

SECTION 07 27 00

OSB WEATHER-RESISTIVE BARRIER (WRB) AND AIR BARRIER (AB) SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Work of this section includes integrated weather-resistive oriented strand board (OSB) system with integral Water-Resistive Barrier (WRB) and air barrier (AB) features, and all components and accessory materials required for covering sheathing joints, penetrations, rough openings, and material transitions, for use under exterior wall claddings.

**SPECIFIER NOTE: THE FORCEFIELD® WEATHER BARRIER SYSTEM SPECIFIED HEREIN REPLACES ALL EXTERIOR WALL SHEATHING, PLASTIC SHEET AIR BARRIERS, SELF-ADHERING AIR BARRIERS, AND FLUID-APPLIED AIR BARRIERS. THEREFORE, DELETE ALL OTHER AIR BARRIERS / WATERRESISTIVE BARRIER PRODUCTS FROM THE SPECIFICATIONS, AND DELETE EXTERIOR WALL SHEATHING FROM DIVISION 6.**

1.2 RELATED SECTIONS

- A. [Section 014000 Quality Requirements;] [Section 014529 Testing Laboratory Services;] [Section 014533 Code-Required Special Inspections and Procedures;] coordination with owners' independent testing and inspection agency
- B. Section 014339 Mock-Ups; exterior wall mock-ups.
- C. Section 061000 Rough Carpentry
- D. Section 061200 Structural Panels
- E. Section 061600 Sheathing
- F. Section 061700 Structural Wood
- G. Section 076500 Flexible (Through-Wall) Flashing
- H. Section 079200 Joint Sealants, sealant materials, and installation techniques
- I. Exterior wall claddings

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM): [www.astm.org](http://www.astm.org)
  - 1. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials
  - 2. ASTM D3330 - Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape
  - 3. ASTM D5651 - Standard Test Method for Surface Bond Strength of Wood-Base Fiber and Particle Panel Materials
  - 4. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
  - 5. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
  - 6. ASTM E1233 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential
  - 7. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
  - 8. ASTM E84- Standard Test Method for Surface Burning Characteristics of Building Materials

9. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

B. American Architectural Manufacturers Association (AAMA)

1. AAMA 711 Voluntary Specification for Self Adhering Flashing Used for Installation of Exterior Wall Fenestration Products

C. Pressure Sensitive Tape Council (PSTC)

1. PSTC 101 - Peel Adhesion of Pressure Sensitive Tapes

2. PSTC 131 - Breaking Strength and Elongation of Pressure Sensitive Tapes

CI. US Department of Commerce (DOC): <http://gsi.nist.gov/global/index.cfm/L1-5/I2-44/A-355>

1. DOC PS 2 - Performance Standard for Wood-Based Structural Panels

CII. International Code Council (ICC): [www.iccsafe.org](http://www.iccsafe.org)

1. ICC IBC - International Building Code

2. ICC IRC - International Residential Code for One- and Two-Family Dwellings

3. ICC FBC - Florida Building Code

CIII. ICC Evaluation Service, Inc. (ICC-ES): [www.icc-es.org](http://www.icc-es.org)

1. ICC-ES AC310 - Acceptance Criteria for Water-Resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers

2. ICC-ES AC116 - Acceptance Criteria for Nails and Spikes

3. ICC-ES AC148 - Acceptance Criteria For Flexible Flashing Materials

4. ICC-ES AC201 - Acceptance Criteria for Staples

5. ICC-ES AC266 - Acceptance Criteria for Wood Structural Panel Roof Sheathing Factory-Laminated with an Alternate Roof Underlayment

6. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections

7. Sustainable Forestry Initiative (SFI): [www.sfiprogram.org/](http://www.sfiprogram.org/)

a. SFI 2010 - 2014 Standards

#### 1.4 SUBMITTALS

A. Submittals; Submit in accordance with Division 1 requirements

B. Product Data and Installation Instructions: Submit manufacturer's product data including sheathing and accessory material types, composition, descriptions and properties, installation instructions and substrate preparation recommendations.

C. Shop Drawings: Submit shop drawings indicating locations and extent of WRB/AB system, including but not limited to details of typical conditions, special joint conditions intersections, with other building envelope systems and materials: counterflashings and details showing bridging of envelope at substrate changes, details of sealing penetrations, and detailed flashing around windows and doors.

D. Test Reports: Submit test reports indicating compliance with specific performance characteristics and requirements.

- E. Sample Warranty: Submit a sample warranty identifying the terms and conditions of the warranty as herein specified.
- F. APA Product Report PR-N136: For WRB/AB system from APA The Engineered Wood Association or Florida Product Approval APA Product Report PR-N136F.

1.5 WARRANTY

- A. Residential and commercial projects: Provide manufacturer's standard warranty that offers a ten (10) year transferable limited warranty to the owner of a structure using ForceField® OSB wall panels.
- B. For wall applications, Provide manufacturer's standard warranty against in-place exposure damage (delamination) for six (6) months of exposure to normal weather conditions beginning with the date of installation of the product.

1.6 QUALITY ASSURANCE: PRE-CONSTRUCTION CONFERENCE

- A. Conduct pre-construction conference on site at project
- B. Review air barrier products and installation requirements
- C. Mock-up construction and expectations
- D. Testing and inspection requirements
- E. Sequencing and coordination of air barrier work with other materials and sections.
- F. Compatibility of materials that will interface with the primary Air and Weather Resistive Barrier membrane material and accessories

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and accept materials to the Project site in original packaging with seals unbroken and label with Manufacturer's name.
- B. Comply with manufacturer's written instructions for protection of sheathing and accessory products from weather prior to installation.
- C. Protect accessory materials from damage, weather, excessive temperatures, and construction traffic.
- D. Handle materials in accordance with the manufacturer's recommendations.

1.8 FIELD CONDITIONS

- A. Application standards where applicable are in accordance with APA Engineered Wood Construction Guide, Form No. E30.
- B. Do not install panels that are moisture damaged. Indications that panels are moisture damaged include, but not limited to, discoloration, disengagement of overlayment, sagging, or irregular shape.
- C. Allow installed panels to be dry to the touch before treating joints, penetrations, rough openings, and material transitions.
- D. Do not attempt to treat joints, corners, penetrations, rough openings, and material transitions when installed sheathing surface is frozen or has frost on the surface.
- E. Do not apply sealing materials to sheathing when air or surface temperature is manufacturers recommended installation conditions.
- F. Sequencing: Do not install weather-resistive barrier material before the roof assembly has been sufficiently installed to prevent a buildup of water in the interior of the building. Schedule other work requiring interface with the air barrier to ensure proper sequencing.

- G. Compatibility: Do not allow weather-barrier materials to come in contact with chemically incompatible materials.
- H. Ultra-violet exposure: Do not expose air barrier materials to sunlight longer than as recommended by the material manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and accept materials to the Project site in original packaging with seals unbroken and label with Manufacturer’s name.
- B. Comply with manufacturer’s written instructions for protection of sheathing and accessory products from weather prior to installation.
- C. Protect accessory materials from damage, weather, excessive temperatures, and construction traffic.
- D. Handle materials in accordance with the manufacturer’s recommendationS.

2.0 FIELD CONDITIONS

- A. Application standards where applicable are in accordance with APA Engineered Wood Construction Guide, Form No. E30.
- B. Do not install panels that are moisture damaged. Indications that panels are moisture damaged include, but not limited to, discoloration, disengagement of overlayment, sagging, or irregular shape.
- C. Allow installed panels to be dry to the touch before treating joints, penetrations, rough openings, and material transitions.
- D. Do not attempt to treat joints, corners, penetrations, rough openings, and material transitions when installed sheathing surface is frozen or has frost on the surface.
- E. Do not apply sealing materials to sheathing when air or surface temperature is manufacturers recommended installation conditions.
- F. Sequencing: Do not install weather-resistive barrier material before the roof assembly has been sufficiently installed to prevent a buildup of water in the interior of the building. Schedule other work requiring interface with the air barrier to ensure proper sequencing.
- G. Compatibility: Do not allow weather-barrier materials to come in contact with chemically incompatible materials.
- H. Ultra-violet exposure: Do not expose air barrier materials to sunlight longer than as recommended by the material manufacturer.

PART 2 - SHEATHING BOARDS

2.1 MANUFACTURING

- A. Basis-of-Designs: Provide Oriented Strand Board (OSB) with Integrated Weather-Resistive Barrier-Air Barrier (WRB-AB) - Georgia-Pacific Building Products LLC 1-800-225-6119; email: techservices@gapac.com” www.buildgp.com or comparable products approved by the Architect in agreement with Division 1 General Requirements.
- B. Source Limitations: Obtain the primary weather-resistive barrier materials from a single source manufacturer.

2.2 PRODUCTS

- A. Acceptable product: ForceField Weather Resistant Barrier OSB as manufactured by Georgia-Pacific Wood Products LLC. buildgp.com/forcefield/, 1-800-225-6119
- B. Roofing underlayment installed under roofing assemblies
  - 1. Sheathing: ForceField® Weather Resistant Barrier OSB
  - 2. Self-adhered flashing tape: Georgia-Pacific ForceField® Premium Tape to treat sheathing joints and penetrations.
  - 3. Fasteners and backer-rod as required by system manufacturer’s instructions. Air and water-resistive barrier system installed at exterior stud walls under exterior cladding.
- C. Air and water-resistive barrier system installed at exterior stud walls under exterior cladding.
  - 1. Sheathing: ForceField® Weather Resistant Barrier OSB
  - 2. Self-adhered tape: GP ForceField Seam Tapes to treat sheathing joints, inside and outside corners, and penetrations.
  - 3. Self-adhered flashing tape: Georgia-Pacific ForceField Premium Tape to tape sheathing joints, inside outside corners, transitions, rough openings and penetrations.
  - 4. Self-adhered flexible flashing tape: ForceField Flex Tape to treat the sil of the rough opening.
  - 5. Mechanically fastened corner seal to treat inside and outside corners.

2.3 PERFORMANCE REQUIREMENTS

- A. Description: OSB panel with integral water-resistive barrier (WRB) and air barrier (AB) complying with applicable requirements of ICC-ES AC 310, ASTM D5651, ASTM E2357
- B. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.
- C. Oriented Strand Board Wall Sheathing: APA Rated Exposure 1 sheathing
- D. OSB Span Rating, Panel Grade and Performance Category: Not less than 24/16 span rating; APA Rated Sheathing; 7/16 Performance Category
- E. Edge Profile: Square edge
- F. Certified Wood: Provide sheathing produced from wood obtained from forests certified by an accredited certification body.
- G. Air-Barrier performance requirement:
  - 1. Air Permeance of Assembly: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2357

H. Water-Vapor Permeance, Panel:

1. Method A: >1 perms (57.452 ng/Pa x s x sq.m), ASTM E96/E96M
2. Method B: >2.75 PERMS (157.994 ng/Pa x s x sq.m), AST, E96/E96M

I. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

2.4 TAPE/FLASHING FOR JOINTS, INSIDE AND OUTSIDE CORNERS, ROUGH OPEININGS, AND ,MATERIAL TRANSITIONS

A. ForceField Seam Tape: treatment of panels seams, inside and outside corners

1. Tape: minimum 3" sheet type self-adhering

2. Properties

- a. Material: Acrylic
- b. Acceptable substrate: ForceField Weather Resistant Barrier OSB
- c. Adhesion to substrate: No delamination from face of sheathing
- d. Tape Thickness: .315 inches
- e. Peel adhesion: PTSC-101
- f. Shear Adhesion: PTSC-107
- g. Tensile Strength: PTSC-131
- h. Elongation: PTSC-131

B. ForceField Premium Tape: Treatment of panel seams, inside outside corners, penetrations, material transitions, and rough openings.

1. Tape: minimum 3" sheet type self-adhering

2. Properties

- a. Materiel: acrylic
- b. Acceptable substrate: ForceField Weather Resistant Barrier OSB
- c. Adhesion to substrate: No delamination from face of sheathing
- d. Tape thickness: 0.015 inch
- e. Specification for Self-adhere flashing AAMA 711-13
- f. Low temp pliability ASTM C-765
- g. Nail sealability ASTM D-1970
- h. Tensile strength ASTM D-5034-95
- i. Peel adhesion ASTM D-3330-04
- j. Air permeance: meets 0.004 cubic feet per minute per square foot (0.02L/s/sq m), maximum, when tested in accordance with ASTM E2178
- k. Water-Vapor Permeance: < 1 perms (ng/Pa x s x sq. m), ASTM E96/E96M, Dry Method
- l. Ultraviolet and weathering resistance: Approved for a maximum of 90 days weather exposure

m. Complies with applicable requirements of Pressure Sensitive Tape Council (PSTC)

C. ForceField Flex Tape: Treat window sill plates using a conformable two-ply

1. Flashing material: minimum 6" sheet type self-adhering

2. Properties

a. Material: Butyl Rubber adhesive

b. Acceptable substrate: ForceField Weather Resistant Barrier OSB

c. Adhesion to substrate: No delamination from face of sheathing

d. Low temp Flex ASTM D903

e. Nail sealability ASTM D1970

f. Tensile strength ASTM D-2023

g. Air permeance: meets 0.004 cubic feet per minute per square foot (0.02L/s/sq m), maximum, when tested in accordance with ASTM E2178

2.5 FASTENERS

A. Fasteners, General: Corrosion-resistant, size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.

B. Nails, Brads, and Staples: ICC AC 116 and ICC AC 201, corrosion-resistant.

C. Power-Driven Fasteners: ICC-ES ESR 1539, corrosion-resistant.

## PART 3 - EXECUTION

## 3.1 PREPARATION

- A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.
- B. Remove projections, protruding fasteners, loose or damaged sheathing material at edges of panel that might interfere with proper installation to treat joints, corners, penetrations, openings, or material transitions.
- C. Wipe down the sheathing surface to receive sealing materials with a clean cloth, dry and free of contaminants.
- D. Ensure field conditions are met as outlined in Part 1-General Requirements.

## 3.2 INSTALLATION OF WRB-AB SHEATHING

- A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Product Report, and requirements of authorities having jurisdiction.
- B. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant sequencing and installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture-barrier.
- C. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.
- D. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.
  - 1. Space square-edged panels with a 0.125 inch (3 mm) gap between board ends and edges, to allow for expansion and contraction.
- E. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
  - 1. ICC-ES ESR-1539 for power-driven fasteners.
  - 2. IBC: Section 2304 General Construction Requirements
  - 3. IRC: Table R602.3(1), "Fastening Schedule" and Table R602.3(2) "Alternative Attachments to Table R602.3(1).

## 3.3 INSTALLATION OF SELF-ADHERED TAPE/FLASHING FOR TREATING SHEATHING JOINTS, CORNERS, PENETRATIONS, ROUGH OPENINGS, AND MATERIAL TRANSITIONS

- A. Apply minimum 3" GP ForceField® Tape at all panel seams, corners, and cracks to form continuous water and air resistant surface. Apply tape according to manufacturer's installation guide.
  - 1. Ensure the surface is free from moisture, frost, dust, dirt, and other bond inhibiting materials. Center the tape over the panel seam so that a minimum 1" of tape is applied on each side of the panel seam.
  - 2. Whenever tape splices occur, a 2" overlap should be used. Sequence tape application such that a shingle lap application is achieved. At T-joints, the tape should overlap by 2".
  - 3. Apply firm pressure on the tape surface with your hand or a J-roller to ensure that a continuous bond is achieved between the tape and the panel surface and to eliminate wrinkles and air bubbles.
- B. Apply GP ForceField Tape to treat exterior wall penetrations. Apply tape according to manufacturer's installation guide.
  - 1. Fill gaps around penetration larger than 1/8" with a backer rod to support the tape around the penetration.
  - 2. Align and position tape on bottom side of penetration and press firmly into place.

3. Align and position tape on both sides of the penetration as close to the penetration as possible and press firmly into place.
4. Ensure the above taped section is overlapping the lower tape section so that all overlaps are shingle style.
5. Align and position tape on top of the penetration as close to the penetration as possible and press firmly into place.
6. Apply firm pressure using a J-roller to ensure that a continuous bond is achieved between the flashing tape and the panel surface and to eliminate wrinkles and air bubbles.

C. Apply approved Georgia-Pacific flashing tapes at window/door rough openings. Apply flashing according to manufacturer's installation guide.

1. Ensure the surface is free from moisture, frost, dust, dirt, and other bond inhibiting materials.
2. Measure the length of the jamb and add 2", cut two pieces of flashing tape to length and position over the jamb so that it extends past the header 2" and a minimum 2" extends onto the face of the panel surface.
3. Align and position the tape over the sill. Remove release paper and press firmly into place. The tape should fold down approximately 2" onto the panel surface and a minimum 6" up the jambs.
4. Apply flashing tape onto the jambs shingle lapping over the sill flashing tape a minimum 2".
5. Apply head flashing tape to achieve minimum 2" overlap onto the panel surface overlapping the jamb flashing tape a minimum 2".
6. Roll over all of the flashing tapes with a J-roller applying firm pressure to ensure that a continuous bond is achieved between the tape and the panel surface and to eliminate wrinkles and air bubbles.
7. Optional for flanged windows: Install flashing tape over the jamb and head flanges in a shingle type application but do not apply flashing tape over the sill flange. Consult window manufacturer for installation requirements and guidelines.

D. Apply approved Georgia-Pacific flashing tapes at material transitions. Apply flashing according to manufacturer's installation guide.

1. Ensure the surface is free from moisture, frost, dust, dirt, and other bond inhibiting materials.
2. If necessary, fill transition gap between the two different substrates with a backer rod if gap is over 1/8" wide to support the tape at the transition joint.
3. Align and position flashing tape and press firmly into place. Ensure minimum 2" of flashing is on each substrate material surface.
4. Ensure minimum 2" overlap at all end laps of flashing. For vertical transitions overlap tapes in a shingle type application
5. Apply firm pressure using a J-roller to ensure that a continuous bond is achieved between the tape and the surface and to eliminate wrinkles and air bubbles.

### 3.4 FIELD QUALITY CONTROL

- A. Allow appropriate time for required inspections to be completed before installing a cladding over the ForceField® Weather Barrier System.
- B. Where applicable, allow for owner's inspection and air barrier testing and reporting.

Project Name Weather-Resistive Barrier (WRB) and Air Barrier (AB) Vapor Permeable  
Integrated Oriented Strand Board (OSB)

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Project Number 07 27-00

3.5 PROTECTION

- A. Protect WRB/AB assembly from damage during installation and during the construction period.

END OF SECTION