Section prior to ordering products from ci cladding system manufacturer.
- .3 Informational Submittals: Provide the following submittals when requested by the Consultant:
 - .1 Evaluation reports and listings:
 - .1 Provide CCMC Evaluation Report as required to confirm the ci cladding system is in compliance with the National Building Code 2015 and ULC 716.1.
 - .2 Provide 3rd party listing to confirm the ci cladding system conforms to NBC Article 3.1.5.5.

- .3 Provide 3rd party listing to confirm the ci cladding system conforms to NBC Clause 3.2.3.8 (1)(b).

1.7 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: Submit manufacturer's written instructions for cleaning solutions, materials and procedures. Include name of original installer and contact information in accordance with Section 01 78 23 Operation and Maintenance Data.
 - .1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.
 - .2 Provide a complete list of repair and replacement parts with cuts and identifying numbers.
 - .3 Include:
 - .1 Finish coat colour batch numbers.
 - .2 Identification of each type of reinforcing mesh used.
 - .3 Identification of adhesive, base coat and finish coat products used.

1.8 PERFORMANCE REQUIREMENTS

- .1 Design Criteria:
 - .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) and ULC S716.3.
 - .2 Moisture Control:
 - .1 Prevent the accumulation of water into or behind the ci cladding system, either by condensation or leakage into the wall construction, in the design and detailing of the wall assembly.
 - .2 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 (when or as deemed necessary by the design professional), at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.
 - .3 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.
 - .4 At expansion joints, back joints with transition membrane.
 - .5 Seal ci cladding system terminations with sealant in conformance ASTM C1382.
 - .3 Grade Condition:
 - .1 Do not specify ci cladding system for use below grade or on surfaces subject to continuous or intermittent water immersion or hydrostatic

pressure. Provide minimum 200 mm (8") clearance between finished earth grade and ci cladding system termination, minimum 51 mm (2") clearance above finished grade (pavers/sidewalk). Provide increased clearance in freeze/thaw climate zones.

- .2 Ensure use of Sto Armor Mat or the Sto IMPACT fortification system for increased impact resistance of system to 2000 mm (6.5') minimum above grade and in other locations indicated on architectural drawings.

SPEC NOTE: 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 EIFS Practice Manual 2.10.1 Design Considerations and Sto Guide Details.

- .4 Sloped Surfaces (trim, shapes, build-outs, and other projecting architectural features):
 - .1 Avoid the use of ci cladding system on weather-exposed horizontal and low slope surfaces such as ledges, sills, and other projecting architectural features unless supported by framing or other structural support and protected with metal coping or flashing.
 - .2 Build out trim from ci cladding system surface with insulation board. All EPS or GPS trim and projecting architectural features must have a minimum 1:2 (27 deg) slope along their top surface.
 - .3 All EPS or GPS horizontal reveals must have a minimum 1:2 (27 deg) slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface.
 - .4 Where EPS or GPS trim or bottom surface of reveal projects more than 50 mm (2") from the face of the wall plane, protect the top surface with waterproof base coat. Limit EPS/GPS trim thickness to a maximum of 100 mm (4").
- .5 Joints and Accessories:
 - .1 Provide expansion joints in the ci cladding system where building movement is anticipated (refer to ULC S716.3, clause 13.1.1):
 - .1 at expansion joints, deflection joints, or other movement joints in the substrate or supporting construction,
 - .2 where the system is to be installed over dissimilar construction or substrates,
 - .3 at changes in building height, or any other areas of anticipated building movement or stress lines in the construction,
 - .4 at floor lines in wood frame construction or other construction types where vertical shrinkage is expected to occur,
 - .5 at cold or control joints in concrete, masonry, or concrete masonry.
 - .2 Back expansion joints, deflection joints, and other movement joints with transition membrane to provide a secondary seal at the joint location.
 - .3 Provide minimum 13 mm (1/2") wide joints where the system abuts windows, doors and other through wall penetrations.

- .4 Provide appropriate sealant tested in accordance with ASTM C1382 at ci cladding system terminations.
- .5 Indicate location of joints, size of joints, and joint design on architectural drawings.
- .6 Performance Criteria:
 - .1 Continuous Insulation: Expanded polystyrene insulation board compliant with ULC S701, Type 1 requirements.
- .7 Air and Moisture Barrier:
 - .1 Material Air Leakage Resistance, ASTM E2178: less than 0.02 L/s·m² @ 75 Pa (0.004 cfm/ft² @ 1.57 lb/ft²)
 - .2 Assembly Air Leakage Resistance, ASTM E2357: less than 0.2 L/s·m² @ 75 Pa (0.04 cfm/ft² @ 1.57 lb/ft²)

SPEC NOTE: Refer to CCMC Evaluation Report No. 12416-R and Intertek listings STO/WEIFS 25-01 and STO/WEIFS 15-01 for specific products and assemblies that conform to the referenced standards and code sections below.

- .8 ci Cladding System
 - .1 Compliant with CAN/ULC S716.1.
 - .2 Listed by CCMC as a cladding system [CCMC ER No. 12416-R].
 - .3 Where required to be tested per CAN/ULC S114, CAN/ULC S134, and to meet Article 3.1.5.5, of the National Building Code of Canada 2010 or 2015, compliant system shall be listed by an independent 3rd party listing agency. [Intertek Listing, Design Number STO/WEIFS 25-01/25-02]
 - .4 Where required to be tested per CAN/ULC S101 and to meet Clause 3.2.3.8 (1)(b) of the National Building Code of Canada 2010 or 2015, compliant system shall be listed by an independent 3rd party listing agency. [Intertek Listing, Design Number STOWEIFS 15-01]

1.9 QUALITY ASSURANCE

- .1 Qualifications: Provide proof of qualifications when requested by Consultant:
 - .1 Contractor: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of three (3) years proven experience of installations similar in material, design, and extent to that indicated for this Project. Installation shall comply with ULC S716.2 in conjunction with manufacturer's installation guide and EIFS Practice Manual.

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.

1.10 MOCK-UPS

- .1 Sample Installation: Construct a sample installation to verify selections made under sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution of Work in accordance with Section 01 45 00 Quality Control.
- .2 Construct mock-up of typical cladding/window assembly with specified tools and materials and test air and water infiltration resistance in accordance with ASTM E283 and ASTM E331 respectively, through independent testing agency.
 - .1 When tested to ASTM E283, verify that the assembly meets the air leakage requirements for an air barrier system of 0.2 L/s/m² at 75 Pa (0.04 cfm/ft² at 1.57 psf)
 - .2 When tested to ASTM E331, verify that no water passes inbound of the air barrier system.
 - .3 Establish and conduct field water spray test method to verify no leakage of window assembly into the wall.
- .3 Conduct ci cladding adhesion testing in accordance with frequency deemed by design professional or owner's quality assurance agent.
- .4 Conduct wet sealant adhesion testing in accordance with sealant manufacturer's field quality control test procedure.
- .5 Notify Consultant a minimum of seven (7) days prior to testing.
- .6 Once reviewed by Consultant, acceptable sample installation can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.

1.11 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: Deliver and store packaged materials in their original containers with manufacturer's labels and seals intact.
- .2 Store as recommended by manufacturer in a weatherproof enclosure, and protect materials during handling and application to prevent damage.
 - .1 Protect EPS and GPS 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.
 - .2 Store reinforcing mesh cartons on side (not upright) in dry area protected from sunlight.
 - .3 Protect coatings (pail products) from freezing and temperatures in excess of 32 deg C (90 deg F) and store away from direct sunlight.
 - .4 Protect portland cement based materials (bag products) from extreme heat (32 deg C [90 deg F]), moisture, humidity and freezing. Store under cover, off the ground, and in a dry location.

- .3 Handle all products as directed on labeling.

1.12 SITE CONDITIONS

- .1 Ambient Conditions: Proceed with installation when ambient and substrate temperature conditions are within limits permitted by manufacturer and when substrates are free from dirt or wetness arising from frost, condensation, or other causes detrimental to adhesion.
- .2 Temperature Range: Above 4 deg C (40 deg F) during application and for 24 hours minimum after set of ci cladding system components and finish materials.
- .3 Provide supplementary heat for installation in temperatures less than 4 deg C (40 deg F) such that material temperatures are maintained as indicated above. Prevent concentration of heat on uncured ci cladding system and vent fumes and other products of combustion to the outside to prevent contact with ci cladding system.
- .4 Prevent uneven or excessive evaporation of moisture from ci cladding system during hot, dry or windy weather. Do not install ci cladding system materials if ambient temperatures are expected to rise above 38 deg C (100 deg F) within a 24-hour period.
- .5 Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.13 WARRANTY

- .1 Provide manufacturer's standard limited warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- .1 Continuous Insulation cladding system specified herein is supplied by:

Sto Canada Ltd.
1821 Albion Road
Unit 1-2
Etobicoke, ON M9W 5W8

Phone: 416 855-0460

- .2 URL: www.stocanada.com

2.2 MATERIALS

SPEC NOTE: The StoGuard air barrier assembly is to be installed as per StoGuard® Air Barrier Installation Manual.

SPEC NOTE: Select one of the fluid-applied air and moisture barrier options and delete the one not required on the project.

SPEC NOTE: Select one of the sheathing joint treatment options and delete the ones not required on the project.

SPEC NOTE: Select one of the rough opening protection options and delete the ones not required on the project.

- .1 Fluid Applied Air and Moisture Barrier consisting of the following multiple compatible components:
 - .1 One component, ready-mixed flexible air and moisture barrier, compatible for application on wood or gypsum sheathing, concrete, and concrete masonry substrates.
 - .1 Basis-of-Design Material: Sto Gold Coat by Sto Canada.
 - .2 Basis-of-Design Material: StoGuard VaporSeal R by Sto Canada
 - .2 Sheathing joint treatment: One component quick-drying air and moisture barrier material to seal sheathing joints, seams, cracks and transitions in above grade wall construction.
 - .1 Basis-of-Design Material: Sto RapidGuard by Sto Canada.
 - .3 Rough opening protection: One component quick-drying air and moisture barrier material for rough opening protection.
 - .1 Basis-of-Design Material: Sto RapidGuard by Sto Canada.
 - .4 Mesh reinforced joint treatment and rough opening protection: Nominal 142 g/m² (4.2 oz/yd²), self-adhesive, flexible, symmetrical, interlaced glass fibre mesh, with alkaline resistant coating for compatibility with Sto materials, used with acrylic elastomeric joint filler to reinforce rough openings, inside and outside corners, sheathing joints, and connections with flashing.
 - .1 Basis-of-Design Material: StoGuard Mesh with Sto Gold Fill by Sto Canada.
 - .5 Fabric reinforced joint treatment and rough opening protection: non-woven cloth reinforcement used with Sto Gold Coat to reinforce rough openings, inside and outside corners, sheathing joints, and connections with flashings.
 - .1 Basis-of-Design Material: StoGuard Fabric and StoGuard RediCorners with Sto Gold Coat
 - .6 Tape for rough opening protection: Self-adhering rubberized asphalt tape for rough opening protection in wood or metal frame construction.
 - .1 Basis-of-Design Material: StoGuard Tape by Sto Canada.
 - .7 Primer for use with StoGuard Tape.
 - .1 Basis-of-Design Material: StoGuard Primer by Sto Canada.
 - .8 Transition Membrane: Flexible air barrier membrane, 0.64 mm (25 mils, 0.025") thick, designed to detail transition areas and achieve continuity of the air barrier assembly, and functions as a secondary weather seal at joints in construction.
 - .1 Basis-of-Design Material: StoGuard Transition Membrane by Sto Canada.

SPEC NOTE: Sto EPS ProD Insulation board is an expanded polystyrene insulation board with geometrically defined drainage cavity (GDDC). GPS ProD Insulation Board is a graphite enhanced expanded polystyrene insulation board with increased thermal resistance and geometrically defined drainage cavity (GDDC). ProD insulation boards are configured on the back with drainage grooves to comply with Ontario Building Code Part 9 requirements and are consistent with Pro-Demnity Insurance Company endorsement requiring Primary and Secondary planes of protection with a 10 mm drainage cavity. Where compliance with the Ontario Building Code Part 9 is not required flat stock insulation boards may be used in lieu of ProD insulation boards.

.2 Continuous Insulation:

- .1 Sto EPS ProD Insulation Board with geometrically defined drainage cavity manufactured in accordance with CAN/ULC S701, thickness as indicated on drawings, minimum 50 mm (2"), and not to exceed 165 mm (6-1/2"), nominal dimensions 610 mm X 1220 mm (24" x 48"), nominal density 16 kg/m³ (1 lb/ft³), RSI 0.65 K·m²/W (R-3.7 F·ft²·h/Btu) at 25 mm (1") thick.
- .2 GPS ProD Insulation Board with geometrically defined drainage cavity manufactured in accordance with CAN/ULC S701, thickness as indicated on drawings, minimum 76 mm (3"), and not to exceed 165 mm (6-1/2"), nominal dimensions 610 mm X 1220 mm (24" x 48"), nominal density 16 kg/m³ (1 lb/ft³), RSI 0.83 K·m²/W (R-4.7 F·ft²·h/Btu) at 25 mm (1") thick

SPEC NOTE: Select one of the following adhesive options for use with Sto EPS ProD Insulation Board. Select only Sto TurboStick polyurethane spray foam adhesive for use with Sto GPS ProD Insulation Board. Delete the adhesives not required on the project. The first option, Sto TurboStick, is a moisture cure polyurethane spray foam adhesive, beneficial in wet climate zones for its fast setting characteristics. The next four options are factory-blended portland cement based adhesives. The last option is a field-mixed portland cement based adhesive.

.3 Insulation Adhesive:

- .1 One component polyurethane spray foam adhesive.
 - .1 Basis-of-Design Material: Sto TurboStick by Sto Canada
- .2 One component polymer modified factory-blended portland cement adhesive
 - .1 Basis-of-Design Material: Sto Primer/Adhesive-B by Sto Canada
- .3 One component polymer modified factory-blended high build portland cement adhesive
 - .1 Basis-of-Design Material: Sto BTS Plus by Sto Canada
- .4 One component polymer modified factory-blended extra high build portland cement adhesive
 - .1 Basis-of-Design Material: Sto BTS Xtra by Sto Canada
- .5 One component polymer modified factory-blended portland cement adhesive
 - .1 Basis-of-Design Material: Sto Element by Sto Canada

SPEC NOTE: Select 2.2.3.6 where a field-mixed adhesive is desired.

- .6 Two component field-mixed latex modified portland cement adhesive (portland cement in conformance with CAN/CSA-A3001)
 - .1 Basis-of-Design Material: Sto Primer/Adhesive by Sto Canada

SPEC NOTE: Select one of the following base coat options, and delete the base coats not required on the project. The first four options are factory-blended base coats.

- .4 Standard Base Coat:
 - .1 One component polymer modified factory-blended portland cement base coat compliant with NBC Article 3.1.5.5 and Clause 3.3.8.(1)(b).
 - .1 Basis of Design Material: Sto Primer/Adhesive-B by Sto Canada.
 - .2 One component polymer modified factory-blended high build portland cement base coat compliant with NBC Article 3.1.5.5 and Clause 3.3.3.8.(1)(b).
 - .1 Basis-of-Design Material: Sto BTS Plus by Sto Canada
 - .3 One component polymer modified factory-blended extra high build portland cement base coat compliant with NBC Clause 3.3.3.8.(1)(b).
 - .1 Basis-of-Design Material: Sto BTS Xtra by Sto Canada
 - .4 One component polymer modified factory-blended portland cement base coat
 - .1 Basis-of-Design Material: Sto Element by Sto Canada

SPEC NOTE: Select 2.2.4.5 where a field-mixed base coat is required.

- .5 Two component latex modified field-mixed portland cement base coat compliant with NBC Article 3.1.5.5 (portland cement in conformance with CAN/CSA-A3001)
 - .1 Basis-of-Design Material: Sto Primer/Adhesive by Sto Canada

SPEC NOTE: Select the following additional base coat if Sto IMPACT is required. Delete this section if Sto IMPACT is NOT required.

- .5 Fortification Base Coat:
 - .1 Ready mixed one component acrylic-based reinforcing plaster
 - .1 Basis-of-Design Material: Sto Armat Classic Plus
- .6 Detail Reinforcing Mesh:
 - .1 Nominal 143 g/m² (4.2 oz/yd²), flexible, symmetrical, interlaced open-weave glass fibre mesh treated with alkaline resistant coating for compatibility with Sto materials used for standard back wrapping and aesthetic detailing.
 - .1 Basis of Design Material: Sto Detail Mesh by Sto Canada.
- .7 Standard Reinforcing Mesh:
 - .1 Nominal 153 g/m² (4.5 oz./yd²), symmetrical, interlaced open-weave glass fibre mesh treated with alkaline resistant coating for compatibility with Sto materials.
 - .1 Basis of Design Material: Sto Mesh by Sto Canada

SPEC NOTE: If Sto IMPACT is required select one of the following meshes for use on ALL wall areas. If Sto IMPACT is NOT required select one of the following meshes to supplement impact resistance on ground floors or other areas of anticipated impact or abuse.

- .8 High Impact Reinforcing Meshes:
 - .1 Nominal 425 g/m² (15.0 oz./yd²), symmetrical, interlaced open-weave glass fibre mesh.
 - .1 Basis of Design Material: Sto Armor Mat by Sto Canada.
 - .2 Nominal 678 g/m² (20 oz./yd²), symmetrical, interlaced open-weave glass fibre mesh.
 - .1 Basis of Design Material: Sto Armor Mat XX by Sto Canada.

SPEC NOTE: Priming is recommended to provide uniform substrate absorption and finish colour, to improve adhesion and water resistance, and to retard efflorescence. Select one of the following primers and delete the ones not required for the project.

- .9 Primer: Acrylic based low VOC primer:
 - .1 Sanded Primer Basis of Design Material: Sto Primer Sand by Sto Canada.
 - .2 Smooth Primer Basis of Design Material: Sto Primer Smooth by Sto Canada.

SPEC NOTE: Select the following paragraph when a faux brick is desired on the project. Sto Primer Creativ has enhanced UV resistance and can be left exposed to simulate mortar joints.

- .1 Basis of Design Material: Sto Primer Creativ by Sto Canada.

- .10 Finish Coat
 - .1 Acrylic based low VOC textured wall finish:

SPEC NOTE: Select one of the following finishes. Delete finishes which are not required on the project.

- .1 Basis of Design Material: Stolit Lotusan by Sto Canada with Lotus-Effect technology for highest water repellency and resistance to soiling.
- .2 Basis of Design Material: Stolit or Stolit X by Sto Canada
- .3 Basis of Design Material: Sto Element by Sto Canada
- .4 Standard Finish Textures: [1.0 - Fine Finish][1.5 - Medium Finish][R1.5 – Swirl Finish (except Stolit Lotusan)] [Freeform Finish (Stolit and Stolit Lotusan only)].
- .5 Colour: [_____] [As selected by the Consultant from the manufacturers standard product line] [As indicated on Drawing _____]

SPEC NOTE: Select the following finish where a pre-cured textured coloured veneer finish, available in a variety of patterns, sizes, and looks is desired. Delete this finish if not required on the project.

- .2 Pre-cured decorative and protective veneer finish

- .1 Basis of Design Material: Sto-Ecoshapes Colour/Pattern [_____] [As selected by Consultant from manufacturers standard selection] [Custom design as selected by Consultant]

SPEC NOTE: Select one of the following specialty finishes if an alternate finish is desired. Delete finishes which are not required on the project.

- .3 StoCreativ Brick Finish: Decorative wall finish system requiring a two-step application process. Self-adhering stencils applied over the primer layer to provide appearance of mortar. Finish layer is applied in varying thickness to achieve the desired stand-out appearance of the brick.
- .4 Stolit Milano Finish: A very fine, ultra-smooth finish used to achieve multiple distinctive looks.
- .5 StoCreativ Lux Finish: Combines the texture and depth of natural stone with the luster of reflective materials.
- .6 StoCreativ Granite Finish: Trowel applied and designed to provide a polished granite look.
- .7 StoTique Finish: Specialty coating applied over finish to achieve a mottled, antiqued or old world appearance.
- .8 Sto Decocoat Finish: Ready-mixed, decorative wall and floor coating composed of fine aggregate encased in an acrylic binder.
- .9 Sto Limestone Finish: Provides the look and feel of natural stone.
- .10 Sto GraniTex Finish: Spray-applied, acrylic based wall finish providing the look and feel of natural stone.
- .11 Colour: [_____] [As selected by the Consultant from the manufacturer's standard product line] [As indicated on Drawing _____].

SPEC NOTE: Wall assembly components listed below are by others and are not furnished by Sto Canada and are not typically installed by the contractor who installs the Sto components .

- .11 Related wall assembly components:
 - .1 Flashing: In accordance with Section 07 62 00.
 - .2 Joint Sealants: In accordance with Section 07 92 00

2.3 MIXES

- .1 Mix materials in accordance with written instructions.
 - .1 Use only clean potable water, free of salts, other contaminants or deleterious materials to mix adhesive/base coat.
 - .2 Use clean, rust-free, high-speed mixer to stir finish to uniform consistency. Add small amounts of clean potable water to aid workability.
 - .3 Use of antifreeze agents, accelerators, rapid binders or other additives is not permitted.
 - .4 Mix only as much material as can readily be used.

2.4 SOURCE QUALITY CONTROL

- .1 Consistent with ULC S716.2, ensure ci cladding system components, air and moisture barrier system, adhesive, base coat, primer, and finish coat materials are supplied by Sto Canada.

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: Verify that substrate conditions which have been previously installed under other sections or contracts meet design tolerances and are acceptable for product installation in accordance with Sto Canada Installation Guide prior to installation of ci cladding system.
- .2 Inspect surfaces to determine conditions as follows:
 - .1 Contamination from algae, chalkiness, dirt, dust, salts, efflorescence, form oil, fungus, grease, laitance, mildew or other foreign substances.
 - .2 Surface absorption and chalkiness.
 - .3 Surface cracks: Measure and record location.
 - .4 Damage and deterioration.
 - .5 Moisture content and moisture damage: Use moisture meter to determine if surface is dry enough to receive the fluid applied air and moisture barrier.
 - .6 Inform Owner and Consultant of unacceptable conditions immediately upon discovery.
 - .7 Proceed with installation after verification and correction of surface conditions.

3.2 PREPARATION

- .1 Protect adjacent surfaces from damage or overspray resulting from ci cladding system work.
 - .1 [Mask] [Cover] adjacent surfaces, fixtures, equipment, landscaping and other components to protect from over spraying.
- .2 Remove loose or damaged materials by [water blasting] [sandblasting] [wire brush].
- .3 Resurface, patch or level surfaces to required tolerance and smoothness in accordance with written instructions.
- .4 Ensure foundation waterproofing material and roof membrane materials are correctly terminated to properly transition with the fluid applied air/moisture barrier on the wall for air barrier continuity and waterproofing integrity.

3.3 COORDINATION

- .1 Provide coordination such that earth grade terminates a minimum 200 mm (8") below the ci cladding system, minimum 50 mm (2") above finished grade (pavers/sidewalk). Provide increased clearance in freeze/thaw climate zones.
- .2 Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier and continuous moisture protection.
- .3 Provide protection of rough openings before installing windows, doors, and other penetrations through the wall, and provide sill flashing.
- .4 Coordinate installation of air and moisture barrier components with window and door installation to provide weatherproofing of the structure and to prevent moisture infiltration and excess air infiltration.
- .5 Provide head flashing immediately after windows, doors, and similar elements are installed.
- .6 Provide diverter flashings wherever water can enter the wall assembly to direct water to the exterior, for example, at lower-to-higher wall intersections.
- .7 Install splices or tie-ins from the air/moisture barrier over back leg of flashings and similar details to form a shingle lap that directs incidental water to the exterior.
- .8 Install copings and sealant immediately after installation of the ci cladding system when coatings are dry, and such that, where sealant is applied against the ci cladding system surface, it is applied against the base coat or primed base coat surface.
- .9 Schedule work such that the air/moisture barrier is exposed to weather no longer than 30 days.
- .10 Attach penetrations through ci cladding system to structural support and provide airtight and water tight seals at penetrations.

3.4 INSTALLATION

SPEC NOTE: Hot or dry conditions accelerate drying. Cold temperatures retard drying and strength gain. Under these conditions adjustments in the scheduling and application of the ci cladding system may be necessary to achieve a satisfactory installation. Do not install air barrier, adhesive, base coat, primers or finishes during extremely hot, dry and/or windy conditions, or during freezing conditions, or on frozen substrates.

- .1 Install in accordance with the manufacturer's written instructions and the contract documents over plumb, true, and level, clean prepared substrate. Refer to StoGuard Air Barrier Installation Manual and Sto Canada [EIFS] Installation Guide.

SPEC NOTE: Do not allow air and moisture barrier installation to remain exposed more than 30 days. Protect with insulation promptly after installation.

SPEC NOTE: The air and 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 and 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.

.2 Air and Moisture Barrier Application:

- .1 Prepare surfaces to receive transition membrane at expansion joints and openings through substrate in accordance with manufacturer's written instructions.
- .2 Locate surface defects such as knots in plywood sheathing, joint treatment of wall sheathing, fasteners, and cracks in concrete masonry units. Remove loose or bond-inhibiting material, including dust, dirt, mould and efflorescence.
- .3 For static and non-structural cracks up to 13 mm (1/2") wide, apply and tool joint and seam filler to fill the crack.
- .4 Install air and moisture barrier components over substrates in accordance with manufacturer's written instructions.
- .5 Allow 24 hours minimum before adhering insulation to air and moisture barrier and not more than 30 days.
- .6 Protect installed products from rain and freezing until dry.

.3 Insulation Installation:

SPEC NOTE: Wrapping insulation with base coat and mesh at terminations is a requirement to keep water out and to provide an adequate substrate for sealant connections.

- .1 Wrapping terminations: Where water is expected to drain, pre-wrap insulation board at terminations with base coat and mesh prior to installation to create Starter Boards. Where drainage is not intended pre-wrap or backwrap insulation board.
 - .1 Pre-wrapping: Embed mesh of sufficient width around the edge of the insulation board to cover minimum 65 mm (2.5") on the back and front of the board. Adhere a 230 mm wide (9") strip of detail mesh with adhesive to the substrate at locations where the pre-wrapped insulation starter boards are butted together. Ensure the length is adequate to wrap 65 mm (2.5") to the substrate plus the thickness of the insulation plus 65 mm (2.5") onto the face of the insulation.
 - .2 Backwrapping: Adhere mesh approximately 65 mm (2.5") onto the substrate at all system terminations (windows, doors, expansion joints, etc.). Ensure the length is adequate to wrap around the insulation board edge and to cover a minimum of 65 mm (2.5") on the outside surface of the insulation board.
- .2 Application of spray foam adhesive and installation of insulation:

- .1 Apply a total of eight (8) ribbons of adhesive uniformly to the back of the insulation board. Apply end ribbons 2 cm (3/4") from each end and apply two (2) ribbons in each section of the board between the drainage grooves with ribbons of adhesive 13-15 cm (5-6") apart. Prevent adhesive from getting into drainage grooves.
- .2 Install the insulation boards after the adhesive "tacks" and before it "skins" in a running bond pattern with joints offset from sheathing joints a minimum of 200 mm (8"). Apply light pressure across the entire surface of the boards with a straight edge to ensure good adhesive contact with the substrate and to keep board joints flush.
- .3 Application of portland cement adhesives and installation of insulation:
 - .1 Apply ribbons of adhesive uniformly to the back of the insulation board between the drainage grooves with a 13 mm x 13 mm (1/2" x 1/2") U-notched trowel with the notches spaced 65 mm (2-1/2") on centre. Prevent adhesive from getting into the drainage grooves.
 - .2 Install the insulation immediately after the application of the adhesive in a running bond pattern with joints offset from sheathing joints a minimum of 200 mm (8"). Apply firm uniform pressure across the entire surface of the boards to ensure good adhesive contact with the substrate.
- .4 Install pre-wrapped starter boards using vertical ribbons of adhesive at the bottom of the wall and at other terminations where drainage is intended such as floor lines. Secure with blocking or mechanical fasteners to support the subsequent rows of boards installed above.
- .5 Install pre-wrapped or back-wrapped boards at other terminations such as windows, doors, and fixture penetrations, allowing for a minimum 13 mm (1/2") wide joint width. At dissimilar construction allow for a minimum 19 mm (3/4") wide joint and as dictated by expected joint movement. At expansion joints terminate boards so they coincide with the edges of the joint and joint width is the same as in the supporting construction.
- .6 Install boards tight to adjacent boards, free of gaps or voids.
- .7 Install pre-wrapped corner boards in an 'L'-shape around openings to avoid alignment of insulation joints with corners of openings.
- .8 Prevent adhesive from getting between boards.
- .9 Fill gaps between boards with wedges of insulation or fill with spray foam adhesive.
- .10 Allow adhesive to dry twenty-four (24) hours minimum prior to rasping. Allow longer drying periods during cool weather until boards are firmly held in place by the adhesive.

SPEC NOTE: When using trim, shapes, or build outs, ensure conformance with requirements of Section 1.8.4 regarding slope and weather protection.

- .11 Install trim, shapes, or build-outs directly to the base layer of insulation board with spray foam or portland cement-based adhesive. Avoid gaps between trim and the base layer of insulation board. If gaps exist fill with the spray foam adhesive and rasp flush with the surface.

- .12 Once all insulation boards are firmly adhered, including trim, rasp the entire insulation board surface to produce a smooth, even surface.

SPEC NOTE: If Sto IMPACT is required Sto Armor Mat reinforcing mesh must be installed over the entire wall area, including trim (or, as an alternate, two layers of standard mesh may be used on trim). If Sto IMPACT is NOT required supplemental mesh application is recommended to a minimum height of 2000 mm (6.5') above finished grade at all areas accessible to pedestrian traffic and other areas exposed to abnormal stress or impact. This is accomplished by using one layer of Sto Armor Mat reinforcing mesh and one layer of standard reinforcing mesh embedded in standard base coat.

.4 Standard Base Coat Installation:

- .1 Reinforce first 2000 mm (6.5') minimum above grade and other designated areas with Sto Armor Mat reinforcing mesh. Reinforce the entire wall surface, including trim, with Sto Armor Mat reinforcing mesh if Sto IMPACT is required (or use the two layer standard mesh application noted above – one initial layer and the second layer installed when field mesh is installed).
 - .1 Install Sto Armor Mat reinforcing mesh at locations indicated. Tightly butt reinforcing mesh. Do not overlap mesh joints.
 - .2 Using stainless steel trowel, apply base coat over surface of insulation board in areas with Sto Armor Mat reinforcing mesh.
 - .3 Apply horizontally or vertically in strips of approximately 1016 mm (40") and immediately embed Sto Armor Mat reinforcing mesh into wet base coat.
 - .4 Trowel smooth to ensure mesh colour is not visible and allow to dry.

SPEC NOTE: Delete paragraph 3.4.4.2 if Sto IMPACT is required.

- .2 Apply standard reinforcing mesh over entire surface of insulation board, including areas with Sto Armor Mat by embedding the mesh in standard base coat
 - .1 Depending on complexity of trim work, detail these areas first by embedding mesh (standard mesh or detail mesh) in standard base coat and lap mesh minimum 65 mm (2.5") from trim onto base layer of insulation board.
 - .2 Using stainless steel trowel apply base coat over surface of insulation board.
 - .3 Work in strips of approximately 1016 mm (40").
 - .4 Immediately embed reinforcing mesh in wet base coat by troweling from the center to the edges of the mesh.
 - .5 Trowel smooth so no mesh colour is visible to a thickness of approximately 1.6 mm (1/16").
 - .6 Overlap mesh seams, backwrapped areas, and detail areas where mesh laps from trim onto base layer of insulation board minimum 65 mm (2.5").
 - .7 Feather base coat on each side of mesh overlaps.
 - .8 Avoid wrinkles in mesh.
 - .9 Reinforce corners of openings with a "butterfly" of detail reinforcing mesh placed diagonally at the corner and embedded in base coat.

- .10 Reinforce inside and outside corners with standard reinforcing mesh wrapped in each direction a minimum of 200 mm (8") embedded in base coat.
- .11 Allow reinforced base coat application to completely dry before proceeding to the next step.

SPEC NOTE: Sto IMPACT uses the fortification layer described below over Sto Armor Mat in lieu of standard base coat. Delete paragraph 3.4.5 if Sto IMPACT is NOT required.

.5 Fortification Base Coat Installation:

- .1 Apply fortification layer using standard reinforcing mesh over the Armor Mat reinforced insulation board surface, including trim.
 - .1 Depending on complexity of trim work, detail these areas first by embedding mesh (standard mesh or detail mesh) in fortification base coat and lap mesh minimum 65 mm (2.5") from trim onto base layer of insulation board.
 - .2 Using stainless steel trowel apply fortification base coat over surface of insulation board.
 - .3 Work in strips of approximately 1016 mm (40").
 - .4 Immediately embed reinforcing mesh in wet fortification base coat by troweling from the centre to the edges of the mesh.
 - .5 Trowel smooth so no mesh colour is visible to a uniform wet thickness of 3.5-4.0 mm (9/64-5/32").
 - .6 Overlap mesh seams, backwrapped areas, and detail areas where mesh laps from trim onto base layer of insulation board minimum 65 mm (2.5").
 - .7 Avoid wrinkles in mesh.
 - .8 Reinforce corners of openings with a "butterfly" of detail reinforcing mesh placed diagonally at the corner and embedded in base coat.
 - .9 Reinforce inside and outside corners with standard reinforcing mesh wrapped in each direction a minimum of 200 mm (8") embedded in base coat.
- .10 Allow fortification layer to completely dry before proceeding to the next step.

SPEC NOTE: Different finishes require different application methods. Refer to product bulletins for the selected finish instructions. Primer is an optional component (except for some specialty finishes) that is recommended to provide uniform substrate absorption and finish colour, to improve adhesion and water resistance, and to retard efflorescence.

.6 Finish Coat:

- .1 Prime reinforced base coat prior to application of finish coat.
 - .1 Allow primer to completely dry prior to applying finish coat.
- .2 Mix small amount of mixing water with finish coat materials to aid workability.
- .3 Apply finish coat to primed base coat using [trowel] [spray applicator equipment], to thickness recommended by ci cladding system manufacturer.

- .4 Shade work to prevent rapid setting of finish.
- .5 Provide equipment, materials and work crew of sufficient size to ensure a continuous operation without cold joints.
- .6 Apply finish in continuous application.
 - .1 Work to a wet edge.
 - .2 Work to an architectural break in wall.
- .7 Do not install different batches of finish coat side-by-side.
- .8 Do not install finish coat in joints to receive sealants.

3.5 SITE QUALITY CONTROL

- .1 Schedule site visits by design professional, owner's consultant, or third party quality assurance agent to conduct tests and review work as follows:

SPEC NOTE: Edit the following to suit project requirements. Establish the type and frequency of tests and the number and duration of site visits required and modify below.

- .2 Testing:
 - .1 [ci cladding system adhesion (ASTM D 4541) at [once per [700 m²] [7500 ft²]]]
 - .2 [Window water spray tests at [three per elevation.]]
 - .3 [Sealant field adhesion tests on each elevation.]
- .3 Site visits by Owner's building envelope consultant:
 - .1 [At project pre-installation meeting.]
 - .2 [After delivery and storage of products.]
 - .3 [Upon completion of preparatory work upon which this Section depends, but before installation begins.]
 - .4 [Two times during progress of work [at [25%] and [60%]] of completion.]
 - .5 [Upon completion of work, after cleaning is carried out.]

SPEC NOTE: Joint sealants and copings are not furnished by Sto Canada and are not typically installed by the installer of Sto components. Provide for their installation in tandem with the insulated cladding work or shortly after the finish work is completed to complete the weatherproofing of the structure. Refer to ASTM C1481 and the EIFS Practice Manual Section 3.3 for more information on the design of joints and sealant selection with EIF systems.

3.6 CLEANING AND PROTECTION

- .1 Provide protection of installed materials from water infiltration into or behind the system. Provide protection of installed primer and finish coat from dust, dirt, precipitation, freezing, and continuous high humidity until fully dry.
- .2 Provide sealant tested in accordance with ASTM C1382 with backer material at ci cladding system terminations to protect against air, water and insect infiltration.

Provide weeps at floor lines, window and door heads, and other areas to conduct incidental water to the exterior.

- .3 Progress Cleaning: Leave work area clean at the end of each work-day, ensuring safe movement of passing pedestrians.
- .4 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.
- .5 Refer to Sto Repair and Maintenance Guide for detailed information on cleaning, repairs, recoating, resurfacing and refinishing, or re-cladding.
- .6 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Installer shall be responsible for ensuring waste management efforts are practiced.
 - .1 Clean pails with water prior to recycling.
 - .2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate onsite bins] for recycling.

END OF SECTION 07 24 26

ATTENTION

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