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This MANU-SPEC[®] utilizes the Construction Specifications Institute (CSI) *Project Resource Manual* (PRM) including *MasterFormat*[™], *SectionFormat*[™] and *PageFormat*[™]. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets []; delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies underslab vapor retarders. These products are manufactured by Raven Industries, Inc. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 07 26 00
VAPOR RETARDERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Underslab vapor retarders.

Specifier Note: Revise paragraphs below to suit project requirements. If a reader of this section could reasonably expect to find a product or component specified in this section, but is actually specified elsewhere, then the related section number(s) should be listed in the paragraph below. Add section numbers and titles per CSI *MasterFormat* and specifier's practice. In the absence of related sections, delete paragraph below.

- B. Related Sections:
 1. Section 07 26 13 - Above-Grade Vapor Retarders.
 2. Section 07 26 16 - Below-Grade Vapor Retarders.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry reference standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standard referenced. Conditions of the Contract or Section 01 42 19 - Reference Standards may establish the edition date of standards. This article does not require compliance with standard, but is merely a listing of references used. The article below should list only those industry standards referenced in this section.

1.02 REFERENCES

- A. ASTM International (ASTM):
 1. ASTM D1709 Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
 2. ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials.
 3. ASTM E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls or as Ground Cover.
 4. ASTM E1643 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

5. ASTM E1745 Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor, either before, during or after construction. Coordinate this article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Section [01 33 00 - Submittals Procedures] [_____].

1.03 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Section [01 33 00 - Submittal Procedures] [_____].
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® sheet, for specified products.
- C. Samples: Submit 8 1/2 inch x 11 inch (216 x 279 mm) samples of specified vapor retarder(s).
- D. Quality Control Submittals:
 1. Manufacturer's Instructions: Manufacturer's installation instructions.
- E. Closeout Submittals:
 1. Warranty: Manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria that establish an overall level of quality for products and workmanship for this section. Coordinate article below with Division 01 Quality Assurance Section.

1.04 QUALITY ASSURANCE

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section. General statements to comply with a particular code are typically addressed in Conditions of the Contract and Section 01 41 00 - Regulatory Requirements. Repetitive statements should be avoided.

- A. Regulatory Requirements: In accordance with Section [01 41 00 - Regulatory Requirements] [_____].

1.05 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Section [01 61 00 - Common Product Requirements] [_____].
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Specifier Note: Coordinate article below with Conditions of the Contract and with Section 01 78 36 - Warranties.

1.06 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit in accordance with Section [01 78 36 - Warranties] [_____] for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

Specifier Note: Retain article below for proprietary method specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 VAPOR RETARDERS

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

- A. Manufacturer: Raven Industries, Inc.

1. Contact: 1813 E. Avenue, Sioux Falls, SD 57104-5931; Telephone: (800) 635-3456, (605) 335-0174; Fax: (605) 331-0333; E-mail: efdsales@ravenind.com; website: www.ravenind.com, www.rufco.com, www.vaporblock.com.

Specifier Note: Retain product(s) below to conform to project requirements. If more than one product is retained, create designators and coordinate with the drawings.

B. VaporBlock 6:

1. Thickness: nominal: 6 mils (0.15 mm).
2. Weight: 29 pounds per thousand square feet (141 grams per square meter).
3. Classification (ASTM E1745): Class C.
4. Tensile Strength, average of machine direction and transverse direction:
 - a. New Material (ASTM E154): 30 pounds per inch (130 N).
5. Puncture Resistance (ASTM D1709): 1500 grams.
6. Permeance (ASTM E96, ASTM E154): 0.090 U.S. perms (0.060 metric perms).
7. Water Vapor Transmission Rate (ASTM E96): 0.080 grain/hr- ft² (0.056 gm/hr-m²)

C. VaporBlock 10:

1. Thickness: nominal: 10 mils (0.25 mm).
2. Weight: 49 pounds per thousand square feet (240 grams per square meter).
3. Classification (ASTM E1745): Class A.
4. Tensile Strength, average of machine direction and transverse direction:
 - a. New Material (ASTM E154): 52 pounds per inch (230 N).
5. Puncture Resistance (ASTM D1709): 2600 grams.
6. Permeance (ASTM E96, E154): 0.005 U.S. perms (0.003 metric perms).
7. Water Vapor Transmission Rate (ASTM E96): 0.002 grain/hr-ft² (0.001 gm/hr-m²)

D. VaporBlock 15:

1. Thickness: nominal: 15 mils (0.38 mm).
2. Weight: 73 pounds per thousand square feet (356 grams per square meter).
3. Classification (ASTM E1745): Class A.
4. Tensile Strength, average of machine direction and transverse direction:
 - a. New Material (ASTM E154): 74 pounds per inch (325 N).
5. Puncture Resistance (ASTM D1709): 4000 grams.
6. Permeance (ASTM E96, E154): 0.004 U.S. perms (0.002 metric perms).
7. Water Vapor Transmission Rate (ASTM E96): 0.001 grain/hr-ft² (0.001 gm/hr-m²)

2.02 ACCESSORIES

- A. Seaming Tape: VaporBond Tape by Raven Industries or other 4 inch (102 mm) wide tape approved by vapor retarder/barrier manufacturer.
- B. Pipe Boot Kits: Raven VaporBoot System or other approved Manufacturer's supplied pipe boot system.
- C. Double Sided Butyl Adhesive Tape: Raven Butyl Seal or other 2 inch wide butyl tape approved by vapor retarder/barrier manufacturer.

2.03 PRODUCT SUBSTITUTIONS

- A. Substitutions: Substitutions in accordance with Section [01 25 13 - Product Substitution Procedures] [No substitutions permitted] [_____].

PART 3 EXECUTION

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph

below per project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton/label instructions for installation. Reference SPEC-DATA Section 5, Installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. In accordance with ASTM E1643.

3.04 CLEANUP

- A. Proceed in accordance with Section [01 74 11 - Cleaning] [_____].
- B. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION