

Non-Permeable Adhered Air and Water Barrier (AWB) Specification

For:

## **WALLcontrol Adhered Air and Water Barrier System with Flashing and Accessories**

Prepared by:

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This specification is provided as a general guide for use of Siplast, Inc. products based on typical building conditions and standard roofing practices. This guide specification is not a substitute for professional design services. The information in this guide specification must be reviewed/approved by a design professional and modified as necessary and appropriate for each project. Each project has unique requirements and Siplast, Inc. recommends that the Owner's representative independently verify the accuracy and appropriateness of the specification provided for a particular project. Each selection or deletion made to this guide specification should be carefully considered. Users of this guide specification assume sole responsibility for its use.

Siplast recommends that WALLcontrol products be installed in a manner to shed water in a shingle fashion. The membrane should be installed in a sequence that maintains a continuous downward water drainage plane onto an acceptable air and water barrier with an unobstructed path to the exterior of the wall system.

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## SECTION 07 26 00 AIR BARRIER – NON-PERMEABLE SHEET (Rev 01/2023)

### PART 1 - GENERAL

#### 1.01. RELATED DOCUMENTS

A. The project plans, details, and general Contract requirements apply to this Section.

#### 1.02. SUMMARY

A. Items Included:

1. Adhered Air and Water Barrier
2. Adhered Flexible Flashing Membrane
3. Liquid Flashing
4. Through-wall Flashing
5. Sealant
6. Primer

B. Related Requirements

1. **[Section 042000 "Unit Masonry"] [Section 042613 "Masonry Veneer"] [Section 044200 "Exterior Stone Cladding"] [Section 044313.13 "Anchored Stone Masonry Veneer"] [Section 044313.16 "Adhered Stone Masonry Veneer"] [ Section 047200 "Cast Stone Masonry"]** for stone masonry ties and flashing installation.
2. Section 06 16 00 "Sheathing" for wall sheathing panels.
3. Section 072100 "Thermal Insulation" for installation of exterior insulation.
4. **[Section 07 52 16 "Modified Bituminous Membrane Roofing"] [Section 07 54 19 "Polyvinyl Chloride Roofing"] [Section 09 96 53 "Elastomeric Roof Coating"]** for roof systems.
5. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counter flashings.
6. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
7. Section **<Insert Section number and title> for <insert material or product to be installed and that requires coordination>**.

#### 1.03. DEFINITIONS

A. Continuous Air Barrier: The combination of interconnected materials, assemblies, and sealed joints and components of the building envelope that minimize air leakage into or out of the building envelope per ASHRAE 90.1 and the International Energy Conservation Code.

- B. Vapor Diffusion: A slow movement of individual water vapor molecules from regions of higher to lower water vapor concentration (higher to lower vapor pressure).
- C. Vapor Non-Permeable Membrane, Class I: The property of having a water-vapor permeance rating of 0.1 perms (5.75 ng/Pa x s x sq. m) or less, when tested in accordance with the desiccant method using Procedure A of ASTM E96 per definition in International Building Code. Vapor non-permeable material retards the passage of moisture vapor through vapor diffusion.
- D. Water-Resistive Barrier: A combination of materials and accessories that prevent the accumulation of water within the wall assembly per International Building Code Section 1403.2.

#### 1.04. REFERENCES

- A. References in these specifications to standards, test methods, and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies that may be used as references throughout this specification section.
  - 1. AAMA: American Architectural Manufacturers Association
  - 2. ABAA: Air Barrier Association of America
  - 3. ASTM: American Society for Testing and Materials
  - 4. CSA: Canadian Standards Association
  - 5. ICC-ES: International Code Council Evaluation Service
  - 6. NFPA: National Fire and Protection Agency
  - 7. USGBC: US Green Building Council

#### 1.05. ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation meetings:
  - 1. When required, and with prior notice, an Air Barrier Manufacturer representative will meet with the necessary parties at the jobsite to review and discuss project conditions as it relates to the integrity of the assembly.

#### 1.06. SUBMITTALS

- A. Product Data: Air barrier manufacturers technical data sheets for each type of product utilized in the air and water barrier assembly.
- B. Manufacturer Instructions: For installation of each product specified.
- C. Samples: 3 in x 5 in for each product, including:
  - 1. Adhered Wall Membrane
  - 2. Adhered Flexible Flashing Membrane
  - 3. Through-wall Flashing
- D. Sampler Warranty: For manufacturer's warranty.
- E. Qualification Data: For Air barrier product applicator

## 1.07. QUALITY ASSURANCE

- A. Source Limitations: Obtain primary air-barrier material and through wall flashing through one source from a single manufacturer. Should project require a vapor impermeable and a vapor permeable air barrier on same project, obtain non-permeable and vapor permeable air barrier and through wall flashing from one source from a single manufacturer.
- B. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this project, whose work has resulted in applications with a record of successful in-service performance.
  - 1. Perform Work in accordance with air barrier manufacturer published literature and as specified in this section.
  - 2. Maintain one (1) copy of Air Barrier Manufacturer's instructions on site.
  - 3. Allow the Air Barrier Manufacturer representative site access during installation.
  - 4. Contact the Air Barrier Manufacturer a minimum of two weeks prior to scheduling a meeting.
- C. Mock-ups: Build mock-ups to set quality standards for materials and execution.
  - 1. Build integrated mockups of exterior wall assembly **[as indicated on Drawings] [150 sq. ft. (14 sq. m)] <Insert area or dimensions>**, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties, and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of weather barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
    - a. Include junction with roofing membrane **[building corner condition,] [and] [foundation wall intersection] [fenestration and wall interface]**.
    - b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air and water barrier until mockups are approved.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

## 1.08. DELIVERY, STORAGE, AND HANDLING

- A. Delivery of Materials:
  - 1. Deliver materials and products in labeled packages.
  - 2. Sequence deliveries to avoid delays, but minimize on-site storage.
- B. Storage of Materials
  - 1. Store and handle in strict compliance with the air barrier manufacturer and conform to applicable safety regulatory agencies. Refer to all applicable data including, but not limited to, Safety Data Sheets, Product Datasheets, product labels, and specific instructions for personal protection.
  - 2. Protect products from damage from sunlight, weather, excessive temperatures and construction operations.
  - 3. Remove damaged material from the site and dispose of in accordance with applicable regulations.

## 1.09. SITE CONDITIONS

### A. Environmental Requirements:

1. Do not perform Work during rain or inclement weather, including during high winds, snow, rain, fog, or mist.
2. Do not perform application on frost covered substrates or surfaces that are wet to touch.
3. Product requirements may vary. Refer to Air Barrier Manufacturer's published literature.

### B. Protection:

1. It is the responsibility of the installing Subcontractor to protect all surfaces not included in scope of Work from damage.
2. Protect top and backside of substrate walls against bulk water during and after application of air barrier.
3. Complete preparation Work prior to installing the air barrier assembly.

## 1.010. WARRANTY

### A. Manufacturer Limited Warranty: Upon successful completion of the project, and after all post-installation procedures have been completed, furnish the Owner with the manufacturer's limited warranty covering the

1. Limited Warranty Coverage: During the applicable warranty term, Siplast will, at its option, provide replacement products for that portion of the products that contain a manufacturing defect that adversely affect the performance of the WallCONTROL products, or the cash value of such replacement product, provided that the WallCONTROL products were installed and used in strict conformance with the written manufacturer's instructions. Refer to limited warranty on product data sheet for complete coverage and restrictions.
2. Limited Warranty Period: Five years

> Siplast 5-year WALLcontrol Materials Warranty

## PART 2 - PRODUCTS

### 2.01 AIR BARRIER SYSTEM

- #### A. Obtain air barrier and auxiliary materials as a single-source from the Air Barrier Manufacturer to ensure compatibility and compliance.

### 2.02 AIR BARRIER MEMBRANE

- #### A. ADHERED AIR BARRIER MEMBRANE: A butyl adhered sheet consisting of a nominal 40 mil (1.0 mm) thick membrane comprised of high-temperature stable, low-temperature application butyl adhesive (non-asphaltic) and a reinforced, aluminum-faced top sheet with a disposable siliconized release liner. Product shall have the following minimum physical properties:

1. Air Permeance per ASTM E2178 and CAN/ULC S741: Not to exceed 0.004 cfm/sf under a pressure differential of 1.57 psf (0.02 L/sq.m @ 75 Pa).
  2. Assembly Air Permeance per ASTM E2357: Not to exceed 0.04 cfm/sf under a pressure differential of 1.57 psf (0.2 L/sq.m @ 75 Pa).
  3. Assembly Air Permeance per CAN/ULC S742: Class A1, Not to exceed 0.04 cfm/sf under a pressure differential of 1.57 psf (0.2 L/sq.m @ 75 Pa).
  4. Water Vapor Permeance per ASTM E96: Less than 0.1 US perm.
  5. Acceptance Criteria For Water-Resistive Barriers per ICC-ES AC38: Passed.
  6. Self-Adhered Performance per AMAA 711: Pass all test criteria as Type A (without primer), and Level 3 (Exposure to 176F (80C)).
  7. Pull Adhesive Strength to Substrates (without Primer) per ASTM D4541: Greater than 16 psi on exterior gypsum, CMU, concrete, and plywood.
  8. Peel Adhesive Strength to Substrates (without Primer) per ASTM D3330: Greater than 5 pli on aluminum and plywood.
  9. UV resistance during construction: 6 months.
  10. Surface Burning Characteristics per ASTM E84: Class A with a Flame Spread of 5 or less and Smoke Development Index of 125 or less.
  11. Cone Calorimeter at Incident Radiant Heat Flux of 50 kW/m<sup>2</sup> per 2015 IBC and newer WRB exception criteria for NFPA 285 per ASTM E1354: Peak Heat Release less than 150 kW/m<sup>2</sup>, Total Heat Release less than 20 MJ/m<sup>2</sup>, Effective Heat of Combustion less than 18 MJ/kg.
  12. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Reinforced Aluminum Butyl Adhered AWB or comparable product by one of the following:
1. <Insert manufacturer's name>.

## 2.03 ADHERED FLEXIBLE FLASHING MEMBRANE

- A. ADHERED AIR BARRIER MEMBRANE: A butyl adhered sheet consisting of a nominal 40 mil (1.0 mm) thick membrane comprised of high-temperature stable, low-temperature application butyl adhesive (non-asphaltic) and a reinforced, aluminum-faced top sheet with a disposable siliconized release liner. Product shall have the following minimum physical properties:
1. Air Permeance per ASTM E2178 and CAN/ULC S741: Not to exceed 0.004 cfm/sf under a pressure differential of 1.57 psf (0.02 L/sq.m @ 75 Pa)
  2. Assembly Air Permeance per ASTM E2357 and CAN/ULC S742: Not to exceed 0.04 cfm/sf under a pressure differential of 1.57 psf (0.2 L/sq.m @ 75 Pa)
  3. Water Vapor Permeance per ASTM E96: Less than 0.1 US perm
  4. Self-Adhered Performance per AMAA 711: Pass all test criteria as Type A (without primer), and Level 3 (Exposure to 176F (80C))
  5. Pull Adhesive Strength to Substrates (without Primer) per ASTM D4541: Greater than 16 psi on exterior gypsum, CMU, concrete, and plywood.

6. Peel Adhesive Strength to Substrates (without Primer) per ASTM D3330: Greater than 5 pli on aluminum and plywood.
  7. UV resistance during construction: 6 months
  8. Surface Burning Characteristics per ASTM E84: Class A with a Flame Spread of 5 or less and Smoke Development Index of 125 or less.
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Reinforced Aluminum Butyl Adhered Flashing or comparable product by one of the following:
1. <Insert manufacturer's name>.

## 2.04 LIQUID FLASHING

- A. LIQUID FLASHING: A liquid-applied single-component silyl-terminated polyether (STPE) moisture cure air barrier accessory for rough openings and joints for commercial wall systems. Product shall have the following minimum physical properties:
1. Air Permeance per ASTM E2178 and CAN/ULC S741: Not to exceed 0.004 cfm/sf under a pressure differential of 1.57 psf (0.02 L/sq.m @ 75 Pa)
  2. Assembly Air Permeance per ASTM E2357 and CAN/ULC S742: Not to exceed 0.04 cfm/sf under a pressure differential of 1.57 psf (0.2 L/sq.m @ 75 Pa)
  3. Liquid Flashing Performance per AMAA 714: Pass all test criteria
  4. Low-Temperature Crack Bridging per ASTM C1305: Pass at 20 mils
  5. Adhesive Strength to Substrates (without Primer) per ASTM C794: Greater than 5 pli on mortar, CMU, concrete, and plywood.
  6. UV resistance during construction: 6 months
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Modified Silicone (STPE) Liquid Flashing or comparable product by one of the following:
1. <Insert manufacturer's name>.

## 2.05 THROUGH-WALL FLASHING

- A. THROUGH-WALL FLASHING: A butyl adhered type 304 stainless steel sheet consisting with a high-temperature stable, low-temperature application butyl adhesive (non-asphaltic) with a disposable siliconized release liner. Product shall have the following minimum physical properties:
1. Air Permeance per ASTM E2178: Not to exceed 0.004 cfm/sf under a pressure differential of 1.57 psf (0.02 L/sq.m @ 75 Pa)
  2. Self-Adhered Performance per AMAA 711: Pass all test criteria as Type A (without primer), and Level 3 (Exposure to 176F (80C))
  3. Surface Burning Characteristics per ASTM E84: Class A
  4. Tensile Strength per ASTM D412: Machine Direction >9100 psi, and Cross-machine Direction >7000 psi.
  5. Adhesive Strength to Substrates (without Primer) per ASTM D3330: Greater than 5 pli on laps, aluminum, and plywood.

6. UV resistance during construction: Unlimited
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast WALLcontrol Stainless Steel Butyl Adhered Flashing or comparable product by one of the following:
  1. <Insert manufacturer's name>.

## 2.06 SEALANT

- A. SEALANT: A non-slump, moisture-curing, elastomeric sealant. Product shall have the following minimum physical properties:
  1. Color: Limestone Gray
  2. VOC Content: Less than 15 g/L
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast PS-715 NS Elastomeric Sealant or comparable product by one of the following:
  1. <Insert manufacturer's name>.

## 2.07 PRIMER

- A. PRIMER: A single component, water-based, acrylic latex, general purpose primer used as a bleed-blocker, adhesion promoter, and corrosion inhibitor prior to application. Product shall have the following minimum physical properties:
  1. Color: Bone White, Translucent
  2. Dry time per ASTM D1640: 20-30 minutes @ 75F (24C) 50% RH
  3. VOC Content: Less than 100 g/L
- B. Basis of Design Product: Subject to compliance with requirements provide Siplast Pro Primer AC or comparable product by one of the following:
  1. <Insert manufacturer's name>.

## PART 3 - EXECUTION

### 3.01 SUBSTRATE EXAMINATION

- A. Refer to air barrier manufacturer's literature for requirements for acceptable substrates.
- B. Verify that substrates and conditions are ready to accept the Work of this section. Notify **[engineer] [architect] [consultant]** in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates. Substrate conditions to verify include:
  1. Substrate must be continuous and secure.
  2. Top and backside of substrate walls must be protected against bulk water during and after application of air barrier.
  3. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the membranes.
  4. Fill voids, gaps and spalled areas in substrate to provide an even plane.



5. Tie holes/voids in poured concrete to be flush and smooth shall be filled. Allow new concrete to cure a minimum of 14 days after forms are removed.
6. Curing compounds must be resin based without oil, wax or pigments. Substrates must be free of form release agents.
7. CMU walls shall have all joints filled and struck flush. Mortar should be cured for a minimum of 7 days. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat. Where necessary, clean loose mortar and other contamination on the substrate with a wire brush or similar abrasion to provide a stable, clean, frost-free, and dust-free surface for application.
8. Exterior sheathing shall be installed according to the manufacturer's installation instructions and fastening pattern. All board edges shall be sound and anchored in a way to provide minimum deflection. All board edges shall be cut cleanly and excess debris shall be removed.
9. Exterior grade plywood, sheathing, and lumber shall be securely fastened. Ensure substrate is acceptable prior to application of air barrier products.
10. Metal surfaces need to be clean and free of oils or other contaminants. Remove rust or other oxidation layers from the surface prior to application.

### 3.02 SUBSTRATE PREPARATION

- A. Verify surfaces, rough openings, and transitions and are in accordance with the product technical data sheet and as stated in this specification and the air barrier manufacturer requirements.
- B. Prior to the installation of air barrier products the following are required:
  1. Roofing systems shall be capped and sealed, or the top of walls protected, in such a way as to eliminate the ability of water to saturate the wall or interior space, both before and after, air barrier system installation. Coordinate installation of air barrier products with the roofing trade to ensure compatibility and continuity with the roofing system.
  2. Substrate must be clean and dry and free from gross irregularities, loose material, unsound material, sharp protrusions, any foreign material (such as dirt, ice, snow, water, grease, bitumen/coal tar, oil, release agents, lacquers, paint coverings), or any other condition that would be detrimental to the adhesion of the membrane to the substrate.
  3. Clean loose dust or dirt from the surface to which the air barrier product is to be applied by wiping with a clean, dry cloth or brush.
- C. Perform a mock-up or field adhesion test on the actual materials being used on the job be conducted to verify adhesion and utilize a primer as needed.

### 3.03 AIR BARRIER INSTALLATION

- A. Apply air barrier membrane for requirements for product installation to achieve a continuous air barrier according to air barrier manufacturer's written instructions.
- B. Application of Adhered Membrane and Adhered Flashing:

1. Air barrier products should be installed in a manner to shed water in a shingle fashion. The membrane should be installed in a sequence that maintains a continuous downward water drainage plane onto an acceptable air and water barrier with an unobstructed path to the exterior of the wall system.
2. Generally, application may proceed when ambient and surface temperature is a minimum 20°F (-7°C) and rising and the substrate is clean, dry, and frost-free.
3. Products can be applied vertically or horizontally.
4. Adhered products shall be lapped onto the previous sheet a minimum of 2" (5cm). All other transitions should have a minimum of 3" (8 cm) overlap. All horizontal laps should be shingled to shed water.
5. Adhered products must be mechanically roll-pressed with a J-Roller to ensure the membrane develops sound contact to the substrate. Hard roller the material within a short period after the installation. Ensure firm pressure is applied to the roller across the entire surface of the material to create continuous and intimate contact with the substrate.
6. All non-water shedding edges must be sealed with Liquid Flashing or Sealant.
7. At the end of each working day, if the wall has been only partially covered, apply a bead of Liquid Flashing or Sealant along the top edge of the membrane at its termination to prevent vertical drainage of precipitation from penetrating the end and undermining the membrane adhesion.
8. Tool all sealants and liquid flashing materials to ensure it is worked into the surface.
9. Tears and holes must be repaired. Repairs made using adhered membrane products sized to extend 6 in (150 mm) in all directions from the perimeter of the affected area and must be pressed into place with a hand roller as soon as possible to ensure continuous and intimate contact with the substrate. Repairs made using liquid flashing products should be applied to extend at least 1 in (25 mm) in all directions from the perimeter of the affected area at a minimum thickness of 60 wet mils.

#### C. Application of Liquid Flashing

1. Refer to the manufacturer's literature for requirements and locations for liquid flashing applications when liquid flashing is utilized in the air barrier system.
2. Liquid Flashing to be applied at a minimum 60 mil (wet mils) thick coating extending at least 1 in (25 mm) onto both surfaces of joints and corners.
3. After the application of the adhered air barrier membrane application, use Liquid Flashing to treat the following details:
  - a. Embedded masonry ties, pintles, and penetrations
  - b. Window and door rough openings
  - c. Sealing corners of lapped adhered flashing at sill, jamb, head, saddle flashing, and other lapped conditions.
  - d. To treat subsequent fastener, insulation pin, and cladding penetration.

#### D. Application of Through-wall Flashing

1. Flashing membrane should be installed in a manner to shed water in a shingle fashion. The membrane should be installed in a sequence that maintains a continuous downward water drainage plane onto an acceptable air and water barrier with an unobstructed path to the exterior of the wall system.
2. The self-adhered membrane must be applied with a 2 inch minimum lap on itself or other transition interfaces at all laps and transitions.
3. To minimize wrinkles in the finished membrane, limit the removal of the release liner to only the area of the flashing membrane that is being immediately adhered to the substrate.
4. When applying the membrane to the substrate, install the Through-wall Flashing using a handheld roller and roll the membrane with constant, firm pressure to ensure uniform contact with the substrate.
5. Seal all terminations, detailing, leading-edge, and protrusions with Sealant.
6. When installing the Through-wall Flashing at a corner with a 90° or greater angle, pre-bend the membrane and roll the crease before removing the release liner and installation.
7. End dams: Fold ends of flashing at the end of the opening or horizontal flashing terminations to form dam or use stainless steel preformed end dams made of 26 gauge stainless steel.
8. Inside and outside corners: Make in an industry-accepted manner using corner and splice material or purchase manufactured corners from the manufacturer.
9. Fasten to wall at the top by embedding in a layer of sealant or use a non-corrosive termination bar and fasten it to the wall at the top edge of the flashing and seal the top edge with sealant.
10. Follow facade cladding, door, window, and roofing manufacturers' installation and maintenance requirements for all exterior enclosure systems.

#### E. Application of Sealant

1. Refer to the manufacturer's literature for requirements and locations for sealant applications and joint types when sealant is utilized in the air barrier system.
2. Tooled Sealant fillet bead extending at least ½ in (12 mm) onto both surfaces.
3. Tool all sealants and liquid flashing materials to ensure it is worked into the surface.

#### F. Application of Primer

1. Refer to the manufacturer's literature for requirements and locations for primer applications when primer is utilized in the air barrier system.

### 3.04 FIELD QUALITY CONTROL

- A. Remove and replace deficient air barrier components as specified.

### 3.05 CLEANING AND PROTECTION

- A. Protect membranes to avoid damage by other trades and construction materials during subsequent operations. Insulation and/or protection products may be installed after membranes have been installed.
- B. As the Work proceeds, and upon completion, promptly clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.
- C. Clean soiled surfaces, spatters, and damage to adjacent areas caused by Work of this Section.
- D. Check area to ensure cleanliness and remove debris, equipment, and excess material from the site.
- E. Inspect the membrane before covering it with subsequent construction materials and repair any punctures, damaged areas, or inadequately lapped seams.
- F. Remove masking and / or temporary protection materials after installation.