SECTION 072500 - WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Weather barrier membrane with drainage plane (Tyvek CommercialWrap D).
   2. Flashings and seam tape.
   3. Flexible flashing.
   4. Fasteners.
   5. Transition strip flashing over window nailing fin to tie into weather barrier system.

B. Related Sections include the following:
   1. Division 06 Section "Rough Carpentry" for fire retardant plywood wall sheathing to receive weather barrier.
   2. Division 08 Section "Clad Wood Windows" for coordination of window tie-in to weather barrier system.

1.3 REFERENCES

A. ASTM International
   1. ASTM C 920; Standard Specification for Elastomeric Joint Sealants
   2. ASTM C 1193; Standard Guide for Use of Joint Sealants
   3. ASTM D 882; Test Method for Tensile Properties of Thin Plastic Sheeting
   4. ASTM D 1117; Standard Guide for Evaluating Non-woven Fabrics
   5. ASTM E 84; Test Method for Surface Burning Characteristics of Building Materials
   6. ASTM E 96; Test Method for Water Vapor Transmission of Materials
   7. ASTM E 1677; Specification for Air Retarder Material or System for Framed Building Walls
   8. ASTM E 2178; Test Method for Air Permeance of Building Materials

B. AATCC - American Association of Textile Chemists & Colorists
   1. Test Method 127 Water Resistance: Hydrostatic Pressure Test

C. TAPPI
   1. Test Method T-410; Grams of Paper and Paperboard (Weight per Unit Area)
   2. Test Method T-460; Air Resistance of Paper (Gurley Hill Method)

1.4 SUBMITTALS

A. General: Submit in accordance with Division 01 Section "Submittals."

B. Complete Shop Drawings and Product Data shall be submitted to the Architect at least 14 days before the Preinstallation Conference. No Preinstallation Conference will be held and no material shall be applied until submittals are complete and released for construction.

C. Product Data: Submit manufacturer current technical literature for each component. Include manufacturer's written installation instructions showing the recommended procedures and sequence of installation of weather barrier.

D. Shop Drawings: Submit manufacturer installation details for terminations, perimeter edges, attachment and sealing to adjacent construction for the entire construction envelope, including the following:
1. Termination and sealing to foundations.
2. Flanged windows.
3. Hollow metal door frames.
4. Wall penetrations by pipes, ducts and conduits.
5. Detailing a penetration where sheathing has a wide gap from the penetration (Example: Large diameter oversized drilled hole receiving small conduit).

E. Samples: Weather barrier membrane, minimum 8-1/2 inches by 11 inches.

F. Quality Assurance Submittals:
1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.

G. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier assembly installation.

H. Warranty: Manufacturer's executed warranty form with authorized signatures and endorsements indicating date of Substantial Completion.

1.5 QUALITY ASSURANCE

A. DuPont Tyvek Commercial Wrap Quality Assurance Program for the installation of weather barrier and interface with adjacent materials to provide a watertight exterior barrier.
1. Contact: Scott Knolton, Certified DuPont Tyvek Specialist, (781) 910-1816.

B. Installer Qualifications:
1. Installer shall have experience with installation of specified weather barrier assemblies under similar conditions.
2. Installation shall be in accordance with weather barrier manufacturer's installation guidelines and recommendations.
3. Source Limitations: Provide weather barrier and accessory materials produced by single manufacturer.

C. Manufacturer's Field Service: Manufacturer's Representative shall be present at the following times for review of installations:
1. Preinstallation conference.
2. Commencement of Work: Manufacturer's Representative shall be present for the initial installation of the weather barrier, including flashing of typical openings and penetrations.

3. Periodic Inspection: Manufacturer's Representative shall inspect entire weather barrier installation and prepare reports of observations of the completed installations, including completion of corrective measures identified during the installation review.
4. No weather barrier shall be concealed by construction until it has been inspected and manufacturer’s representative’s written inspection report is received by the Architect.

D. Mockup: Build mockup to set quality standards for materials and execution.
1. Prepare mockups for review at Preinstallation Conference.
2. Build mockup on exterior framed wall in location directed by Architect.
3. Install mockup using approved weather barrier assembly including fasteners, flashing, tape and related accessories per manufacturer's current printed instructions and recommendations. Include sample of flashing and sealing around window, attachment to window frames, taping tops of trim flashing, membrane flashing behind trim, and sealing barrier at base of wall. Include sample of flashing and sealing around window in mockup.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups, unless such deviations are specifically approved by Architect in writing.
5. Contact manufacturer's designated representative prior to weather barrier assembly installation, to perform required mockup visual inspection and analysis as required for warranty. Manufacturer's representative of the weather barrier shall be present for preparation of mockup.
6. Mock-up approved by Architect may remain as part of the work if undamaged.

E. Preinstallation Conference: Conduct conference at Project site two weeks prior to start of weather barrier installation. Comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to roofing system including, but not limited to, the following:
1. Complete Shop Drawings and Product Data shall be submitted to the Architect at least 14 days before the Preinstallation Conference.
2. Meet with Owner, Architect, Owner's Representative, weather barrier Installer, weather barrier manufacturer's designated representative, sheathing Installer, and installers whose work interfaces with or affects weather barrier including installers of exterior sheathing, wall cladding, trim, windows and doors, and flashings.
3. Review all related project requirements and submittals, status of substrate work and preparation, areas of potential conflict and interface, availability of weather barrier assembly materials and components, installer's training requirements, equipment, facilities and scaffolding, and coordinate methods, procedures and sequencing requirements for full and proper installation, integration, repairs and protection.
4. Review approved submittals.
5. Review mock-up.
6. Review interface of flashings and trim with weather barrier system.
7. Review and coordinate sequence of installation with adjacent materials.
8. Review installation and interface with window installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.
10. Provide 7 business days minimum advance notice to participants prior to convening preinstallation conference.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver weather barrier materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Store weather barrier materials as recommended by weather barrier manufacturer.
1. Protect rolls from direct sunlight and inclement weather until ready for use.

1.7 SCHEDULING

A. Review requirements for sequencing of installation of weather barrier assembly with installation of siding and trim, windows, doors, and trim flashings to provide a weather-tight barrier assembly.

B. Contractor is solely responsible to make clear to the Subcontractors the extent of their Work and coordinate overlapping Work to assure a weather-tight building envelope.

C. Schedule installation of weather barrier materials and exterior cladding within nine months of weather barrier assembly installation.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Manufacturer: DuPont Building Innovations; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; phone: (800) 448-9835; website: http://construction.tyvek.com.

2.2 MATERIALS

A. Weather Barrier: High-performance, flash spun-bonded olefin, non-woven, non-perforated, surface textured drainage plain, secondary weather barrier, and related assembly components.
1. Product: DuPont Tyvek CommercialWrap D.

B. Performance Characteristics:
1. Air Penetration: Type I when tested in accordance with ASTM E 1677.
2. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E 96, Method B.
3. Water Penetration Resistance: Minimum 235 cm when tested in accordance with AATCC Test Method 127.
4. Basis Weight: Minimum 2.4 oz/yd^2, when tested in accordance with TAPPI Test Method T-410.
5. Air Resistance of Paper: Air infiltration at >750 seconds, when tested in accordance with TAPPI Test Method T-460.
6. Tensile Strength: Minimum 33/41 lbs/in., when tested in accordance with ASTM D 882, Method A.
7. Surface Burning Characteristics: Class A, when tested in accordance with E 84. Flame Spread: 15, Smoke Developed: 25.

2.3 ACCESSORIES

A. Seam Tape: DuPont Tyvek Tape.

B. Fasteners:
   1. Wood Frame Construction: Tyvek Wrap Caps, as manufactured by DuPont Building Innovations; #4 nails with large 1-inch plastic cap fasteners.

C. Sealants: Provide sealants recommended by weather barrier manufacturer that comply with ASTM C 920, elastomeric polymer sealant to maintain watertight conditions.
   1. Product: DuPont Commercial Sealant.

D. Adhesives: Provide adhesive recommended by weather barrier manufacturer.
   1. Products:
      a. Liquid Nails LN-109
      b. Denso Butyl Liquid
      c. 3M High Strength 90
      d. SIA 655

E. Primers: Provide flashing manufacturer's recommended primer to assist in adhesion between substrate and flashing.
   1. Products:
      a. 3M High Strength 90
      b. Denso Butyl Spray
      c. SIA 655
      d. Permagrip 105

F. Flashing:
   1. Straight Flashing Membrane: DuPont StraightFlash, straight flashing membrane materials for flashing windows and doors and sealing .
      a. DuPont StraightFlash VF: Dual-sided flashing membrane materials for non-flanged doors.
   2. Flexible Membrane Flashing: DuPont FlexWrap, flexible membrane flashing materials for window openings and penetrations.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Examine substrates, areas, and surface conditions, with Installer present, to verify that surfaces are sound, dry, even, and free of oil, grease, dirt, dust and other contaminants that are detrimental to the installation of the weather barrier membrane and the adhesion of flashings, and for compliance with requirements and other conditions affecting performance of weather barrier.
   1. Fill voids and gaps in substrate greater than 1/4 inch in width to provide an even surface. Provide full support at outside and inside corners, free of gaps that would permit water infiltration.

3.2 INSTALLATION OF WEATHER BARRIER

A. General: Install weather barrier over exterior face of exterior wall substrate in accordance with manufacturer's recommendations and instructions to provide a water resistant barrier system.
   1. Apply materials within manufacturer's requirements for substrate and ambient temperatures and for weather conditions.

2. Do not apply to wet or frozen substrates.
3. Install membrane in tight intimate contact with substrate, without wrinkles and fish mouths.
4. Roll entire surface of flexible flashing membrane firmly to assure full adhesion to substrates.
5. Roll flashings tapes firmly to assure full adhesion to substrates.

B. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to over lap.
1. Coordinate location of fasteners with siding. Do not locate fasteners behind trim.

C. Install weather barrier in a horizontal manner starting at lower portion of wall surface with subsequent layers installed in a shingling manner to overlap lower layers 2-1/2 inches minimum and 12 inches at ends. Overlap exterior corners not less than 12 inches and seams not less than 6 inches. Do not place vertical laps above openings. Maintain weather barrier smooth, plumb and level.

D. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3- to 6-inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer. Cut off material so it is not visible below siding.

E. Weather Barrier Attachment:
1. Wood Sheathing Construction: Attach weather barrier to exterior sheathing. Secure using weather barrier manufacturer recommend fasteners, space 6 to18 inches vertically on center and 24 inch on center, maximum horizontally.
2. Coordinate location of fasteners with trim. Seal over fasteners with straight flashing membrane. If fasteners are in the way of trim, relocate fastener and seal over hole with bituminous flashing tape.
3. Cover staples used for temporary positioning and attachment of weather barrier with straight flashing membrane.
4. Lap building wrap over metal flashings and seal with continuous seam tape to form a watertight barrier.

3.3 SEAMING

A. Seal seams of weather barrier with seam tape at all vertical and horizontal overlapping seams.

B. Seal tears or cuts as recommended by weather barrier manufacturer.

3.4 OPENING PREPARATION FOR HOLLOW METAL FRAMES

A. Flush cut weather barrier at edge of substrate around full perimeter of opening.

B. Cut a head flap at 45-degree angle in the weather barrier at opening head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

3.5 FLASHING FOR HOLLOW METAL FRAMES AND LOUVERS

A. Apply 9-inch wide strips of straight membrane flashing at jambs. Align flashing with interior edge of jamb framing. Start straight membrane flashing at head of opening and lap sill flashing down to the sill.

B. Spray-apply primer to top 6 inches of jambs and exposed sheathing.

C. Install flexible membrane flashing at opening head using same installation procedures used at sill. Overlap jamb flashing a minimum of 2 inches.

D. Coordinate flashing with frame and louver installation.

E. On exterior, install backer-rod in joint between frame and flashed rough framing. Apply sealant at jambs and head, leaving sill unsealed. Apply sealants in accordance with sealant manufacturer's instructions and ASTM C 1193.

F. Position weather barrier head flap across head flashing. Adhere using 4-inch wide straight flashing membrane over the 45-degree seams.

G. Tape top of opening in accordance with manufacturer recommendations.

H. On interior, install backer rod in joint between frame of opening and flashed rough framing. Apply sealant around entire window to create air seal. Apply sealant in accordance with sealant manufacturer’s instructions and ASTM C 1193.

3.6 OPENING PREPARATION FOR FLANGED WINDOWS

A. Cut weather barrier in a modified "I-cut" pattern.
   1. Cut weather barrier horizontally along the bottom of the header.
   2. Cut weather barrier vertically 2/3 of the way down from top center of window opening.
   3. Cut weather barrier diagonally from bottom of center vertical cut to the left and right corners of the opening.
   4. Fold side and bottom weather barrier flaps into window opening, fasten to edge of blocking and cut off barrier flush with back of blocking.

B. Cut a head flap at 45-degree angle in the weather barrier at window head to expose 8 inches of sheathing. Temporarily secure weather barrier flap away from sheathing with tape.

3.7 FLASHING FOR FLANGED WINDOWS

A. Cut flexible membrane flashing a minimum of 12 inches longer than width of sill rough opening.

B. Cover horizontal sill by aligning flexible membrane flashing edge with inside edge of sill. Adhere to rough opening across sill and up jambs a minimum of 6 inches. Secure flashing tightly into corners by working in along the sill before adhering up the jambs.

C. Fan flexible membrane flashing at bottom corners onto face of wall. Firmly press in place. Mechanically fasten fanned edges.

D. Window installation specified in Section 085200 – Clad Wood Windows.

E. Window Nailing Fin Flashing:
   1. Apply 4-inch wide strips of straight flashing membrane at jambs overlapping entire nailing fin. Extend jamb flashing 1-inch above top of rough opening and below bottom edge of sill flashing.

2. Apply 4-inch wide strip of straight flashing membrane as head flashing overlapping the nailing fin. Head flashing shall extend beyond outside edges of both jamb flashings.
3. Flashing Lap On to Window:
    a. If Anderson windows are provided, apply transition membrane system on to face of window nailing fins.
    b. If Marvin windows are provided, apply transition membrane system over face of window nailing fins and lap on to window frame not less than 1/4 inch, providing a watertight seal at the intersection of the nailing fin and window frame.

F. Position weather barrier head flap across head flashing. Adhere using 4-inch wide straight flashing membrane over the 45-degree seams.

G. Tape head flap in accordance with manufacturer's recommendations.

3.8 FIELD QUALITY CONTROL

A. Notify manufacturer's designated representative to obtain required periodic observations of weather barrier assembly installation.

B. Weather barrier shall be inspected and written field service report received by Architect before weather barrier is covered.

3.9 PROTECTION

A. Protect installed weather barrier from damage.

END OF SECTION 072500