Sto Corp.
3800 Camp Creek Parkway
Building 1400, Suite 120
Atlanta, GA 30331
Tel: 404-346-3666
Toll Free: 1-800-221-2397
Fax: 404-346-3119
www.stocorp.com

Sto Specification R103
Guideline Specification for
Installation of StoTherm ci Exterior Insulation and Finish (EIFS) Wall Assemblies over Existing Wall Cladding Using Metal Lath Attachment

Section No. 072400
Sto reStore Level 3

This specification is intended to give design professionals and restoration contractors guideline instructions for the installation of StoTherm ci exterior insulation and finish system (EIFS) with drainage to existing masonry, including painted masonry, walls. This specification is supplemental to Sto specifications for construction of EIFS. Refer to the Sto specifications and documents listed in section 1.03 for detailed instructions on the handling, mixing, and use of Sto products.

Each repair project is unique and will require involvement of qualified repair design professionals and contractors. This specification addresses installation of EIFS to the structure after repairs have been made to correct original construction deficiencies, degradation, or damage. Conditions that require specific repair detail design may exist on any project. Conditions that are significantly different from those described herein must be addressed by the project design or construction professional. EIFS is a nonstructural element. This specification DOES NOT address correction of structural deficiencies and work in this section should not proceed until any and all sources of structural cracking or other structural deficiencies are corrected.

This specification does not specifically address window replacement. However the flashing repair/replacement procedures are applicable if windows are to be removed.

Guide details for EIFS repair are available at www.stocorp.com to supplement this specification. The necessity for repairs is often a result of improper construction practice. Select qualified contractors for repair work and verify their references.

Notes in italics, such as this one, are explanatory and intended to guide the design/construction professional and user in the proper selection and use of materials. This specification should be modified where necessary to accommodate individual project conditions.

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PART 1 GENERAL

1.1 SUMMARY

A. Install new water-resistive barrier membrane system to existing masonry façade.

B. Install flashing as required to direct water to the exterior of the wall and integrate the flashing with the water-resistive barrier membrane system in accordance with manufacturer's requirements.

C. Install galvanized expanded metal diamond lath.

D. Install exterior insulation and finish system (EIFS) with drainage.

1.2 SUBMITTALS

A. EIFS, repair materials, and coating manufacturers' specifications, details, installation instructions and product data.

B. Samples for approval as directed by architect, engineer, or owner.

C. Manufacturer's standard material warranty for each product or system to be used.

D. Minimum three job references.

1.3 REFERENCES

A. ASTM Standards

ASTM C 578	Specification for Foam Plastic Insulation
ASTM C 847	Specification for Metal Lath
ASTM C 920	Specification for Elastomeric Joint Sealants
ASTM C 1063	Specification for Installation of Lath
ASTM C 1382	Specification for Sealants for EIFS
ASTM E 2430	Specification for EIFS Reinforcing Mesh
ASTM E 2568	Specification for EIFS
ASTM E 2570	Specification for Water-resistive Barrier Coatings

B. Other References

StoTherm EIFS	Reference Guide: Repair and Maintenance
Sto Specification RC 100	reStore Guideline Specification for Cleaning Wall Surfaces
Sto Specification A100G	StoTherm ci Classic Guide Specification

NOTE: Substitute the appropriate specification name and number for the EIFS products to be used based on the material warranty length and drainage requirements for the new components to be installed:

- *E100G, StoTherm ci Essence*
- *L100G, StoTherm ci Lotusan*

ICC-ES ESR-1030	Sto RainScreen and Sto RainScreen II Evaluation Report *(Note: Sto RainScreen II, only, is applicable to this specification.)*

1.4 DESIGN REQUIREMENTS

A. A qualified engineer, architect or repair contractor shall perform the actions specified in Section 1.04 of this specification:

B. Determine repair scope and detail design requirements based on inspection of the field conditions.

C. Identify and design repairs to the structure and to the existing façade as required to provide a sound substrate for installation of the water-resistive membrane, metal lath support and EIFS.

D. Provide flashing installation, repair and/or replacement details for applicable conditions and indicate locations of each repair on project drawings. Flashing remediation shall be based on standard flashing requirements listed below and indications of distress or leakage observed during inspection:

1. Provide head flashing above and sill flashing below all window and door openings, and similar through wall penetrations
2. Provide flashing at the bottom of the EIF system.
3. Provide flashing at floor line expansion joints in multi-story construction.
4. Terminate EIFS minimum 2-inches (51 mm) above paved grade and roofing materials.
5. Terminate EIFS minimum 6--inches (152 mm) above soil and landscaped finished grades.

NOTE: Verify local code requirements and comply with them for minimum distance above grade for EIFS termination.

6. Provide metal cap flashing for parapets. Cap flashing shall be sloped to drain water onto the roof system.
7. Provide metal flashing for non-vertical or low slope projections to drain water away from the wall exterior.

NOTE: Best practice where no sill flashing is present beneath windows is to remove the window and properly install a sill pan flashing.

E. Integrate all flashing repair and replacement with the water-resistive barrier system to provide direct and continuous drainage to the exterior of the wall.

F. Pre-wrap exterior insulation terminations at grade, expansion joints, and perimeters of wall openings and mechanical penetrations. Provide minimum ½-inch-wide (12.5 mm) space between the pre-wrapped insulation and window/door frames. Install backer rod and sealant joint at perimeters of window, doors and mechanical penetrations.

G. Provide detail drawings consistent with Sto guideline details and Sto product installation instructions.

H. As an option to flashing described in 1.04 D7, apply waterproof base coat with reinforcing mesh to standard EIFS base coat on the top surfaces of projecting elements and immediately above and below the projecting elements. Slope projecting elements sufficiently to provide drainage to the exterior. Protect these surfaces with horizontal grade coating. IMPORTANT: Limit this option to small, easily accessible areas. Dirt pick-up, bird droppings, excess wear, and other issues may occur that necessitate frequent maintenance of projecting elements.

1.5 QUALITY ASSURANCE

A. Manufacturer's requirements

1. EIFS material manufacturer shall have minimum 25 years of experience producing cementitious and polymer-based materials for use in EIFS construction and repair..
2. EIFS manufacturer shall have a manufacturing quality control system that is certified to comply with ISO 9001-2008 and an environmental quality management system certified to comply with ISO 14001-2004.
3. EIFS manufacturer shall have current valid code evaluation reports which list the EIFS materials to be used.

B. Contractor requirements

1. Contractor shall be licensed and insured and shall have been engaged in EIFS and EIFS repair construction for minimum three years.
2. Contractor shall be knowledgeable in the proper handling, use and installation of Sto materials.
3. Contractor shall employ skilled mechanics who are experienced and knowledgeable in the repair procedures and requirements of the specified project.
4. Contractor shall have completed minimum three projects of similar size, scope and complexity to the project being specified.
5. Contractor shall provide the proper equipment, manpower and supervision on the job site to perform the repair procedures in accordance with Sto's published repair specifications, applicable Sto details and the contract documents.

C. Inspection requirements

1. Quality control inspections shall be provided for by the owner or owner's representative.
2. Inspectors shall be qualified by experience to evaluate field conditions before and during the repair process and shall be familiar with the specified repair procedures prior to commencement of work.
3. Inspections shall be provided at key intervals during each repair.
4. Inspect the condition of the water-resistive barrier, transition elements and newly installed or replaced flashing for visible evidence of material integrity and continuity of the system before installing lath. Verify that flashing and water-resistive barrier installation is in accordance with the repair detail design. Verify visible continuity of the water-resistive barrier system to direct water to the exterior of the wall via the flashing.
5. Inspect installed lath to verify proper fastener type and spacing, and wire-tying of lath seams.
6. Inspect the final appearance of each repair location to verify compliance with owner requirements.
7. Resolve any visible construction detail conflicts with the repair designer before allowing the contractor to proceed with the repair.

1.6 DELIVERY, STORAGE AND HANDLING

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

B. Protect liquid products (pails) from freezing and temperatures greater than 90 degrees F (32 degrees C). Do not store in direct sunlight.

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

1.7 PROJECT/SITE CONDITIONS

A. Apply materials only when surface and ambient temperatures are above 40 degrees F (4 degrees C) and are expected to remain above 40 degrees F (4 degrees C) for 24 hours after application.

B. Provide supplementary heat for installation in temperatures less than 40 degrees F (4 degrees C).

C. Provide protection of surrounding areas and adjacent surfaces from spillage, splatter, overspray or other unintended contact with the materials that are being applied.

1.8 COORDINATION AND SCHEDULING

A. Schedule and conduct a preconstruction conference with all trades providing work for this section. At minimum discuss:

1. Full scope of repairs
2. Repair locations as noted on project drawings,
3. Coordination and location of repairs that specifically require coordination between trades to set the proper sequence of installation.

B. Schedule repairs to permit inspections where specified in Section 1.05.

C. Do not start repairs in an area unless sufficient work can be completed such that the area is weather-tight at the end of the work shift. Alternatively allow sufficient time before the end of the work shift to provide temporary weather protection until work can resume.

D. Coordinate with all trades involved to schedule work to result in the proper sequencing of materials within the repair (proper lapping of water resistive system components and flashing).

E. Schedule finish and coating application to large areas such that each day's application will end at an architectural break.

1.9 WARRANTY

A. Provide manufacturer's standard warranty for products used.

PART 2 PRODUCTS

NOTE: *Detailed Sto product information is available at **www.stocorp.com**. Many different product options are presented below. All products may not be required. Product selection assistance is available from your local Sto representative and Sto Corp. Technical Services.*

2.1 MANUFACTURERS

A. Provide EIFS component materials and coatings (as applicable) from single manufacturer:

1. Sto Corp., 3800 Camp Creek PKWY, Building 1400, Suite 120, Atlanta, GA 30331; www.stocorp.com, 1-800-221-2397

B. Provide EIFS accessory components from qualified manufacturers.

C. Provide metal plaster base (expanded metal lath) and fasteners from qualified manufacturer.

2.2 WATERPROOF AIR BARRIER

A. Provide waterproof air barrier coating and transition membrane system.

1. Waterproof Air Barrier: Sto Gold Coat – fluid-applied waterproof air-barrier coating for moisture protection of sheathing, masonry and concrete substrates behind EIFS.

2. Rough Opening Protection and Joint Treatment

a. Sto Gold Fill with StoGuard Mesh – trowel-applied treatment for waterproof air barrier system terminations and transitions to flashing and other construction elements.

b. StoGuard RapidFill – gun-grade waterproof air barrier sealant with fiber reinforcement for use to seal between water-resistive barrier and flashing elements.(may be alternate to or used with Sto Gold Fill and StoGuard Tape)

c. StoGuard Fabric – non-woven fabric tape for use with Sto Gold Coat as a transition element by embedment of the StoGuard Fabric into wet Sto Gold Coat. Used as transition membrane from Sto Gold Coat onto top edge of StoGuard Tape. *(in some cases may be used as an alternate to StoGuard Transition Membrane).*

d. StoGuard Tape – fabric-faced, self-adhesive modified asphaltic flashing tape for use with Sto Gold Coat as transition at flashing, windows, mechanical penetrations and at system terminations

3. Transition Membrane

a. StoGuard Transition Membrane – flexible air barrier membrane used with Sto Gold Coat for transition at flashing and system terminations.

2.3 ADHESIVE

(Select 1)

A. Cementitious Adhesives

1. BTS Plus – one component, polymer-modified, high build EIFS adhesive.

2. BTS Xtra – Lightweight, one component, polymer-modified, high build adhesive.

3. Primer/Adhesive-B – one component, polymer-modified, adhesive.

4. Primer/Adhesive – two component, polymer-modified, adhesive. Combined in the field with portland cement.

2.4 INSULATION BOARD

A. Nominal 1.0 pcf (16 kg/cu.m.) Expanded Polystyrene (EPS) insulation board in compliance with ASTM E 2430 and ASTM C 578, Type I requirements.

NOTE: Minimum required thickness is 1 inch (25 mm) and maximum allowable thickness is 4 inches (305 mm). Use of insulation thickness greater than 4-inches (305 mm) requires evaluation by a qualified fire professional and approval by local code agency.

2.5 BASE COAT

(Select 1)

A. Cementitious Base Coats (see 2.03 for product descriptions)

1. BTS Plus
2. BTS Xtra
3. Primer/Adhesive-B
4. Primer/Adhesive

B. Non-Cementitious Base Coat

1. Sto RFP – single component, ready-mixed, non-cementitious fiber reinforced acrylic base coat.

C. Waterproof Base Coat

1. Sto Flexyl – two component fiber-reinforced acrylic-based waterproof base coat mixed in the field with portland cement (provided by others). Use with reinforcing mesh where waterproofing is required.
2. Sto Watertight Coat – two component, pre-proportioned acrylic based waterproof base coat. Combine two components in field. Use with reinforcing mesh where waterproofing is required.

2.6 GLASS FIBER MESH REINFORCEMENT

A. Provide alkali resistant, open weave glass fiber mesh reinforcing for surface leveling and waterproof base coat.

1. Products:
   a. Sto Mesh – alkali-resistant, glass-fiber reinforcing mesh for use with Sto base coat products to provide crack resistance.
   b. Sto Detail Mesh – alkali-resistant, glass-fiber reinforcing mesh for use with Sto base coats to provide crack resistance and at system terminations.
   c. StoGuard Mesh – self-adhesive mesh for use with Sto Gold Fill water resistive barrier joint and transition treatment.
   d. Sto Armor Mat – high impact resistant, 15 oz. per sq.yd. (509 g/sq.m.) alkali resistant, glass-fiber reinforcing mesh.
   e. Sto Armor Mat XX – ultra-high impact resistant, 20 oz. per sq.yd. (678 g/sq.m.) alkali resistant glass-fiber reinforcing mesh.

2.7 PRIMER

A. Provide acrylic primer (choose one).

1. Sto Primer Sand
2. Sto Primer Smooth
3. Sto Hot Prime
4. Sto Primer Creativ

2.8 POLYMERIC FINISH

A. Provide polymeric acrylic EIFS finish. Color and texture to be determined based on mockup. *(Choose one)*

1. Acrylic Finish Products
    a. Stolit Lotusan –Textured finish with Lotus Effect (maximum water repellency, significantly reduced cleaning requirements over time)
    b. Stolit – Acrylic textured finish (better than industry standard acrylic finish)
    c. Sto Essence DPR – Acrylic textured finish (industry standard acrylic finish)
2. Specialty Acrylic Finishes

NOTE: These finishes are accent or nontraditional finishes. These products require application of mesh-reinforced base coat prior to finish installation and may require significant additional surface preparation and clear sealer for exterior use. See written installation instructions for the specified product and specify accordingly.

    a. Sto Decocoat – trowel or spray-applied colored aggregate textured finish
    b. Sto Granitex – spray applied colored aggregate finish with coarse texture
    c. StoCreativ Granite – trowel applied colored aggregate faux granite finish
    d. StoCreative Lux – trowel applied colored aggregate faux granite finish with reflective accent
    e. StoTique – faux finish transluscent surface application for smooth or textured Sto acrylic finishes to produce mottled color and old-world appearance.

2.9 PORTLAND CEMENT

A. Provide ASTM C 150 Type I, Type II, or Type I-II cement for mixing with Sto Primer/Adhesive and/or Sto Flexyl.

2.10 SEALANT

A. Sealant shall be low-modulus, comply with ASTM C 920, ASTM C 1382 and be recommended for use with EIFS by the sealant manufacturer.

2.11 LATH DRAINAGE MAT

A. Provide minimum 2.5 lb/sq.yd.(1.36 kg/sq.m), galvanized expanded metal lath, complying with ASTM C 847.

2.12 MIXING

A. Mix in accordance with manufacturer's printed instructions.

B. Mix cementitious products with clean, potable water.

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

A. Prequalify repair contractor under Quality Assurance requirements of this specification (section 1.05.B).

3.2 PREPARATION

A. Conduct preconstruction conference with all installers. At minimum discuss:

1. Full scope of repairs
2. Repair locations as noted on project drawings,
3. Coordination and location of repairs that specifically require coordination between trades to set the proper sequence of installation.

B. For painted surfaces, perform bond tests to verify adhesion of StoGuard materials to existing coatings.

3.3 WATERPROOF AIR BARRIER INSTALLATION

A. Clean wall surface in accordance with Sto Specification RC100, *Guideline Specifications for Cleaning Wall Surfaces.*

B. Do not proceed until all loose or unsound paint, coating, or substrate materials have been removed.

C. Install corrosion resistant flashing at locations indicated on the project drawings.

D. Install system transition details and termination details in accordance with project requirements and product specifications (product specifications and published use and installation instructions are available at www.stocorp.com).

E. Apply Sto Gold Coat to prepared surface, minimum 10 wet mils, and as necessary to achieve a void free and pinhole free application.

F. Repair localized voids and pinholes with brush or roller to provide continuous coating application.

G. Allow Sto Gold Coat to dry completely (minimum 4 hours, depending on ambient conditions).

3.4 LATH INSTALLATION

NOTE: Wind resistance of this system is based on providing fastening and support equivalent to that used over frame construction as described in ESR-1030, Assembly No. 3, allowable negative wind pressure 55 psf (269 N/sq.m.). Fastener type, spacing, pattern and washer type

must be determined by the project design professional in consultation with the fastener manufacturer for applications requiring greater than 55 psf (269 N/sq.m.) allowable negative pressure, and MUST be tested in accordance with ASTM E 330. Acceptance of the system must be determined to be acceptable by the responsible design professional.

A. Install galvanized expanded metal lath complying with ASTM C 847.

1. Attach lath drainage mat to substrate using fasteners that are recommended by the fastener manufacturer for the substrate being covered.
2. Use ULP 302 plate washers spaced maximum 16-inches (406 mm), on-center, horizontally and maximum 8-inches (203mm) on-center, vertically, with a minimum edge distance of 2-inches (51 mm) from edge of lath.
3. Butt seams of lath drainage mat (do not lap lath). Wire-tie lath seams where edges are not securely attached.

3.5 EIFS INSTALLATION

A. Mix adhesive in accordance with product instructions for the material being used and apply to the insulation board using a notched trowel such that the ribbons of adhesive will be oriented vertically in-place.

B. Install remainder of EIF system in accordance with Sto published installation instructions and specifications for the system being used as referenced in section 1.03 of this specification.

END OF SECTION

ATTENTION

Sto products are intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. They should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of Sto products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to Sto products, and to the structure of the building or its components. **STO CORP. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.** For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com.