SECTION 07 25 00 – weather barriers

1. General
   1. SUMMARY
      1. This Section includes requirements for supply and installation of weather barriers and accessories, installed behind open-joint cladding.
      2. Related Requirements:
         1. Section 04 20 00 – Unit Masonry.
         2. Section 06 10 00 – Rough Carpentry.
         3. Section 07 27 13 – Modified Bituminous Sheet Air Barrier.
         4. Section 07 27 39 – Vapour Permeable Air Barrier Membrane.
         5. Section 08 41 13 – Aluminum Framed Entrances and Storefronts.
         6. Section 08 44 13 – Glazed Aluminum Curtain Wall.
         7. Section 09 29 00 – Gypsum Board.
   2. reference standards
      1. American Society for Testing of Materials (ASTM):
         1. ASTM D 882-2010, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
         2. ASTM E 96/ 96M-2010, Standard Test Methods for Water Vapor Transmission of Materials.
         3. ASTM E 2178-2003, Standard Test Method for Air Permeance of Building Materials.
      2. Air Barrier Association of America (ABAA):
         1. ABAA 2011, Installer's Certification Program.
         2. ABAA 2012, Water-resistive Barrier Installation Guideline.
      3. Underwriters Laboratories of Canada:
         1. CAN/ULC-S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
   3. administrative requirements
      1. Co-ordination: Co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.
      2. Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.
         1. Comply with Section 01 31 19 – Project Meetings, and co-ordinate with other similar pre installation meetings.
         2. Notify attendees two (2) weeks prior to meeting and ensure meeting attendees include as minimum:
            1. Owner.
            2. Consultant.
            3. Water-resistive barrier installer.
            4. Manufacturer's Technical Representative.
         3. Ensure meeting agenda includes review of methods and procedures related to water-resistive barrier installation including co-ordination with related work.
         4. Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within one (1) week of meeting.
   4. SUBMITTALS
      1. Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
      2. Action Submittals:
         1. Product Data: Submit product data including manufacturer's literature for water-resistive barrier membrane and accessories, indicating compliance with specified requirements and material characteristics.
            1. Submit list on water-resistive barrier manufacturer's letterhead of materials, components, and accessories to be incorporated into Work.
            2. MSDS report.
            3. Include product names, types, and series numbers.
            4. Include contact information for manufacturer and their representative for this Project.
         2. Samples:
            1. Submit duplicate 305 mm x 305 mm (12" x 12") sample of membrane.
            2. Submit duplicate 305 mm (12") long samples of seam tape and each type of flashing materials.
         3. Test Reports:
            1. Submit test reports showing compliance with specified performance characteristics and physical properties including air permeance, water vapour permeance and structural performance.
            2. Submit ICC-ESR documentation demonstrating compliance with ICC-AC 38 Acceptance Criteria for Water-Resistive Barriers.
         4. Field Reports: Submit manufacturer's field reports within three (3) days of each manufacturer representative's site visit and inspection.
         5. Installer Qualifications:
            1. Submit verification of manufacturer's approval of installer, or letter verifying installer's experience with work similar to work of this Section.
      3. Closeout Submittals:
         1. Operation and Maintenance Data: Supply maintenance data for water-resistive barrier materials for incorporation into manual specified in Section 01 78 36 - Warranties.
         2. Record Documentation:
            1. List materials used in water-resistive barrier work.
            2. Warranty: Submit warranty documents specified.
   5. QUALITY ASSURANCE

Retain "Installer Qualifications" Paragraph below if applicable. For warranty purposes, manufacturer may qualify an installer. Coordinate paragraph with qualifications manufacturer requires of Installer.

* + 1. Installer Quality Assurance: Manufacturer's approval of installer, or minimum two (2) years' experience with work similar to work of this Section.
       1. Ensure all accessories such as seam tape, flashing membranes, fasteners and sealants come from same source as water-resistive barrier membrane.
    2. Mock-up: Construct full size 3048mm x 3048mm (10' x 10') mock-up of wall showing water-resistive barrier using proposed procedures, materials and quality of work where directed by Consultant and in accordance with Section 01 45 00 – Quality Control.
       1. Include examples of window frame, door frame, interior corner, exterior corner and common protrusions or penetrations of barrier membrane.
       2. Purpose: To judge quality of work and material installation.
       3. Allow Consultant twenty-four (24) hours minimum prior to inspection of mock-up.
       4. Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
       5. When accepted, mock-up will demonstrate minimum standard of quality required for work of this Section.
       6. Approved mock-up will remain part of finished work.
  1. environmental conditions
     1. Weather barrier shall be applied to surfaces that are either wet, oily, frosted, dirty or contaminated in any way.
     2. Ambient Conditions: Apply air and vapour membrane to substrate surfaces that are within manufacturer's installation temperature threshold range accounting for wind cooling and apparent temperature when actual temperature is approaching manufacturer's minimum temperature threshold.
  2. DELIVERY, STORAGE, HANDLING and protection
     1. Delivery and Acceptance Requirements:
        1. Deliver material in accordance with Section 01 61 00 – Common Product Requirements.
        2. Deliver materials and components in manufacture's original packaging with identification labels intact and in sizes to suit project.
     2. Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
        1. Ensure materials are protected from sunlight and UV radiation.
     3. Packaging Waste Management:
        1. Separate and recycle waste packaging materials in accordance with Section 01 74 19 – Construction Waste Management and Disposal.
        2. Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.
        3. Collect and separate for disposal paper and plastic material in appropriate on-site storage containers for recycling in accordance with Waste Management Plan.
  3. WARRANTY
     1. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.
        1. Ten (10) years limited material warranty.
     2. Installer's Warranty: Submit installers warranty stating that weather barrier and accessories are installed in accordance with manufacturer's recommendations and that membrane, transitions and through-wall flashing membranes, primers, mastics, adhesives, and sealants are sourced from one manufacturer.

1. Products
   1. manufacturers
      1. Basis-of-Design products are named in this Section; form the basis-of-design materials for the project; additional manufacturers offering similar products may be incorporated into the work of this Section provided they meet the performance requirements established by the named products and provided they submit requests a minimum of five (5) days in advance of Bid Closing.
      2. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
         1. Dörken Systems Inc.
   2. materials
      1. Vapor permeable water-resistive barrier with highly tear-resistant thermo-bonded non-woven polyester substrate, and waterproof acrylic highly UV resistant coating.
         1. Include factory applied self-adhesive strip at longitudinal edges of barrier membrane.
      2. Design Criteria:
         1. Water Vapor Permeance: To ASTM E 96 (Procedure A), 204 perms minimum.
         2. Water Impact Penetration Resistance: To AATCC 42, no water passing.
         3. Air Permeance: To ASTM E 2178, 0.9 L/ (s x m2) @ 75 Pa.
         4. Tear Resistance: To ASTM D 1922, 1916 g minimum.
         5. Dry Tensile Strength: To ASTM D 882, MD 47.4 lb/in2, CD 28.7 lb/in2 minimum.
         6. Elongation at Break: To ASTM D 882, MD 40 %, CD 45 % minimum.
         7. Fire Rating Characteristics to CAN/ULC-S102:
            1. Flame Spread: 10 maximum.
            2. Smoke Developed: 145 maximum.
      3. Water-resistive Barrier for Walls: Vapor permeable water-resistive barrier with tear-resistant thermo-bonded, non-woven polyester substrate and waterproof acrylic polymeric coating stabilized against oxidation and UV degradation and factory applied adhesive edge strips.
         1. Service Life Expectancy: Twenty-five (25) years.
         2. Weight: 5.5 lb/100 ft2, 270 g/m2, 44 lb/roll nominal.
         3. Colour: Black.
         4. Basis of Design Materials: Dörken Systems Inc., DELTA-FASSADE S.
      4. Accessories:
         1. Seam tape: In accordance with water-resistive barrier manufacturer's written recommendations.
            1. Basis of Design Materials: Dörken Systems Inc., DELTA-FASSADE TAPE
         2. Flashings: Self-adhering, water-resistive flashing membrane in accordance with water-resistive barrier manufacturer's written recommendations.
            1. Basis of Design Materials: Dörken Systems Inc., DELTA-FASSADE FLASHING
         3. Fasteners: Water and vapour resistant fasteners in accordance with water- resistive barrier manufacturer's written recommendations.

SPEC NOTE: For steel frame construction, use the following paragraph:

* + - * 1. 41 mm (1-5/8") corrosion-resistant screw with 50 mm (2") minimum diameter plastic caps, unless otherwise recommended by the manufacturer.

DÖRKEN SYSTEMS INC. GUIDE NOTE: For wood frame construction, use the following paragraph:

* + - * 1. #4 nails with 25 mm (1") minimum diameter plastic caps.
      1. Sealants and Adhesives: Elastomeric sealant and adhesive in accordance with water-resistive barrier manufacturer's written recommendations, and Section 07 92 00 – Joint Sealants.
         1. Ensure sealants are UV resistant and compatible with adjacent materials.
         2. Basis of Design Materials: Dörken Systems Inc., DELTA-THAN.
      2. Primers: In accordance with flashing manufacturer's written recommendations.
      3. Flexible Membrane Through-wall Flashing: Self-adhering, butyl-rubber based flashing membrane.
         1. Basis of Design Materials: Dörken Systems Inc., DELTA-TW FLASHING.

1. Execution
   1. EXAMINATION
      1. Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for water-resistive barrier installation in accordance with manufacturer's written recommendations.
         1. Visually inspect substrate in presence of Consultant.
         2. Inform Consultant of unacceptable conditions immediately upon discovery.
         3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.
   2. PREPARATION
      1. Prepare surfaces in accordance with manufacturer's written requirements for type of substrate; free from voids, spalled areas, loose aggregates or sharp points; clean surfaces to remove contaminants that could affect bond such as grease or wax, dust, dirt and debris.
      2. Ensure step flashings and kick-out flashings are installed before beginning installation of water-resistive barrier membrane.
      3. Ensure protrusions that may penetrate water-resistive barrier membrane are removed before beginning installation.
   3. INSTALLATION
      1. Install water-resistive barrier before installation of windows and doors in accordance with manufacturer's written recommendations.
      2. Do installation in accordance with ABAA written recommendations for installation of water-resistive barriers.
      3. Unroll water-resistive barrier with printed side out, wrapping entire building, including rough openings for windows, doors and other protrusions or penetrations.
         1. Install water-resistive barrier plumb and level to exterior face of sheathing, or directly to framing members in accordance with manufacturer written recommendations.
         2. Ensure water-resistive barrier is installed with textured side facing substrate.
      4. Start installation of water-resistive barrier at building corner, leaving 150 mm to 305 mm (6" to 12") of membrane extended beyond corner.
      5. Install horizontally starting at bottom of wall.
         1. Overlap water-resistive barrier membrane as follows:
            1. Exterior Corners: 305 mm (12") minimum.
            2. Vertical and horizontal seems: 150 mm (6") minimum.
            3. Other seams, joints or at protrusions and penetrations: 150 mm (6") minimum.
      6. Sill Plate Interface: Extend lower edge of water-resistive barrier over sill plate interface 75 mm to 150 mm (3"to 6").
         1. Secure to substrate with elastomeric sealant in accordance with water-resistive barrier manufacturer's written recommendation.
      7. Attachment of Water-resistive Barrier Membrane to Substrate:
         1. Attach water-resistive barrier to steel studs through exterior sheathing with mechanical fasteners, and elastomeric adhesive in accordance with manufacturer's written recommendations.

SPEC NOTE: Retain the following four paragraphs if mechanical fasteners are to be used.

* + - * 1. Secure using fasteners and custom caps spaced 157 mm (18") maximum vertically on center along stud line and 610 mm (24") maximum on center, horizontally.
        2. Ensure fasteners penetrate securely through metal studs 19 mm (3/4") minimum.
        3. Install fasteners 150 mm (6") from sill and frame of window and door openings.
        4. Ensure fasteners are installed 229 mm (9") minimum from window or door head.

SPEC NOTE: For wood frame construction, use the following paragraph.

* + 1. Attach water-resistive barrier to wood stud framing through exterior sheathing with mechanical fasteners, and/or elastomeric adhesive in accordance with manufacturer's written recommendations.
       1. Secure using fasteners and custom caps spaced 457 mm (18") maximum vertically on center along stud line and 610 mm (24") maximum on center, horizontally.
       2. Ensure fasteners penetrate wood studs 19 mm (3/4") inch minimum.
       3. Install fasteners 150 mm (6") from sill and frame of window and door openings.
       4. Ensure fasteners are installed 229 mm (9") minimum from window or door head.
  1. site quality control
     1. Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 – Quality Control.
     2. Manufacturer's Services:
        1. Coordinate manufacturer's services with Section 01 45 00 – Quality Control.
           1. Manufacturer review work involved in handling, installation, protection, and cleaning of water-resistive barrier and components, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
        2. Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for product installation review in accordance with manufacturer's instructions.
           1. Report any inconsistencies from manufacturer's recommendations immediately to Consultant.
        3. Schedule site visits to review work at stages listed:
           1. As required by consultant.
           2. Obtain reports within three (3) days of review and submit immediately to Consultant.
  2. CLEANING AND PROTECTION
     1. Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 77 19 – Closeout Requirements.
        1. Leave work area clean end of each day.
     2. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment in accordance with Section 01 77 19 – Closeout Requirements.
     3. Waste Management:
        1. Coordinate recycling of waste materials with 01 74 19 – Construction Waste Management and Disposal.
        2. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
     4. Remove recycling containers and bins from site and dispose of materials at appropriate facility.
     5. Protect installed products and components from damage during construction.
     6. Repair damage to adjacent materials caused by water-resistive barrier installation.

END OF SECTION