

Channeled Adhesive CI Design Wall System with MaxGrip Veneer Mortar – Section 07 24 19

Water-drainage polymer-based EIFS incorporating vertical drainage channels, a fluid air/water-resistive barrier and adhered veneer finish.

INTRODUCTION

This specification has been assembled to enable the design professional to select or delete sections to suit the project requirements and is intended to be used in conjunction with Senergy® typical details, product bulletins, technical bulletins, etc.

DESIGN RESPONSIBILITY

It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for its intended use. The designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings and the like. The Wall Systems business of Master Builders Solutions Construction Systems US, LLC (herein referred to as “Master Builders Solutions”) has prepared guidelines in the form of specifications, typical application details, and product bulletins to facilitate the design process only. Master Builders Solutions is not liable for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or the like, whether based upon the information provided by Master Builders Solutions or otherwise, or for any changes which the purchasers, specifiers, designers or their appointed representatives may make to Master Builders Solutions published comments. The International Building Code and TMS 402/602 *Building Code Requirements and Specification for Masonry Structures* do not place a specific height limit on this application. However local building code may impose certain restrictions that would limit the height that the system can be placed. Consult the authority having jurisdiction (AHJ) for the project to ensure local requirements are satisfied.

Designing and Detailing a CHANNELED ADHESIVE CI DESIGN Wall System with MAXGRIP VENEER MORTAR

General: The system shall be installed in strict accordance with current recommended published details and product specifications from the system’s manufacturer.

A. Wind Load

1. Substrate deflection should be limited based on recommendations of the veneer manufacturer or local building codes but in no case shall deflection be more than L/360 under positive and negative design wind loads.
2. Design for wind load in conformance with local code requirements.

B. Substrate Systems

1. Acceptable substrates are: PermaBase® Cement Board and other cement-boards conforming with ASTM C1325 (Type A-exterior); poured concrete/unit masonry; ASTM C1177 type sheathings, including, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, eXP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, and DensGlass® exterior sheathing DensElement (sheathing only); gypsum sheathing (ASTM C79/C1396); Huber Zip (sheathing only) Exposure I or exterior plywood (Grade C/D or better); or Exposure I OSB.
2. Painted and otherwise coated surfaces of brick, unit masonry, stucco and concrete shall be inspected and prepared as approved by Master Builders Solutions before application. The applicator shall verify that the proposed substrate is acceptable prior to the Channeled Adhesive CI Design Wall System with MaxGrip Veneer Mortar installation.
3. The substrate systems shall be engineered with regard to structural performance by others.

C. Moisture Control

1. Prevent the accumulation of water behind the EIFS, either by condensation or leakage through the wall construction, in the design and detailing of the wall assembly.
 - a. Provide flashing to direct water to the exterior where it is likely to penetrate components in the wall assembly, including, above window and door heads, beneath window and door sills, at

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roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall and anywhere else required by local code.

- b. Air Leakage Prevention: Provide continuity of air barrier system at foundation, roof, windows, doors and other penetrations through the system with connecting and compatible air barrier components to minimize condensation and leakage caused by air movement.
- c. Vapor Diffusion and Condensation: Perform a dew point analysis of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust insulation thickness and/or other wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.

D. Veneer Color Selection: The use of dark color veneer must be considered in relation to wall surface temperature as a function of local climate conditions. Dark brick, stone and tile colors with LRV (Light Reflective Value) of less than 20% are not recommended based on EPS service temperature limitation of 165°F (74 °C)

E. System Joints

1. Expansion joints in the system are required at building expansion joints, at prefabricated panel joints, floor lines of wood frame construction, where substrates change and where structural movement is anticipated. It is the sole responsibility of the project design team, including the architect, engineer, etc., to ultimately determine specific expansion joint placement, width and design. Detail specific locations in construction drawings.
2. Sealant joints are required at all penetrations through the Channeled Adhesive CI Design with MaxGrip Veneer Mortar (windows, doors, etc.)
3. Specify compatible closed cell backer rod and acceptable sealant that has been evaluated in accordance with ASTM C 1382, "Test Method for Determining Tensile Adhesion Properties of Sealants When Used in Exterior Insulation and Finish System (EIFS) Joints," and that meets minimum 50% elongation after conditioning.
4. The system must be properly terminated (back-wrapped a min. of 2 1/2" (64mm), properly sealed, flashed) at all penetrations, lighting fixtures, electrical outlets, hose bibs, dryer vents, etc.
5. For a list of acceptable sealants refer to *Acceptable Sealants for use with Senergy Wall Systems* technical bulletin.

F. Grade Condition

1. The Channeled Adhesive CI Design with MaxGrip Veneer Mortar is not intended for use below grade or on surfaces subject to continuous or intermittent immersion in water or hydrostatic pressure. Ensure a minimum 8" (203.2 mm) clearance above grade or as required by code, a minimum 1" (25.4 mm) clearance above finished grade (sidewalk/concrete flatwork).

G. Coordination with other trades

1. Evaluate adjacent materials such as windows, doors, etc. for conformance to manufacturer's details. Adjacent trades shall provide scaled shop drawings for review.
2. Air seals at any joints/gaps between adjoining components (penetrations, etc.) are of primary importance to maintain continuity of an air barrier system and must be considered by the design professional in the overall wall assembly design. Install air seals between the primary air/water-resistive barrier and other wall components (penetrations, etc.) in order to maintain continuity of an air barrier system.
3. Provide site grading such that Channeled Adhesive CI Design with MaxGrip Veneer Mortar terminates a minimum of 8" (203 mm) above finished grade or as required by code.
4. Provide protection of rough openings in accordance with Senergy's *Air/Water-Resistive/Vapor Barrier Application Guidelines* before installing windows, doors, and other penetrations through the wall.
5. Install copings and sealant immediately after installation of the Channeled Adhesive CI Design with MaxGrip Veneer Mortar and when Senergy products are completely dry.

TECHNICAL INFORMATION

Consult Master Builders Solutions' Technical Services Department for specific recommendations concerning all other applications. Consult the Senergy website, senergy.master-builders-solutions.com, for additional information about products, systems and for updated literature.

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PART 1 GENERAL

NOTE TO SPECIFIER: Items in blue/underlined indicate a system option or choice of options. Throughout the specification, delete those which are not required or utilized.

1.01 SECTION INCLUDES

- A. Refer to all drawings and other sections of this specification to determine the type and extent of work therein affecting the work of this section, whether or not such work is specifically mentioned herein.
- B. Channeled Adhesive CI Design with MaxGrip Veneer Mortar: Composite wall Exterior Insulation and Finish System consisting of Senergy air/water-resistive barrier, Senergy Adhesive, rigid insulation, Senergy Base Coat, INTERMEDIATE 12 by Master Builders Solutions and Senergy FLEXGUARD 4 reinforcing mesh, MAXGRIP VENEER MORTAR and selected adhered veneer (by others).
- C. Senergy products are listed in this specification to establish a standard of quality. Any substitutions to this specification shall be submitted to and receive approval from the Architect at least 10 days before bidding. Proof of equality shall be borne by the submitter.
- D. The system type shall be Senergy Channeled Adhesive CI Design with MaxGrip Veneer Mortar as manufactured by Master Builders Solutions, Shakopee, MN.

1.02 RELATED SECTIONS

- A. Section 03 00 00 Concrete substrate
- B. Section 04 00 00 Masonry substrate
- C. Section 05 40 00 Cold-formed metal framing
- D. Section 06 16 00 Sheathing
- E. Section 06 11 00 Wood framing
- F. Section 07 27 00 Air barriers
- G. Section 07 62 00 Sheet Metal Flashing and Trim
- H. Section 07 65 00 Flexible flashing
- I. Section 07 90 00 Joint protection
- J. Section 08 00 00 Openings
- K. Section 09 22 00 Supports for plaster and gypsum board
- L. Section 09 22 16 Non-structural metal framing
- M. Section 09 29 00 Gypsum board

1.03 REFERENCES

- A. ES AC235 Acceptance Criteria for EIFS Clad Drainage Wall Assemblies
- B. ES AC212 Acceptance Criteria for Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing
- C. ASTM E2568 Standard Specification for PB Exterior Insulation and Finish Systems
- D. ASTM E2570 Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage
- E. NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components
- F. ESR-2986 ICC Evaluation Service, Inc., ES Report™ (SENERSHIELD-R/RS)
- G. ESR-1878 ICC Evaluation Service, Inc., ES Report (Channeled Adhesive CI Design with MaxGrip Veneer Mortar)
- H. ICC-ES AC51 Acceptance Criteria for Precast Stone Veneer
- I. TMS 402 Building Code Requirements for Masonry Structures
- J. ANSI A108.01 General Requirements: Sub-surfaces and Preparations by Other Trades.
- K. ANSI A108.02 General Requirements: Materials, Environmental, and Workmanship.
- L. ANSI A108.10 Installation of Grout in Stonework.
- M. ANSI A118.4 Specifications for Modified Dry-Set Cement Mortar.
- N. ANSI A118.15 Specifications for Improved Modified Dry-Set Cement Mortar
- O. ANSI A137.1 Specification for Ceramic Tile
- P. ASTM C1088 Standard Specification for Thin Veneer Brick Units

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Q. ASTM C1670 Standard Specification for Adhered Manufactured Stone Masonry Veneer (AMSMV) Units

1.04 DEFINITIONS

- A. Exterior Insulation and Finish System: Exterior assembly comprised of adhesive, rigid insulation, base coat, reinforcing mesh and finish.
- B. Class PB Systems: A class of EIFS where the base coat varies in thickness depending upon the number of layers or thickness of reinforcing mesh. The reinforcing material is glass fiber mesh, which is embedded into the base coat at the time of installation. The base coat shall be applied to achieve reinforcing mesh embedment with no reinforcing mesh color visible, nominal thickness of 1/16"(1.6 mm). An adhered veneer is applied over the base coat.
- C. EIFS with drainage: A wall cladding design with an exterior surface for primary weather protection and aesthetics, which incorporates an inner secondary air/water-resistive barrier to accommodate incidental moisture and direct it to the exterior.

1.05 SUBMITTALS

- A. Submit under provisions of Section [01 33 00]
- B. Product Data: Provide data on Channeled Adhesive CI Design with MaxGrip Veneer Mortar materials, product characteristics, performance criteria, limitations and durability.
- C. Code Compliance : Provide manufacturer's applicable code compliance report ICC-ES ESR-1878.
- D. Samples: Submit [\[two\]](#) [\[x\]](#) [\[inch\]](#) [\[millimeter\]](#) size samples of Channeled Adhesive CI Design with MaxGrip Veneer Mortar illustrating selected adhered veneer.
- E. Certificate: System manufacturer's approval of applicator.
- F. Sealant: Sealant manufacturer's certificate of compliance with ASTM C1382.
- G. System manufacturer's current specifications, typical details, system overview and related product literature which indicate preparation required, storage, installation techniques, jointing requirements and finishing techniques.

1.06 QUALITY ASSURANCE

- A. Manufacturer: More than 10 years in the EIFS industry, with more than 1000 completed EIFS projects.
- B. Applicator: Approved by Master Builders Solutions in performing work of this section.
- C. Regulatory Requirements: Conform to applicable code requirements for EIFS.
- D. Field Samples
 - 1. Provide under provisions of Section [\[01 43 36\]](#) [\[01 43 39\]](#).
 - 2. Construct one field sample panel for each adhered veneer, [\[x\]](#) [\[meters\]](#) [\[feet\]](#) in size of system materials illustrating method of attachment.
 - 3. Prepare each sample panel using the same tools and techniques to be used for the actual application.
 - 4. Locate sample panel where directed.
 - 5. Accepted sample panel [\[may\]](#) [\[may not\]](#) remain as part of the work.
 - 6. Field samples shall be comprised of all wall assembly components including substrate, Senergy air/water- resistive barrier, Senergy adhesive, insulation board, Senergy Base Coat, INTERMEDIATE 12 AND FLEXGUARD 4 reinforcing mesh, MAXGRIP, selected adhered veneer and typical sealant/flashing conditions.
- E. Testing:
 - 1. General Air/Water-Resistive Barrier Minimum Performance:

TEST	METHOD	CRITERIA	RESULTS
Water-resistive barrier coatings used under EIFS	ASTM E2570		Meets all performance requirements
Air Leakage of Air Barrier Assemblies	ASTM E2357	0.2 l/(s.m ²) @75 Pa (0.04 cfm/ft ² @ 1.57 psf)	0.0007 l/s.m ² (0.0001 cfm/ft ²) @ 75 Pa (1.57 psf) positive / post conditioning 0.0014 l/s.m ² (0.0003 cfm/ft ²) @ 75 Pa (1.57 psf) negative / post conditioning
Air Permeance of Building Materials	ASTM E2178	0.02 l/(s.m ²) @75 Pa (0.004 cfm/ft ² @ 1.57 psf)	0.0049 l/s.m ² @ 75 Pa (0.00098 cfm/ft ² @ 1.57 psf)
Rate of Air Leakage	ASTM E283		0.0185 l/s.m ² @ 75 Pa (0.0037 cfm/ft ² @ 1.57 psf)

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Water Vapor Transmission	ASTM E96	Report value	Senershield-R - 18 Perms (grains/Hr. in Hg. ft ²) @ 10 mils wet film thickness Senershield-RS 18 Perms (grains/Hr. in Hg. ft ²) @ 12 mils wet film thickness Senershield-R/RS - 14 Perms (grains/Hr. in Hg. ft ²) @ 20 mils wet film thickness Senershield-VB - 0.09 Perms (grains/Hr. in Hg. ft ²) @ 26 mils wet film thickness
Pull-Off Strength of Coatings	ASTM D4541	Min. 110 kPa (15.9 psi) or substrate failure	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood; pvc and galvanized flashing
Nail Sealability (without Sheathing Fabric)	ASTM D1970	No water penetration at galvanized roofing nail penetration under 127 mm (5") head of water after 3 days at 4° C (40° F)	Pass
Surface Burning	ASTM E84	Flame Spread < 25 Smoke Development < 450	Meets Class A: Flame spread =15 Smoke developed = 95

2. Air/Water-Resistive Barrier ICC-ES AC-212:

TEST	METHOD	CRITERIA	RESULTS
Sequential Testing: 1. Structural 2. Racking 3. Restrained Environmental Conditioning 4. Water Penetration	1. ASTM E 1233 Procedure A 2. ASTM E 72 3. ICC-ES AC-212 4. ASTM E 331	No cracking at joints or interface of flashing No water penetration after 15 min @ 137 Pa (2.86 psf)	Pass - Tested over OSB and gypsum sheathing No water penetration after 90 min @ 299 Pa (6.24 psf)
Sequential Testing: 1. UV Light Exposure 2. Accelerated Aging 3. Hydrostatic Pressure Test	1. ICC-ES AC-212 2. ICC-ES AC-212 3. AATCC 127-1985	No cracking or bond failure to substrate No water penetration after 21.7 in (550 mm) water for 5 hours	Pass
Freeze-Thaw	ASTM E 2485 (Method B)	No sign of deleterious effects after 10 cycles	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood
Water Resistance	ASTM D2247	No deleterious effects after 14-day exposure	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood
Tensile Bond	ASTM C 297	Minimum 103 kPa (15 psi)	Pass - Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood, CMU; pvc and galvanized flashing
Tensile Bond (after freeze-thaw)	ASTM C 297	Minimum 103 kPa (15 psi) avg; no failure after 10 cycles freeze-thaw	Pass

3. Air/Water-Resistance Barrier ICC-ES AC 148:

TEST	METHOD	CRITERIA	RESULTS
Sequential Testing: 1. UV Light Exposure 2. Accelerated Aging 3. Hydrostatic Pressure Test	1. ICC-ES AC 148 2. ICC-ES AC 148 3. AATCC 127-1985	No cracking or bond failure to substrate No water penetration after 21.7 in (550 mm) water for 5 hours	Pass
Peel Adhesion	ASTM D 3330 Method F	After UV Exposure After Accelerated Aging After Elevated Temperature Exposure After Water Immersion	Pass - tested over ASTM C1177 glass-mat sheathing, OSB, plywood, PVC and uncoated aluminum
Nail Sealability after Thermal Cycling	ASTM D 1970 (Modified), AAMA 711	No water penetration at galvanized roofing nail penetration under 31 mm (1.2") head of water after 24 hours at 4° C (40° F)	Pass
Tensile Strength after UV Exposure	ASTM D 5034, AAMA 711	Minimum 0.5 N/mm (2.9 lbs./in)	Pass
Cold Temperature Pliability	ASTM D 1970, AAMA 711	No cracking after bending around a 25 mm (1") mandrel after 2-hour exposure to -18° C (0° F)	Pass
Resistance to Peeling	AAMA 711	No signs of distress or failure after	Pass

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		24 hours of exposure at room temperature, 50° C (122° F), 65° C (149° F), 80° C (176° F)
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4. Channeled Adhesive CI Design with MaxGrip Veneer Mortar System and Component Performance:

TEST	METHOD	CRITERIA	RESULTS
EIFS and EIFS with Drainage	ASTM E2568 and ICC-ES AC 235		Meets all performance requirements
Drainage Efficiency	ASTM E2273	90% Minimum	98.7% - Senershield-R/RS/VB
Transverse Wind-load	ASTM E330	Steel stud framing (20 gauge) 16"o.c., 1/2" gypsum sheathing, 4" SHEATHING FABRIC over sheathing joints, SENERSHIELD-R, Senergy Adhesive, 1" expanded polystyrene insulation board, Senergy Base Coat, Intermediate 12 reinforcing mesh, skim coat of MaxGrip Veneer Mortar, veneer adhered with MaxGrip Veneer Mortar	Average ultimate loads ¹ : - 65.4 psf (- 3131 Pa) +131 psf (+6272 Pa)
Transverse Wind-load	ASTM E330	Wood assembly (2' x 4') 16"o.c., 7/16" Exposure 1 OSB, 4" SHEATHING FABRIC over sheathing joints, SENERSHIELD-R, Senergy Adhesive, 1" expanded polystyrene insulation board, Senergy Base Coat, Intermediate 12 reinforcing mesh, skim coat of MaxGrip Veneer Mortar, veneer adhered with MaxGrip Veneer Mortar.	Average ultimate loads ¹ : -162 psf (-7756 Pa) +239 psf (+11443 Pa)
Tensile Bond	ASTM C297/E2134	Minimum 103 kPa (15 psi)	Pass
Shear Bond (full assembly test for EPS strength)	ASTM C273	Core shear modulus of the EPS is equal to or greater than 280 psi. The 2% offset shear strength is equal to or greater than 12 psi.	Shear modulus 281.43 psi; offset shear 13.6 psi
Water Penetration	ASTM E 331	No water penetration after 15 minutes @ 2.86 psf (137 Pa)	Pass
Radiant Heat Exposure	NFPA 268	No ignition at 20 minutes	Met test criteria with 4" thick EPS insulation.
Fire Endurance	ASTM E119	Maintain fire resistance of existing rated assembly	1-hour rating with maximum 4" thick EPS insulation
Intermediate Scale Multi-story Fire Test	NFPA 285 / UBC Standard 26-9	1. Resist flame propagation over the exterior surface 2. Resist vertical spread of flame within combustible core/component of panel from one story to the next 3. Resist vertical spread of flame over the interior surface from one story to the next 4. Resist lateral spread of flame from the compartment of fire origin to adjacent spaces	Met test criteria with 4" thick EPS insulation.
Surface Burning	ASTM E84 / UL 723	Flame spread < 25 Smoke developed < 450	All components of the system meet Class A performance (FS < 25; SD < 450)
Accelerated Weathering	ASTM G 153 (formerly G23)	No deleterious effects after 2000 hours.	Pass
Accelerated Weathering	ASTM G 154 (formerly G53)	No deleterious effects after 2000 hours.	Pass - No deleterious effects after 7500 hours.
Freeze-Thaw	ASTM C67, E2485 Method A	No deleterious effects after 60 cycles	Pass

¹ No failure in the Senergy materials; failure in framing and/or sheathing connections

5. Reinforcing Mesh Testing

TEST	METHOD	CRITERIA	RESULTS
Alkali Resistance of Reinforcing Mesh	ASTM E 2098	Greater than 120 pli (21 dN/CM) retained tensile strength	Pass (all mesh)

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Impact Resistance	ASTM E2486 (formerly EIMA 101.86)	25-49 inch-lbs. (2.8-5.6 j)	FLEXGUARD 4
Impact Resistance	ASTM E2486 (formerly EIMA 101.86)	50-89 inch-lbs. (5.7-10.1 j)	INTERMEDIATE 12

6. MAXGRIP VENEER MORTAR

TEST	METHOD	CRITERIA	RESULTS
Compressive Strength	ASTM C 109	N/A	4000 psi
Freeze-Thaw	ASTM C 666	Procedure A, cycles rapid freezing and thawing in water. 40°F - 0°F - 40°F in not less than 2 hours and not more than 5 hours; modified using full IVS composite in place of concrete beam	> 100 cycles, no failure of MaxGrip
Shear Strength	ANSI 118.4	28 days ≥ 200 psi After 7 day water immersion ≥ 150 psi	565 psi at 28 days 306 psi after 7 day water immersion
Shear Strength	ANSI A118.15	7 days ≥ 300 psi 28 days ≥ 400 psi After 7 days water immersion ≥ 200 psi	487 psi at 7 days 565 psi at 28 days 306 psi after 7 day water immersion
Shear Bond	ASTM C482	Minimum 50 psi	130 psi - Directly to molded cement mortar bed specified in ASTM C482 = 130 psi 151 psi and 141 psi respectively - to Senergy Alpha Base Coat and Alpha Dry Base Coat over molded cement mortar bed specified in ASTM C482.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle products under provisions of Section [01 65 00] [01 66 00] [].
- B. Deliver Master Builders Solutions - Senergy in original unopened packages with manufacturer's labels intact.
- C. Protect Master Builders Solutions - Senergy materials during transportation and installation to avoid physical damage.
- D. Master Builders Solutions - Senergy materials in cool, dry place protected from freezing. Store at no less than 4°C/40°F.
- E. Store MAXFLASH at a minimum of 40°F/4°C. In cold weather, keep containers at room temperature for at least 24 hours before using.
- F. Store insulation boards flat and protected from direct sunlight and extreme heat.
- G. Store Master Builders Solutions - Senergy Reinforcing Mesh, SHEATHING FABRIC and WS FLASH flexible flashing in cool, dry place protected from exposure to moisture.

1.08 PROJECT/SITE CONDITIONS

- A. Do not apply Master Builders Solutions – Senergy materials in ambient temperatures below 40°F/4°C. Provide properly vented, supplementary heat during installation and drying period when temperatures less than 40°F/4°C prevail.
- B. Do not apply Master Builders Solutions - Senergy materials to frozen surfaces.
- C. Maintain ambient temperature at or above 40°F/4°C during and at least 24 hours after Master Builders Solutions - Senergy materials installation and until dry.

1.09 SEQUENCING AND SCHEDULING

- A. Coordinate and schedule installation of Channeled Adhesive CI Design with MaxGrip Veneer Mortar with related work of other sections.
- B. Coordinate and schedule installation of trim, flashing, and joint sealers to prevent water infiltration behind the system.

1.10 WARRANTY

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- A. Provide Master Builders Solutions standard warranty for Channeled Adhesive CI Design with MaxGrip Veneer Mortar installations under provisions of Section [01 70 00]. Reference Senergy's *Warranty Schedule* technical bulletin for specific information.
- A. Comply with Master Builders Solutions' project review requirements and notification procedures to assure qualification for warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Channeled Adhesive CI Design with MaxGrip Veneer Mortar (Class PB System) manufactured by Master Builders Solutions.

2.02 MATERIALS

NOTE TO SPECIFIER: Items in blue/underlined indicate a system option or choice of options. Throughout the specification, delete those which are not required or utilized. Contact Master Builders Solutions' Technical Service Department for further assistance.

A. Air/Water-Resistive Barrier Components:

1. Block Filler:
 - a. WS FIL: A one-component, water-based block filler designed to prepare rough, porous concrete /masonry substrates for subsequent application of Senergy fluid applied air/water-resistive barrier products
2. Air/Water-Resistive Barrier: **(Required, Select a, b or c)**
 - a. SENERSHIELD-R: A one-component fluid-applied vapor permeable air/water-resistive barrier.
 - b. SENERSHIELD-RS: A one-component fluid-applied vapor permeable air/water-resistive barrier for use with airless spray equipment.
 - c. SENERSHIELD-VB: A one-component fluid-applied vapor impermeable air/water-resistive barrier.
3. Rough Opening and Joint Treatment: **(Required, Select A or B)**
 - a. SHEATHING FABRIC: A spun-bonded non-woven reinforced polyester web for use with Senergy fluid applied air/weather-resistive barriers.
 - b. MAXFLASH: A one-component elastomeric material for use as a flexible flashing membrane.
4. Transitional Membrane / Expansion Joint Flashing (If selected, both a & b are required)
 - a. WS FLASH: 30-mil thick, self-sealing, self-healing composite membrane of polyester fabric and rubberized asphalt. Compatible with Senergy liquid air/weather resistive barriers.
 - b. FLASHING PRIMER: A water-based primer for use prior to application of WS FLASH on all acceptable surfaces.
5. Cold Temperature Additive:
 - a. LT ADDITIVE: Blending of LT ADDITIVE with a pail of SENERSHIELD-R/-RS/-VB enables application of these materials at temperatures as low as 25°F (-4°C).

B. Adhesives/Base Coats: **(Required, Select One or More)**

1. ALPHA Base Coat: A 100% acrylic base coat, field-mixed with Type I or Type II Portland cement. It has a creamy texture that is easily spread.
2. ALPHA DRY Base Coat: A dry-mix polymer adhesive and base coat containing Portland cement, and requiring only water for mixing.
3. XTRA-STOP Base Coat: A 100% acrylic-based, water-resistant base coat, field-mixed with Type I or Type II Portland cement.
4. ALPHA GENIE Base Coat: A 100% acrylic, fiber-reinforced base coat, adhesive and leveler that is field-mixed with Type I or Type II Portland cement.

NOTE TO SPECIFIER: Portland cement is not required if ALPHA DRY Base Coat is specified.

C. Portland cement:

1. Conform to ASTM C150, Type I, II, or I/II, grey or white; fresh and free of lumps.

D. Water:

1. Clean and potable without foreign matter.

E. Insulation Board:

1. Expanded polystyrene; ASTM C578, Type I; Flame spread less than 25, smoke developed less than 450 per ASTM E84, UL 723.
 - a. Minimum density 0.95 lb./ft³ (15.22 kg/m³); 0.24 per inch (K=6.09 per mm).

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- b. Minimum thickness as indicated on drawings [minimum 19 mm (3/4"). Maximum thickness 4" (102 mm)
- c. Air-dried (aged) six weeks, or equivalent, prior to installation.
- d. Edges: square within 1/32" per foot (0.8 mm per meter).
- e. Thickness: tolerance of plus or minus 1/16" (1.6 mm).
- f. Size: 2' x 4' (0.6 m x 1.22 m).
- g. Length and width: tolerance of plus or minus 1/16" (1.6 mm).

F. Reinforcing Mesh: Balanced, open-weave glass, fiber reinforcing mesh, twisted multi-end strands treated for compatibility with Senergy Base Coats.

1. FLEXGUARD 4: Standard weight, 4 oz used for back wrapping perimeter EPS boards of all openings, penetrations and other system terminations only.
2. INTERMEDIATE 12: Intermediate weight, 12 oz used in field of wall.

G. Skim Coat: As a skim coat for thin brick, tile or stone veneer (If MAXGRIP VENEER MORTAR not used as skim coat, then Select One)

1. ALPHA Base Coat: A 100% acrylic base coat, field-mixed with Type I or Type II Portland cement. It has a creamy texture that is easily spread.
2. ALPHA DRY Base Coat: A dry-mix polymer adhesive and base coat containing Portland cement, and requiring only water for mixing.

H. MAXGRIP VENEER MORTAR by Master Builders Solutions: A high-strength specially formulated setting bed mortar used to adhere natural and manufactured stone, tile and thin brick veneer

I. Adhered Veneer (By Other):

1. Manufactured Stone Veneer Units: shall comply with ICC-ES AC51 Acceptance Criteria Adhered Manufactured Stone Masonry Veneer or ASTM C1670 Standard Specification for Adhered Manufactured Stone Masonry Veneer Units.
2. Thin Brick Veneer Units: shall comply with ASTM C1088 Standard Specification for Thin Veneer Brick Units Made from Clay or Shale.
3. Tile: shall comply with requirements of the Tile Council of North America/ANSI A137.1 Standard for Ceramic Tile and other applicable TCNA standards.
4. Pointing mortar (as applicable): per the adhered veneer manufacturers recommendations for the specific veneer installed.

2.03 ACCESSORIES

A. Window/Door Drip Edge: Rigid polyvinyl chloride (PVC), UV resistant for exterior use, with a drip edge, as furnished by Plastic Components, Inc. or equal. Accessories shall conform to ASTM D1784-97, C1063-99 and D4216-99.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Conditions:

1. Verify project site conditions under provisions of Section [01 00 00].

B. Walls:

1. Substrates:
 - a. Acceptable substrates are: PermaBase[®] Cement Board and other cement-boards conforming with ASTM C1325 (Type A-exterior); poured concrete/unit masonry; ASTM C1177 type sheathings, including, Weather Defense[™] Platinum sheathing, GreenGlass[®] sheathing, eXP[™] sheathing, GlasRoc[®] sheathing, Securock[™] glass-mat sheathing, and DensGlass[®] exterior sheathing. DensElement (sheathing only); gypsum sheathing (ASTM C79/C1396); Huber Zip (sheathing only); Exposure I or exterior plywood (Grade C/D or better); or Exposure I OSB. Consult the Master Builders Solutions' Technical Services Department for all other applications.
 - b. Wall sheathing must be securely fastened per applicable building code and sheathing manufacturer's requirements.
 - c. Examine surfaces to receive Channeled Adhesive CI Design with MaxGrip Veneer Mortar and verify that substrate and adjacent materials are dry, clean, sound, and free of releasing agents, paint, or other residue or coatings. Verify substrate is flat, free of fins or planar irregularities greater than 1/4" in 10' (6.4 mm in 3 m).
2. Flashings:

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- a. All flashings are by others and must be installed in accordance with specific manufacturer's requirements. Where appropriate, end-dams must be provided.
 - b. Openings must be flashed prior to window/door, HVAC, etc. installation. Refer to WS FLASH product bulletin and Senergy's *Moisture Protection Guidelines for Senerflex Wall Systems* bulletin for further information.
 - c. Windows and openings shall be flashed according to design and Building Code Requirements.
 - d. Individual windows that are ganged to make multiple units require continuous head flashing and the joints between the units must be fully sealed.
3. Roof:
- a. Verify that all roof flashings have been installed in accordance with the guidelines set by the Asphalt Roofing Manufacturers Association (ARMA).
4. Kick-out flashing:
- a. Kick-out flashing must be installed leak-proof and angled (min 100°) to allow for proper drainage and water diversion.
- C.** Do not proceed until all unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A.** Protect all surrounding areas and surfaces from damage and staining during application of Channeled Adhesive CI Design with MaxGrip Veneer Mortar materials.
- B.** Substrate preparation: Prepare substrates in accordance with Senergy instructions.

3.03 MIXING

General: No additives are permitted unless specified in product mixing instructions. Close containers when not in use. Prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product. Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

NOTE TO SPECIFIER: Keep only the products in this section which were selected in Section 2.02. Delete those not to be utilized.

B. Air/Water-Resistive Barriers:

1. WS FIL & SENERSHIELD-R/RS/VB: Mix with a clean, rust-free paddle and drill until thoroughly blended. Do not add water.
2. Cold Temperature Additive: LT ADDITIVE: Pour the entire contents of one (1) bottle of LT ADDITIVE into one (1) full pail of SENERSHIELD-R/RS/VB. Mix with a clean, rust-free paddle and drill until fully blended.

C. Senergy Base Coat:

1. ALPHA Base Coat: Mix base coat with a clean, rust-free paddle and drill until thoroughly blended, before adding Portland cement. Mix one-part (by weight) Portland cement with one-part base coat. Add Portland cement in small increments, mixing until thoroughly blended after each additional increment. Clean, potable water may be added to adjust workability.
2. XTRA-STOP Base Coat: Mix base coat with a clean, rust-free paddle and drill until thoroughly blended, before adding Portland cement. Mix one-part (by weight) Portland cement with one-part base coat. Add Portland cement in small increments, mixing until thoroughly blended after each additional increment. Clean, potable water may be added to adjust workability.
3. ALPHA GENIE Base Coat: Mix base coat with a clean, rust-free paddle and drill until thoroughly blended, before adding Portland cement. Mix one-part (by weight) Portland cement with one-part base coat. Add Portland cement in small increments, mixing until thoroughly blended after each additional increment. Clean, potable water may be added to adjust workability.
4. ALPHA DRY Base Coat: Mix and prepare each bag in a 5-gallon (19-liter) pail. Fill the container with approximately 1.5-gallons (5.6-liters) of clean, potable water. Add ALPHA DRY Base Coat in small increments, mixing after each additional increment. Mix ALPHA DRY Base Coat and water with a clean, rust-free paddle and drill until thoroughly blended. Additional ALPHA DRY Base Coat or water may be added to adjust workability.

D. MAXGRIP VENEER MORTAR:

1. Skim Coat: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. 1.0-1.25 gallons (3.8-4.7 liters) of clean, potable water to a pail. Add a full bag of

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MAXGRIP VENEER MORTAR to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Let stand for 5 to 10 minutes, then remix/retemper for 1 minute before use.

2. Light Weight Adhered Veneer such as Thin Brick: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. Add 1.0-1.25 gallons (3.8-4.7 liters) of clean, potable water to a pail. Add a full bag of MAXGRIP VENEER MORTAR to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Additional water may be added to adjust workability, do not exceed 1.25 gallons. Let stand for 5 to 10 minutes, then remix / retemper for 1 minute before use. The mixed material should have a thick putty consistency and not slide off the trowel when held vertically.
3. Heavy Stone and Tile: Prepare to mix one bag in a 5-gallon (19-liter) pail that is clean and free of foreign substances. Add 0.75-1.0 gallons (2.8-3.8 liters) of clean, potable water to a pail. Add a full bag of MAXGRIP VENEER MORTAR to the pail in small increments, mixing after each addition. Mix with a low speed drill with a 4-sided mortar paddle until thoroughly blended. Additional water may be added to adjust workability, do not exceed 1 gallon. Let stand for 5 to 10 minutes, then remix / retemper for 1 minute before use. The mixed material should have a thick putty consistency and not slide off the trowel when held vertically.

3.04 APPLICATION

A. Accessories:

1. Attach Window/Door Drip Edge level and per manufacturer's instructions.

NOTE TO SPECIFIER: Keep only the products in this section which were selected in Section 2.02. Delete those not to be utilized.

B. Air/Water-Resistive Barrier:

1. Apply the WS FIL in accordance with WS FIL product bulletin
2. All sheathing joints and windows/openings must be protected, and the air/water-resistive barrier applied in accordance with *Air/Water-Resistive/Vapor Barrier Application Guideline* technical bulletin.
3. Substrate shall be dry, clean, sound, and free of releasing agents, paint, or other residue or coatings. Verify substrate is flat, free of fins or planar irregularities greater than ¼" in 10' (6.4 mm in 3 m).
4. Unsatisfactory conditions shall be corrected before application of the Senergy air/water-resistive barriers.
5. Apply the SHEATHING FABRIC and Senergy air/water-resistive barrier in accordance with the Senergy air/water-resistive barrier product bulletin.
6. Apply the MAXFLASH in accordance with MAXFLASH product bulletin.
7. Installed materials shall be checked before continuing system application.
8. Ensure SHEATHING FABRIC Senergy air/water-resistive barrier or MAXFLASH overlaps the top flange of the starter track.
9. Installed materials shall be checked before continuing system application.

C. Insulation Board:

1. Vertical surfaces: Begin at base of wall with firm, temporary support or spacer.
2. Stagger joints horizontally in a running bond pattern offset a minimum of 6".
3. Pre-cut insulation board to fit openings and projections. Insulation board must be a single piece around corners of openings. Stagger vertical joints and corners. Stagger insulation and sheathing board joints. Offset insulation board joints from sheathing joints by a minimum of 16".
4. Apply mixed Senergy Base Coat to entire surface of insulation board using a stainless-steel trowel with 1/2"x 1/2" (13 mm x 13 mm) notches spaced 2" (50 mm) apart. Ribbons of adhesive must be applied parallel to the 2' dimension of the EPS insulation board to ensure they are vertical when the EPS insulation board is applied to the substrate.
5. Immediately set board into place and apply pressure over entire surface of board to ensure positive uniform contact and high initial grab. Do not slide board into place. Do not allow base coat to dry prior to installing.
6. Abut all joints tightly and ensure overall flush level surface.
7. Fill 1/16" (1.6 mm) and larger gaps between insulation boards with slivers of insulation board.
8. Check adhesion periodically by removing a board prior to set. Properly installed insulation board will

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be difficult to remove and Senergy Adhesive/Base Coat will be adhered to both the Senergy Air/Water-Resistive Barrier and the insulation board.

9. Allow application of insulation board to dry (normally 8 to 10 hours) prior to application of base coat/reinforcing mesh.
10. Rasp flush any irregularities of the insulation board greater than 1/16" (1.6 mm).
11. Install expansion joints and aesthetic grooves as indicated on drawings. Do not align aesthetic grooves with insulation board joints.

D. Senergy Base Coat/Reinforcing Mesh:

1. Base coat shall be applied to achieve reinforcing mesh embedment with no reinforcing mesh color visible.

E. Senergy FLEXGUARD 4 Reinforcing Mesh:

Note: Back wrapping the EPS insulation board is required to provide appropriate fire performance on IBC Types I, II, III and IV (non-combustible) construction

1. Apply FLEXGUARD 4 Reinforcing Mesh to the back side of the EPS board termination a minimum 2 ½" (64mm) by applying selected Senergy Base Coat and embedding the FLEXGUARD 4 into the wet mixture.
2. Once the EPS board is set in place, apply selected Senergy base coat to edge and face of insulation board and wrap the remaining tail end of the FLEXGUARD 4 across the edge and onto the face 2 ½" (64mm) ensuring reinforcing mesh is fully encapsulated in Senergy Base Coat with no predominant mesh pattern visible.
3. Once back wrapping is accomplished, INTERMEDIATE 12 Reinforcing Mesh should be applied over the 2 ½" span of FLEXGUARD 4 wrapped up the face.

Note: Pre-back wrapping the EPS insulation board with Senergy Base Coat and FLEXGUARD 4 reinforcing mesh may be preferred to facilitate installation. This is accomplished by wrapping the back min. 2 ½" (64mm), edge and face min. 2 ½" (64mm) of the insulation board with reinforced base coat prior to installing the insulation board to the substrate.

F. INTERMEDIATE 12 Reinforcing Mesh:

1. Apply mixed Senergy Base Coat to entire surface of insulation board with a stainless-steel trowel to embed the reinforcing mesh.
2. Immediately place INTERMEDIATE 12 against wet base coat and embed the reinforcing mesh into the base coat by troweling from the center to the edges.
3. Lap INTERMEDIATE 12 reinforcing mesh 2 ½" (64 mm) minimum at edges.
4. Ensure INTERMEDIATE 12 is continuous at corners, void of wrinkles and embedded in base coat so that no reinforcing mesh color is visible.
5. If required, apply a second layer of base coat to achieve total nominal base coat/reinforcing mesh thickness of 1/16" (1.6 mm).
6. Allow base coat with embedded reinforcing mesh to dry hard (normally 8 to 10 hours).

G. MAXGRIP – Adhered Veneer Mortar:

Prior to installing the adhered veneer, apply selected Senergy Base Coat or MAXGRIP as a skim coat over dry reinforced base coat at approximately 1/6" (1.6mm) thick. Apply to an area that can be covered with adhered veneer before the skim coat dries. Allow skim coat layer to set for 3-5 minutes, then proceed with adhering the selected veneer

Note: MAXGRIP shall be applied and veneer installed such that the MAXGRIP is free of voids.

Allow MAXGRIP to cure for 24-hours before applying pointing mortar.

1. Thin Brick Veneer: Spread MAXGRIP onto the back of bricks in a continuous layer nominally 3/16"-1/4" (5-6mm) thick and press bricks firmly into place on the substrate.
2. Stone Veneer: Apply MAXGRIP to the back of clean stone veneer in a continuous layer nominally 1/4"-3/8" (6-9mm) thick. Press firmly in place with a twisting movement until excess material exudes from the sides of the unit. Remove excess MAXGRIP between units.
3. Tile: Installation should proceed in accordance with ANSI A 108.5 (the type and size of the tile will dictate adhesive application.)

3.05 CLEANING

A. Clean work under provisions of Section [01 74 00] [].

B. Clean adjacent surfaces and remove excess material, droppings, and debris.

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3.06 PROTECTION

- A.** Protect base coat from rain, snow and frost for 48–72 hours following application.
- B.** Protect installed construction under provisions of Section [01 76 00] [].

END OF SECTION

Senergy Channeled Adhesive CI Design Wall System with MaxGrip Veneer Mortar

WARRANTY

Master Builders Solutions Construction Systems US, LLC (hereinafter "Master Builders Solutions") warrants this product to be free from manufacturing defects and to meet the technical properties on the current Product Bulletin, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. MASTER BUILDERS SOLUTIONS MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of Master Builders Solutions. In the absence of an extended warranty issued by Master Builders Solutions, any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. Master Builders Solutions WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

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