SECTION 07 27 15 – non-bituminous self-adhering sheet air barriers

1. General
   1. SUMMARY
      1. Section Includes:
         1. Supply labour, materials, plant, tools, and equipment to complete the Work as shown on the Drawings and as specified herein, including, but not limited to the following:
            1. Materials and installation methods of vapour permeable air barrier membrane system.
            2. Materials and installation methods to bridge and seal the following air leakage pathways and gaps:

Connections of the walls to the roof air barrier. Connections of the walls to the foundations, seismic and expansion points, openings and penetrations of window frames, store front, and other envelope systems, door frames, piping, conduit, duct and similar penetrations, masonry ties, screws, bolts, and similar penetrations. All other leakage pathways in the building envelope.

* + 1. Related Requirements:
       1. Section 04 20 00 – Unit Masonry.
       2. Section 06 10 00 – Rough Carpentry.
       3. Section 07 21 13 – Board Insulation.
       4. Section 07 21 16 – Blanket Insulation.
       5. Section 07 92 00 – Joint Sealants.
       6. Section 08 11 13 – Hollow Metal Doors and Frames.
       7. Section 08 33 23 – Overhead Coiling Doors.
       8. Section 08 36 13-13 – Metal Sectional Doors.
       9. Section 08 41 13 – Aluminum Framed Entrances and Storefronts.
       10. Section 08 44 13 – Glazed Aluminum Curtain Walls.
       11. Section 09 29 00 – Gypsum Board.
       12. Contractor shall be responsible for co-ordinating this section with all related sections.
  1. definitions

Retain terms that remain after this Section has been edited for a project.

* + 1. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
    2. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
    3. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.
  1. preinstallation meetings

Retain "Preinstallation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + 1. Preinstallation Conference: Conduct conference at Project site.
       1. Convene a pre-installation conference two (2) weeks prior to commencing work of this section. Require attendance of parties directly affecting work of this section, including, but not limited to, the Owner's representative, Consultant, General Contractor, vapour permeable air barrier membrane contractor, vapour permeable air barrier membrane manufacturer's representative and substrate installer.
       2. Contact Consultant two (2) weeks prior to pre-installation conference to confirm schedule.
       3. Review preparation and installation procedures and co-ordinating and scheduling required with related work.
       4. Record discussions of conference and decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. Review foreseeable methods and procedures related to the vapour permeable air barrier membrane, including the following:
          1. Tour, inspect and discuss condition of substrate, penetrations and preparatory work performed by other trades.
          2. Review surface preparation, minimum curing period and installation procedures.
          3. Review special details and flashings.
          4. Review required submittals, both completed and yet to be completed.
          5. Review and finalize construction schedule related to work and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
          6. Review required inspections, testing, protection, and repair procedures.
          7. Review weather and forecasted weather conditions, and procedures for coping with unfavourable conditions.
       5. Arrange for a Manufacturer's Representative to:
          1. Visit the site and discuss any special requirements, procedures, and unique conditions, prior to commencement of work.
          2. Inspect substrate surfaces and recommend solutions to accommodate adverse conditions.
          3. Periodically visit and inspect the installation and report unsatisfactory conditions to the Contractor.
          4. Attend final inspection and to submit written certification that the products, systems, and assemblies have been installed in accordance with the manufacturer's requirements.
       6. Inspection and Testing:
          1. Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover any installed vapour permeable air barrier membrane until any required inspections, testing approvals have been completed.
  1. action SUBMITTALS
     1. Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
     2. Product Data: For each type of product.
        1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; and tested physical and performance properties of products.
        2. Prior to commencing the Work, submit documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the NBC.
        3. Prior to commencing the Work submit copies of manufacturer's current ISO certification. Membrane, primers, sealants, adhesives and associated auxiliary materials shall be included.
        4. Prior to commencing the Work submit references clearly indicating that the membrane manufacturer/installer has successfully completed projects on an annual basis of similar scope and nature for a minimum of fifteen (15) years. Submit references for a minimum of ten (10) projects.
        5. Prior to commencing the Work submit manufacturer's complete set of standard details for the air barrier membrane system showing a continuous plane of air tightness throughout the building envelope.
        6. Prior to commencing work provide a material checklist, complete with application rates and minimum thickness of primary membranes.

Retain "Sustainable Design Submittals" Paragraph below if Work of this Section has sustainability design requirements.

* + 1. Sustainable Design Submittals:
       - 1. Product Data: For coatings, indicating VOC content.
         2. Laboratory Test Reports: For coatings, indicating compliance with requirements for low-emitting materials.
    2. Shop Drawings: For air-barrier assemblies.
       1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
       2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
       3. Include details of interfaces with other materials that form part of air barrier.
  1. informational submittals

Retain "Product Certificates" Paragraph below to require submittal of product certificates from manufacturers.

* + 1. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with air barrier.
    2. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + 1. Field quality-control reports.
  1. performance requirements
     1. Provide a vapour permeable air barrier constructed to perform as a continuous air and vapour barrier, and as liquid water drainage plane flashed to discharge any incidental condensation or water penetration.
     2. The building envelope shall be designed and constructed with a continuous air barrier to control air leakage into, or out of the conditioned space.
     3. The air barrier shall be joined in an airtight and flexible manner to the air barrier material of adjacent systems, allowing for the relative movement of systems due to thermal and moisture variations and creep. Connection shall be made between:
        1. Foundations and walls.
        2. Walls and windows or doors.
        3. Different wall systems.
        4. Wall and roof.
        5. Wall and roof over unconditioned space.
        6. Walls, floor and roof across construction, control, and expansion joints.
        7. Walls, floors and roof to utility, pipe, and duct penetrations.
        8. All penetrations of the air barrier and paths of air infiltration/exfiltration shall be made airtight.
  2. quality assurance
     1. Work in this Section is to be carried out by a skilled applicator approved by manufacturer and in strict accordance with manufacturer's printed instructions. Upon request, provide written confirmation or certification from the vapour permeable air barrier manufacturer that the installer has been trained and is recognized by the manufacturer as suitable for the execution of the work.
     2. Perform Work in accordance with the manufacturer's written instructions of the air barrier membrane and this specification.
     3. Maintain one (1) copy of the manufacturer's written instructions on site.
     4. Compounds used in this section shall be sourced from one (1) manufacturer, including sheet membrane, air barrier sealants, primers, mastics, and adhesives.

Retain "mock-ups requirements" for large projects that require a mock-up tested. Delete if not required.

* + 1. Mockups: Build mockups to set quality standards for materials and execution and for preconstruction testing.
       1. Build integrated mockups of exterior wall assembly 150 sq. ft. (14 sq. m), 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 air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
          1. Coordinate construction of mockups to permit inspection and testing of air barrier before external insulation and cladding are installed.
          2. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
          3. If Consultant determines mockups do not comply with requirements, reconstruct mockups, and apply air barrier until mockups are approved.
       2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Consultant specifically approves such deviations in writing.
       3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
  1. preconstruction testing
     1. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.
     2. Mock-up Testing: Air-barrier assemblies shall comply with performance requirements indicated, as evidenced by reports based on mock-up testing by a qualified testing agency.
        1. Air-Leakage-Location Testing: Mockups will be tested for evidence of air leakage according to ASTM E 1186, chamber pressurization or depressurization with smoke tracers.
        2. Air-Leakage-Volume Testing: Mockups will be tested for air-leakage rate according to ASTM E 783.
        3. Adhesion Testing: Mockups will be tested for required air-barrier adhesion to substrate according to ASTM D 4541.
        4. Notify Consultant seven (7) days in advance of the dates and times when mockups will be tested.
  2. delivery, storage, and handling
     1. Coordinate deliveries with construction schedule and arrange for proper storage areas.
     2. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.
     3. Store materials in a clean, dry, and protected area, off the floor or ground, in their original containers, sealed and undamaged. Manufacturer's labels are to be easily visible and undamaged. Store rolled materials on end.
     4. Store liquid membrane materials, adhesives, and primers at minimum 5 degree C, and store away from open flames, sparks and excessive heat as liquid membrane materials and primers are flammable because of solvent content.
     5. Care and precaution are to be exercised by the applicator so as not to damage the work of other trades. Applicator is responsible to take all necessary precautions to protect work of other trades during application.
     6. In addition to the above, store modified bituminous sheet type flexible vapour permeable air barrier membrane flashings as follows:
        1. Store rolls of membrane tape in accordance with manufacturers written instructions.
        2. Store materials away from direct heat or open flame.
        3. Store rolls away from direct sunlight until ready for use.
        4. For installation in cold weather, store rolls of membrane in heated storage trailer for minimum of twenty-four (24) hours with the temperature kept at 21 degree C and remove for application with as little exposure as possible to low ambient temperatures.
     7. The vapour permeable air barrier membrane is not designed for permanent exposure but can be left exposed for up to a maximum of thirty (30) days. As soon as possible after the membrane has cured, protect vapour permeable air barrier membrane from damage by work of other Sections.
  3. warranty
     1. Warrant the work of this Section against defects in materials and workmanship in accordance with the General Conditions, but for a period of two (2) years and agree to repair and replace faulty materials or work which becomes evident during the warranty period, without cost to the Owner. Provide the Owner with a written warranty to this effect.
  4. field conditions
     1. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.
        1. Protect substrates from environmental conditions that affect air-barrier performance.
        2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1. Products

Manufacturers and Products listed are neither recommended nor endorsed by the AIA or Avitru. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications. For definitions of terms and requirements for Contractor's product selection, see Section 01 61 00 – Common Product Requirements.

* 1. materials
     1. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.
  2. performance requirements
     1. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier.
     2. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
     3. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. (0.2 L/s x sq. m of surface area at 75 Pa), when tested according to ASTM E 2357.
  3. non-bituminous sheet – vapour-permeable air barrier

Retain option in "Vapor-Permeable Non-bituminous Sheet" Paragraph below if application with VOC-conforming accessory materials is required.

* + 1. Vapor-Permeable Nonbituminous Sheet: Minimum 20-mil- (0.5-mm-) thick, self-adhering, vapour permeable membrane bonded with permeable adhesive layer and split-back poly-release film. Formulated for application with primer that complies with VOC limits.

Retain "Products" Subparagraph and list of manufacturers and products below to require specific products or a comparable product from other manufacturers.

* + - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
         1. Blueskin VP160 by Henry Company; Blueskin VP160.
         2. Cosella-Dorken Products, Inc.; Delta-Vent SA.
         3. Grace Construction Products; W.R. Grace & Co. -- Conn.; Perm-A-Barrier VPS.
         4. VaproShield LLC; [RevealShield SA] [WrapShield SA].
      2. Physical and Performance Properties:
         1. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. (0.02 L/s x sq. m of surface area at 75-Pa) pressure difference; ASTM E 2178.
         2. Puncture Resistance: Minimum 40 lbf (180 N); ASTM E 154/E 154M.
         3. Vapor Permeance: Minimum 15 perms (860 ng/Pa x s x sq. m); ASTM E 96/E 96M, Desiccant Method, Procedure A.
         4. Adhesion to Substrate: Minimum 16 lbf/sq. in. (110 kPa) when tested according to ASTM D 4541.
  1. ACCESSORy materials
     1. Requirement: Provide primers, transition strips, termination strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.

Revise paragraphs below to suit Project; consult manufacturers for recommendations.

Both types of liquid primer in "Primer" Paragraph below may be used on concrete, masonry, gypsum and wood-based sheathing, metal, and painted substrates.

* + 1. Primer: Liquid [waterborne] [solvent-borne] primer recommended for substrate by air-barrier material manufacturer.
       1. VOC Content: 100 g/L or less.
       2. Low-Emitting Materials: Products shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
    2. Flexible Air Barrier Membrane Flashings (Transition Flashings):
       1. 40 mils (1mm) thick x width to suit, strips of self-adhering, SBS rubberized asphalt laminated to a cross-laminated, high density polyethylene film with a silconized release liner.
          1. Basis of Design Product: Blueskin TWF by Henry Bakor
    3. Reinforcing Fabric (Joint Treatment Mesh):
       1. 150mm (6") wide, open weave 20/10 mesh, glass fibre yarn saturated with synthetic resins, reinforcing fabric fabric weighing minimum of 2.5 oz/sq.yd., and conforming to CGSB 37-GP-63M
          1. Basis of Design Product: Yellow Jacket 990-06 by Henry Bakor
       2. Air Barrier Sealant:
          1. High solids, high flexibility, polymer modified, rubberized asphalt type sealant, compatible to vapour permeable air barrier membrane and conforming to CAN/CGSB-37.29-M.

Basis of Design Product: Polybitume Sealing Compound by Henry Bakor

* + - 1. Substrate Cleaners:
         1. Petroleum spirits thinner or low flash petroleum spirits (mineral spirits) conforming to CAN/CGSB-1.4-2000, or xylene thinner (xylol) conforming to CAN/CGSB-1.49-M.
      2. Packing Insulation:
         1. Loose, glass fibre or mineral fibre insulation, 1.0 lbs./cu.ft. density, and conforming to CAN/CGSB-51.11.

1. Execution
   1. examination
      1. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
         1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
         2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
         3. Verify that substrates are visibly dry and free of moisture. Test concrete substrates for capillary moisture by plastic sheet method according to ASTM D 4263.
         4. Verify that masonry joints are flush and completely filled with mortar.
      2. Proceed with installation only after unsatisfactory conditions have been corrected.
   2. surface preparation
      1. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
      2. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
      3. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
      4. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching membrane.
      5. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
      6. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
      7. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

Treatment at expansion joints, isolation joints, and other discontinuous joints varies. Not only primary architectural expansion joints but also building expansion joints may need continuous air barriers. Coordinate expansion-joint treatment with Section 07 95 13 – Expansion Joint Assemblies.

* + 1. Bridge [isolation joints] [expansion joints] [and] [discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints] with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.
  1. INSTALLATION
     1. Install materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
        1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
     2. Prepare, treat, and seal inside and outside corners and vertical and horizontal surfaces at terminations and penetrations with termination mastic. Ensure continuity of the air seal throughout the scope of this section.
     3. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier sheet on same day. Reprime areas exposed for more than 24 hours.
     4. Apply and firmly adhere air-barrier sheets over area to receive air barrier. Accurately align sheets and maintain uniform 2-1/2" (64-mm-) minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure airtight installation.
        1. Apply sheets in a shingled manner to shed water.
        2. Roll sheets firmly to enhance adhesion to substrate.
     5. Apply continuous air-barrier sheets over accessory strips bridging substrate cracks, construction, and contraction joints.

Retain "CMU" Paragraph below if masonry anchors are installed before air-barrier placement. Retain if installing air-barrier sheet after projecting interior wythe masonry ties or if joint reinforcement has been installed.

* + 1. CMU: Install air-barrier sheet horizontally against the CMU beginning at base of wall. Align top edge of air-barrier sheet immediately below protruding masonry ties or joint reinforcement or ties, and firmly adhere in place.
       1. Overlap horizontally adjacent sheets a minimum of 2" (50 mm) and roll seams.
       2. Apply overlapping sheets with bottom edge slit to fit around masonry reinforcing or ties. Roll firmly into place.
       3. Seal around masonry reinforcing or ties and penetrations with termination mastic.
       4. Continue the sheet into all openings in the wall, such as doors and windows, and terminate at points to maintain an airtight barrier that is not visible from interior.
    2. Seal top of through-wall flashings to air-barrier sheet with an additional 6" (150-mm-) wide, transition strip.
    3. Seal exposed edges of sheet at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
    4. Install air-barrier sheet and accessory materials to form a seal with adjacent construction and to maintain a continuous air barrier.
       1. Coordinate air-barrier installation with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
       2. Install transition strip on roofing membrane or base flashing so that a minimum of 3" (75 mm) of coverage is achieved over each substrate.
    5. Connect and seal exterior wall air-barrier sheet continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
    6. At end of each working day, seal top edge of air-barrier material to substrate with termination mastic.
    7. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
    8. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3" (75 mm) of coverage is achieved over each substrate. Maintain 3" (75 mm) of contact over firm bearing to perimeter frames, with not less than 1" (25 mm) of full contact.
       1. Transition Strip: Roll firmly to enhance adhesion.
    9. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of air-barrier material with foam sealant.
    10. Repair punctures, voids, and deficient lapped seams in air barrier. Slit and flatten fishmouths and blisters. Patch with air-barrier sheet extending 6" (150 mm) beyond repaired areas in all directions.
    11. Do not cover air barrier until it has been tested and inspected by testing agency.
    12. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.
  1. field quality control

Coordinate test and inspection requirements in this article with Owner.

Retain "Testing Agency" Paragraph below to identify who shall perform tests and inspections. If retaining second option in paragraph, retain "Field quality-control reports" Paragraph in "Informational Submittals" Article.

* + 1. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

Retain option in "Inspections" Paragraph below with list of inspections if required for Contractor's information.

* + 1. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
       1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
       2. Continuous structural support of air-barrier system has been provided.
       3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
       4. Site conditions for application temperature and dryness of substrates have been maintained.
       5. Maximum exposure time of materials to UV deterioration has not been exceeded.
       6. Surfaces have been primed.
       7. Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges), with no fishmouths.
       8. Termination mastic has been applied on cut edges.
       9. Air barrier has been firmly adhered to substrate.
       10. Compatible materials have been used.
       11. Transitions at changes in direction and structural support at gaps have been provided.
       12. Connections between assemblies (air barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
       13. All penetrations have been sealed.
    2. Tests: As determined by testing agency from among the following tests:

Retain "Air-Leakage-Location Testing" Subparagraph below if testing to locate air-leakage sites is required and if air-leakage-volume testing is required.

* + - 1. Air-Leakage-Location Testing: Air-barrier assemblies will be tested for evidence of air leakage according to ASTM E 1186, chamber pressurization or depressurization with smoke tracers.
      2. Air-Leakage-Volume Testing: Air-barrier assemblies will be tested for air-leakage rate according to ASTM E 783.
      3. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D 4541 for each 600 sq. ft. (56 sq. m) of installed air barrier or part thereof.
    1. Air barriers will be considered defective if they do not pass tests and inspections.
       1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
       2. Remove and replace deficient air-barrier components for retesting as specified above.
    2. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
    3. Prepare test and inspection reports.
  1. cleaning and protection
     1. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
        1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove, and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials according to air-barrier manufacturer's written instructions.
        2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
     2. Clean spills, stains, and soiling from construction that would be exposed in the completed Work, using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION