Building with conscience.

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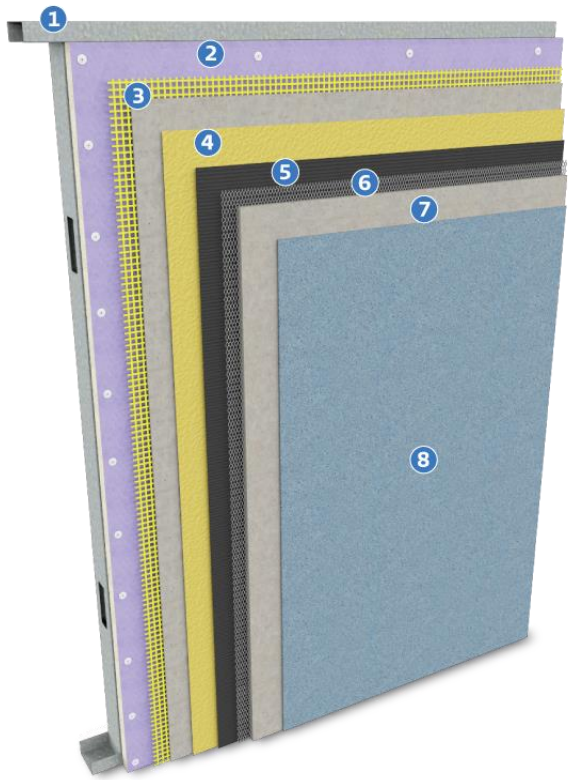
Sto Guide Specification 6H01
Sto High Velocity Hurricane Zone (HVHZ) System

StoPowerwall® GMG

Section 07 24 19

This specification is intended for use by the design/construction professional and any user of Sto products to assist in developing project specifications and to provide guidance on the application of a Sto High Velocity Hurricane Zone (HVHZ) System, StoPowerwall GMG, to vertical above grade exterior wall construction. StoPowerwall® GMG (Glass Mat Gypsum substrate) is a Large and Small Missile impact resistant stucco wall system that complies with the Florida Building Code (FBC) and Miami-Dade County, Florida requirements for use in High Velocity Hurricane Zones with a Design Pressure of ± 100 psf (4.79 kPa). Refer to Miami-Dade County NOA No. 25-0107.07.

IMPORTANT: The 2023 FBC, which is adopted by Miami-Dade County, Florida, requires a minimum $^{3}/_{16}$-in (5mm) space or drainage material to the exterior side of the water-resistive barrier (WRB) in Moist and Marine climate zones. Where the 2023 FBC is in effect, refer to Sto Specification No. 6H03 StoPowerwall® GMG with Sto DrainScreen® and Miami-Dade County NOA No. 25-0107.10



No.	Components
1	6-in (152mm), 18 Ga Steel Studs at 16-in (406mm) oc
2	5/8-in (16mm) Glass Mat Faced Gypsum Sheathing (eXP® by National Gypsum)
3	Sto Armor Mat XX (20 oz) Mesh Embedded in Sto Primer/Adhesive-B
4	StoGuard® with Sto Gold Coat®
5	#15 Grade D Building Paper
6	2.5 lb/yd^2 (1.36 kg/m^2) Self-Furred Galvanized Expanded Metal Lath
7	StoPowerwall® Stucco Scratch & Browm Coat at 3/4-in or 7/8-in (19mm or 22mm) thick
8	Sto Textured Finish or StoCast Finish

Note: components not identified as Sto are furnished by other manufacturers and are not necessarily installed by trades who install the Sto products. Refer to project specific contract documents.

Table of Contents

PART 1 GENERAL

1.1 SUMMARY

A. Provide High Velocity Hurricane Zone (HVHZ), Large and Small Missile Impact Resistant stucco wall system that complies with requirements of the Florida Building Code (FBC) and Miami-Dade County, Florida.

Add/delete Sections, depending on specific project requirements

B. Related Sections

1. Section 03 00 00: Concrete
2. Section 04 00 00: Unit Masonry
3. Section 05 10 00: Structural Metal Framing
4. Section 06 10 00: Rough Carpentry
5. Section 06 16 00: Sheathing
6. Section 07 26 00: Vapor Retarders
7. Section 07 27 00: Air Barriers
8. Section 07 50 00: Membrane Roofing
9. Section 07 62 00: Sheet Metal Flashing and Trim
10. Section 07 90 00: Joint Protection
11. Section 08 10 00: Doors and Frames
12. Section 08 40 00: Entrances, Storefronts, and Curtain Walls
13. Section 08 50 00: Windows

1.2 SUBMITTALS

A. Manufacturer's Miami-Dade County NOA (Notice of Acceptance)

B. Manufacturer's standard warranty

C. Applicator's industry training credentials

D. Samples for approval as directed by architect or owner

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

1.3 REFERENCES

A. ASTM Standards

1. C847, Standard Specification for Metal Lath
2. C926, Standard Specification for Application of Portland Cement-Based Plaster
3. C920, Standard Specification for Elastomeric Joint Sealants

4. C1177, Specification for Glass Mat Gypsum for Use as Sheathing
5. C1861, Standard Specification for Lathing and Furring Accessories, and Fasteners, for Interior and Exterior Portland Cement-Based Plaster
6. E96, Standard Test Methods for Water Vapor Transmission of Materials
7. E119, Method for Fire Tests of Building Construction and Materials
8. E283, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
9. E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
10. E331, Standard Test Method for Water Penetration of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
11. E2178, Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials
12. E2357, Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies

B. Miami-Dade County Notice of Acceptance

1. NOA 25-0107.07, Sto Corp., StoPowerwall GMG Wall Panel System with Wire Lath and Stucco over 5/8” eXP Gypsum Sheathing

C. Florida Building Code Test Standards

1. TAS 201, Testing Application Standard (TAS) 201-94, Impact Test Procedures
2. TAS 202, Testing Application Standard (TAS) 202-94, Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure
3. TAS 203, Testing Application Standard (TAS) 203-94, Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

D. International Organization for Standardization (ISO)

1. ISO 9001, Quality Management Systems – Requirements
2. ISO 14001, Environmental Management Systems – Requirements with Guidance for Use

E. South Coast AQMD (Air Quality Management District) Standards

1. Rule 1113, Architectural Coatings

F. Sto Publications

1. 66s.xx StoPowerwall Design Guide and Detail Booklet
2. Sto reStore Repair and Maintenance Guide

1.4 DESIGN REQUIREMENTS

Add/delete depending on specific project requirements

A. Refer to Miami-Dade County NOA 25-0107.07 for design pressure, minimum design requirements, and approved materials.

B. Air Barrier and Water-Resistive Barrier (AWRB): liquid-applied AWRB with compatible detail components

C. Stucco Wall Assembly: achieves plus or minus 100 psf (4.79 kPa) design wind pressure

1.5 PERFORMANCE REQUIREMENTS

A. Air and Water-Resistive Barrier (AWRB)

1. Air leakage less than 0.004 cfm/ft^2 (0.02 L/s·m^2) at 1.57 psf (75 Pa) when measured in accordance with ASTM E2178
2. Assembly air leakage less than 0.04 cfm/ft^2 (0.2 L/s·m^2) after conditioning protocol when measured in accordance with ASTM E2357
3. Vapor Permeable, water vapor permeance greater than 10 perms when measured in accordance with ASTM E96, Method B

B. Stucco and AWRB Wall Assembly

1. Meets Large Missile Impact resistance and wind load criteria of TAS 201, 202, and 203 with a design pressure rating of plus or minus 100 psf (4.79 kPa)
2. Maintains hourly fire resistance rating of known, hourly rated base wall assembly when tested or evaluated in accordance with ASTM E119

1.6 COMPLIANCE

A. Stucco Wall Assembly

1. Complies with FBC and Miami-Dade County requirements for use in High Velocity Hurricane Zones, and for use on buildings required to have Large Missile Impact resistance
2. Complies with FBC and Miami-Dade County requirements for use on noncombustible construction

B. Air and Water-Resistive Barrier

1. Complies with FBC and Miami-Dade County requirements for allowable material and assembly air leakage
2. Complies with FBC and Miami-Dade County requirements as a Water-Resistive Barrier (WRB)

C. Stucco Material

1. Complies with FBC and Miami-Dade County requirements for Exterior Plaster
2. Complies with ASTM C926

D. Metal Lath, Accessories, Fasteners

1. Metal lath and accessories comply with FBC and Miami-Dade County, Florida requirements
2. Metal lath complies with ASTM C847
3. Metal lath accessories and fasteners comply with ASTM C1861

E. Joint Sealant

1. Complies with ASTM C920: Type S, Grade NS, Use NT, A, M, Class 100/50

1.7 QUALITY ASSURANCE

A. Manufacturer Requirements

1. Manufacturer facilities subject to audit by a quality assurance entity approved by the Florida Building Commission
2. Manufacturing facilities in compliance with ISO 9001 Certified Quality System and ISO 14001 Certified Environmental Management System

B. Contractor Requirements

1. Engaged in application of similar systems 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 air and water-resistive barrier and 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 compared 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

C. Substrate Requirements

1. All substrates shall be in compliance with the applicable building code for strength, durability, resistance to weather, fire resistance, and other safety requirements
2. Glass mat gypsum sheathing shall be in conformance with ASTM C1177. Surface shall be clean, dry, and free of frost, damage, dust, dirt, oil or other contaminants that could interfere with adhesion of the AWRB or other stucco wall assembly components.

D. Mock-up Testing

1. Construct full-scale mock-up of typical air and water-resistive barrier and Stucco/window wall assembly with specified tools and materials and test air leakage, 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.

E. 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

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

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

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

D. Store gun-grade air barrier component at temperatures between 40 and 80°F (4 and 26°C), and protect from freezing, moisture, direct sunlight, and keep away from sources of ignition

1.9 PROJECT/SITE CONDITIONS

Weather conditions affect application and drying time of products. Hot or dry conditions limit working time and accelerate drying and may require adjustments in the scheduling of work 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, freezing, and continuous high humidity (Exception: gun-grade air barrier component dries faster in damp or high humidity conditions)

A. Maintain ambient and surface temperatures above 40°F (4°C) during application and drying period, minimum 24 hours after application of air and water-resistive barrier and stucco products

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

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

1.10 COORDINATION/SCHEDULING

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

A. Provide site grading such that the stucco terminates above grade a minimum of 4 inches (102 mm) or as required by code

B. Provide roofing and protection at roof and floor levels to prevent water entry to the interior or into and behind the exterior wall system during construction.

C. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuously connected air and water-resistive barrier

D. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall

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

F. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior

G. Install splices or tie-ins from air and water-resistive barrier over back leg of flashings, and similar details, to form a shingle lap that directs water to the exterior

H. Install copings and sealant immediately after installation of the stucco when stucco is firm and dry

I. Schedule work such that the air and water-resistive barrier is exposed to weather no longer than the period allowed by the manufacturer

J. Attach penetrations through the stucco to structural support and provide watertight seal at penetrations.

1.11 WARRANTY

A. Provide manufacturer's standard warranty

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. The following are acceptable manufacturers:

1. Sheathing

a. National Gypsum Company, 2001 Rexford Road, Charlotte, NC 28211
Tel: 704 365 7300, www.nationalgypsum. com

2. Sheathing Reinforcement and Base Coat, Air and Water-Resistive Barrier, Stucco and Stucco Finishes

a. Sto Corp., 3800 Camp Creek Parkway, Building 1400, Suite 120, Atlanta, GA 30331
Tel: 800 221 2397, www.stocorp.com

2.2 SHEATHING

1. 5/8-in (16mm) eXP® glass mat gypsum sheathing in compliance with ASTM C1177 as manufactured by National Gypsum Company

2.3 SHEATHING REINFORCEMENT

A. Sto Armor Mat XX embedded in Sto Primer/Adhesive-B base coat as furnished by Sto Corp.

2.4 AIR AND WATER-RESISTIVE BARRIER

A. StoGuard Detail Components for sheathing joint treatment, rough opening protection, counterflashing, and joints and seams as furnished by Sto Corp.:

Choose one or more components as needed for the work

1. Sto Gold Coat used with StoGuard Fabric reinforcement
2. Sto RapidGuard: single component rapid drying gun-applied STPE detail component
3. StoGuard Conformable Membrane: self-adhered membrane flashing

B. Static and Dynamic Joints

1. StoGuard Conformable Membrane: self-adhered membrane tape

C. Air and Water-resistive Barrier Coating

1. Sto Gold Coat: ready mixed vapor permeable air and water-resistive barrier coating

2.5 SLIP SHEET

A. One layer Type D No. 15 asphalt saturated kraft paper as furnished by others

2.6 METAL LATH AND ACCESSORIES

A. Metal Lath: minimum 2.5 lb/yd^2 (1.35 kg/m^2) galvanized expanded diamond mesh metal lath in conformance with ASTM C847 as furnished by others

B. Accessories: casing bead, corner beads, expansion and control joint accessories in conformance with ASTM C1861 as furnished by others

2.7 STUCCO

A. StoPowerwall Stucco as furnished by Sto Corp. or approved supplier

2.8 PRIMER

Primer is an optional component, except for some specialty finishes – refer to finish product bulletins

A. Sto brush, roller, or spray-applied primer as dictated by substrate condition or finish selection as furnished by Sto Corp.

2.9 FINISH

Choose one or more as dictated by architectural drawings

A. Sto Textured Finish: low VOC trowel applied decorative and protective textured finish in compliance with South Coast AQMD Rule 1113, as furnished by Sto Corp.

B. StoCast Finish: pre-formed, factory cast decorative and protective finish, adhesive, and topcoat where applicable, as furnished by Sto Corp.

2.10 JOB MIXED INGREDIENTS

A. Water – clean and potable

2.11 ACCESSORIES

PVC accessories are often used in marine climate zones where risk of corrosion is high.

A. Lathing Accessories, and Fasteners – PVC accessories and corrosion resistant fasteners in conformance with ASTM C1861 as furnished by others

B. StoSeal® STPE Sealant - high-movement, low modulus, non-sag one-component silyl-terminated polyether joint sealant in compliance with ASTM C920 as furnished by Sto Corp.

2.12 MIXING

A. Refer to manufacturer's applicable product bulletins for mixing of materials

PART 3 EXECUTION

3.1 ACCEPTABLE INSTALLERS

A. Prequalify under Quality Assurance requirements of this specification (Section 1.7)

3.2 EXAMINATION

A. Inspect sheathing application for compliance with applicable requirement and installation in conformance with this specification, manufacturer requirements, and the applicable Miami-Dade County, Florida NOA

1. Glass Mat Faced gypsum sheathing: compliant with ASTM C1177 with fasteners and fastening schedule in conformance with Miami-Dade County, Florida NOA No. 25-0107.07
2. Sheathing Fasteners: #8 x 1-$^{1}/_{4}$-in (32mm) wafer head corrosion resistant self-drilling screws seated flush with sheathing surface, spaced 8-in (203mm) on center along studs in field and perimeter.
3. Lath Fasteners: #8 x 1-$^{1}/_{2}$-in (38mm) wafer head corrosion resistant self-drilling screws, spaced 7-in (179mm) on center along studs
4. Surface condition: clean, dry, and free of frost, damage, and all bond-inhibiting materials, including dirt, dust, efflorescence, oils, grease, chalkiness, and other foreign matter.

B. Report deviations from the requirements of project specifications or other conditions that might adversely affect the sheathing installation, or air and water-resistive barrier and stucco installation to the General Contractor. Do not start work until deviations are corrected.

3.3 SURFACE PREPARATION

A. Remove surface contaminants from gypsum sheathing surfaces

B. Fill large gaps between sheathing or voids around pipe, conduit, scupper, and similar penetrations with spray foam and shave flush with surface (refer to Sto Details)

C. Replace weather-damaged sheathing and repair or replace damaged or cracked sheathing

3.4 INSTALLATION

Refer to applicable Sto Product Bulletins and StoPowerwall Design Guide and Detail Booklet Series 66s.xx for general information on installation and details.

EXCEPTION: install sheathing reinforcement (Sto Armor Mat XX mesh embedded in Sto base coat) BEFORE installing the Sto AWRB. Tightly abut mesh seams in the field of the wall and abut the mesh at changes in plane such as inside and outside corners. Reinforce inside and outside corners with Sto Detail Mesh centered and folded at corners over the butted seam and embed the mesh in Sto base coat. Alternatively, reinforce corners with any of the StoGuard detail Components – StoGuard Fabric embedded in Sto Gold Coat, Sto RapidGuard, or StoGuard Conformable Membrane -- when the Sto AWRB is being installed. Install the Sto AWRB coating over the entire reinforced sheathing surface.

A. Install manufacturer's air and water-resistive barrier in conformance with manufacturer's written instructions

B. Install stucco cladding in conformance with manufacturer's written instructions, ASTM C1861 and ASTM C926

3.5 PROTECTION

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

B. Provide protection of installed materials from dust, dirt, precipitation, freezing and continuous high humidity until they are fully dry

3.6 CLEANING, REPAIR AND MAINTENANCE

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

B. Maintain adjacent components of construction such as sealants, windows, doors, and flashing, to prevent water entry into or behind the stucco and anywhere into the wall assembly

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