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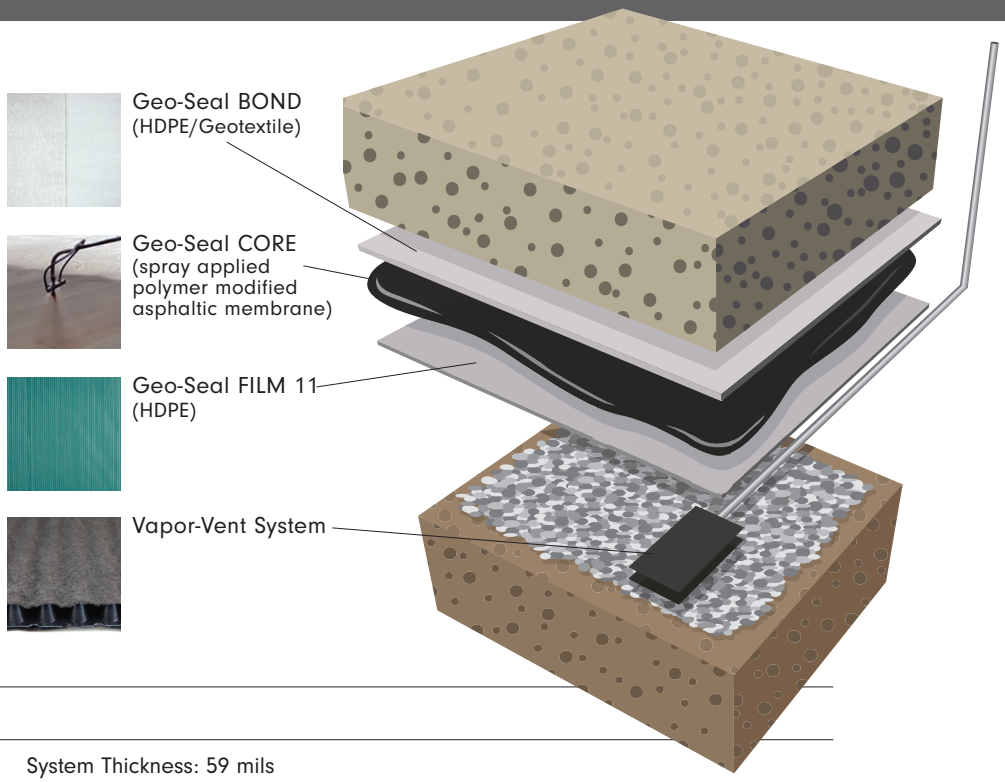
GEO-SEAL 60
SUBMITTAL PACKET

Geo-Seal® 60



System: Geo-Seal 60 Vapor Intrusion Barrier			
Application: Underslab Contaminant Vapor Barrier		System Thickness: 59 mils	
	1st Layer	2nd Layer	3rd Layer
Product Name	Geo-Seal FILM 11	Geo-Seal CORE 30 mil	Geo-Seal BOND 18 mil

DESCRIPTION

Geo-Seal® 60 is designed to provide a cost-effective alternative for sites desiring a preemptive mitigation solution, but also wish to have a vapor intrusion barrier that is more robust and resistant to construction traffic than simple single sheet membranes. While simple single sheet membranes may be able to provide robust chemical resistance, they often lack the robust seals around penetrations and termination points. They are also more prone to punctures during the construction process.

Geo-Seal® 60 makes the decision easy for those debating whether to employ a simple single sheet membrane or utilize a thicker, more robust barrier to protect human health at similar price points.

BENEFITS

- **Class A:** Class A vapor barrier that alone will meet the basic water vapor barrier requirements
- **Durable:** Three layers of complementary contaminant vapor barrier materials create a thick and redundant composite system superior to single sheet barrier systems.
- **Chemical Resistant:** Constructed with multiple highly chemical resistant sheets and polymer-modified asphaltic membrane to form a robust composite barrier.
- **Seamless:** Spray-applied Core layer ensures complete sealing of building foundation without mechanical fastening.
- **Bonded:** Mechanically adheres directly to the foundation slab.
- **Single-Source Warranty:** EPRO can be a single point of contact to address building owners vapor intrusion and waterproofing needs.

LIMITATIONS

- Do not apply below 20°F or to damp, frosty or contaminated surfaces.
- Contact EPRO for waterproofing system recommendations.

SPECIFICATIONS, DRAWINGS, AND TECHNICAL ASSISTANCE

The most current specifications and drawings can be found on www.eproinc.com. For project specific details contact EPRO directly, or your local EPRO representative.

Site conditions, performance goals, and budget determine which system is most appropriate for a given project. For more information regarding product performance, testing, plan review, or general technical assistance, please contact EPRO.

WARRANTY

EPRO provides a wide range of warranty options for Geo-Seal systems. For a project to be eligible for any warranty option beyond a 1-year material warranty, a Geo-Seal Authorized Applicator must be used and the project must be registered and approved by EPRO prior to the commencement of any product application.

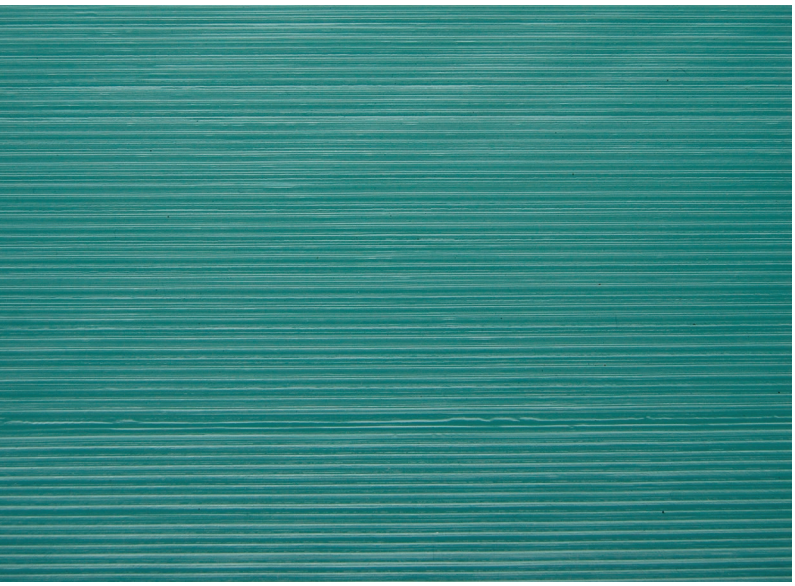
Warranty options available for this system include:

- Material warranty
- Longer warranty periods are available. Contact EPRO for more information.

Physical Property	Test Method	Value
Tensile Strength	ASTM D 412	527.7 psi
Elongation	ASTM D 412	45%
Adhesion to Concrete	ASTM D 903	8 lbf/in
Puncture Resistance	ASTM D 4833	98 lbs
Hydrostatic Head Resistance	ASTM D 5385	100 psi (231 ft)
Water Vapor Transmission	ASTM E 96	0.020 perms
Methane Transmission	ASTM D 1434	Passed
Naphthalene Diffusion Rate	Geokinetics	5.30×10^{-17} m^2/sec
PCE Diffusion Rate	Geokinetics	1.16×10^{-17} m^2/sec
Benzene Diffusion Rate	Geokinetics	2.31×10^{-18} m^2/sec
Classification	ASTM E1745	Class A, B & C

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® FILM 11



Product Description

Basic Use: Geo-Seal 60 vapor intrusion barrier system utilizes Geo-Seal FILM 11 is a base course. Applied prior to application of Geo-Seal CORE and Geo-Seal BOND. Geo-Seal FILM 11 provides a lower cost alternative to Geo-Seal BASE, while providing a nice compromise between the characteristics of Geo-Seal BASE and the more robust EPRO system product e.base 316.

Composition: Geo-Seal FILM 11 is a 11 mil geomembrane comprised of high density polyethylene (HDPE). While Geo-Seal FILM 11 is always installed as a component of EPRO's Geo-Seal system assemblies, it alone exceeds all Class A, B, and C vapor barrier requirements.

Benefits

- Excellent chemical resistance
- Large roll size drastically minimizes seams
- Meets class A, B, and C vapor barrier standards
- Impermeable to water when installed as part of the composite system

Limitations

- Should not be used as the sole means of building protection
- Additional weight should be used during application in windy conditions
- Excessive moisture must be removed prior application of Geo-Seal CORE

Technical Data

Properties: See physical properties table

Coverages: One roll covers 2550 square feet, not including overlaps or waste

Specification Writer: Contact EPRO before writing specifications on this product. Geo-Seal system assemblies should be reviewed in order to meet project specific site conditions.

Installation

Preparation: Please refer to manufacturer's specifications for substrate requirements. Rolls should be inspected for cosmetic damage prior to application.

Application: Please refer to manufacturer's specifications. Overlap the seams of Geo-Seal FILM 11 a minimum of 6" and with a 30 mil application of Geo-Seal CORE in the seam overlap.

Availability and Packaging

Contact a local EPRO installer or authorized applicator (www.eproinc.com).

Roll Size: 12.75' x 200' folded rolls, 135 lbs

Warranty

Limited Warranty: EPRO Services, Inc. believes to the best of its knowledge that performance tables are accurate and reliable. EPRO warrants this product to be free from defects. EPRO makes no other warranties with respect to this product, express or implied, including without limitation the implied warranties of MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. EPRO's liability shall be limited in all events to supplying sufficient product to retreat the specific areas to which defective product has been applied. EPRO shall have no other liability, including liability for incidental or resultant damages, whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives of EPRO or its distributors.

Equipment

Seaming: AD-55 Sprayer, available through EPRO for application of Geo-Seal CORE in seam overlaps, or by hand using Geo-Seal CORE Detail.

Smoke Testing: EPRO Smoke Test Machine for underslab applications

Technical Services and Information

Complete technical services and information are available by contacting EPRO at 800.882.1896 or www.eproinc.com.

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® FILM 11

Typical Physical Properties

Physical Property	Test Method	Value
Material		HDPE
Color		Green
Thickness		11 mil
Classification	ASTM E 1745	Exceeds Class A, B & C
Water Vapor Permeance	ASTM E 96	.020 perms
Tensile Strength	ASTM E 154 (ATSM D 882)	50 lbf/in
Puncture Resistance	ASTM D 1709	2,400 grams Method B
Life Expectancy	ASTM E 154	Indefinite
Radon Diffusion Cooefficient	K124/02/95	2.5 x 10^{-11} m^2/s
Chemical Resistance	ASTM E 154	Unaffected

Dimensions: 12.75′ x 200′
Weight: 135 pounds

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® CORE

Product Description

Basic Use: Geo-Seal CORE is a polymer modified asphalt (PMA) applied to nominal dry thicknesses depending on the configuration of the Geo-Seal system vapor intrusion barrier system. Spray applied to form a seamless barrier, Geo-Seal CORE is an integral component to all Geo-Seal systems due to its ability to bond to and seam high density polyethylene (HDPE), polyolefin sheets. Geo-Seal CORE is applied with a proprietary self-contained sprayer designed to produce a high build, monolithic, and rapidly curing membrane.

Composition: Geo-Seal CORE is a non-hazardous, low-viscosity, water-based, anionic asphalt emulsion modified with a blend of synthetic polymerized rubbers and proprietary additives. Geo-Seal CORE is highly stable during transit and proper storage, but becomes highly reactive during the spray application to form a rapidly cured membrane with exceptional bonding, elongation, and hydrophobic characteristics.

Benefits

- Provides a layer of seamless protection and redundancy in all Geo-Seal system assemblies
- Hydrophobic and resistant to methane gas
- Non-toxic, non-hazardous, non-flammable, and VOC free
- Forms a tenacious bond to HDPE sheets
- Application to damp substrates is acceptable
- Can be applied in below freezing temperatures with proper equipment

Limitations

- Surfaces shall be free of dirt and debris
- Material should be stored above 40°F and not allowed to freeze
- Not a traffic bearing surface, additional protection required
- Must not be applied to ponded water
- Direct foot traffic should be limited when ambient air temperatures are greater than 100°F

Technical Data

Shelf life: 6 months. The ability to apply the product beyond its estimated shelf life is dependent on storage conditions and homogeneity of the product. Storing material in an enclosed temperature controlled environment that maintains a minimum ambient temperature of 65° Fahrenheit will likely extend the shelf life beyond 6 months.

Properties: See physical properties table

Specification Writer: Contact EPRO before writing specifications on this product. Geo-Seal system assemblies should be reviewed in order to meet project specific site conditions.

Additional test information available upon request.

Installation

EPRO Authorized Applicators must be approved in writing by EPRO prior to receiving a contract in order to qualify for a warranty for this product and system assembly.

Surface Preparation: All surfaces shall be prepared in accordance to manufacturer's specifications. Surfaces shall be uniform, free of loose materials, and surface contaminants. Contaminant and loose debris shall be removed prior to application by suitable methods.

Application: Please refer to manufacturer's specifications. Geo-Seal CORE shall be spray applied to the specified nominal mil thickness. When properly applied, Geo-Seal CORE will set up immediately on the surface and promptly start the curing process. Light foot traffic is acceptable, but must be limited to the authorized Geo-Seal applicator. The initial cure is complete when Geo-Seal CORE is no longer ejecting moisture, 12 to 48 hours depending on ambient air conditions.

Availability and Packaging

Contact EPRO sales representative for local distributors or authorized applicators (www.eproinc.com).

Geo-Seal CORE is available in the following packaging options:

55 gallon drum
275 gallon tote
330 gallon tote

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® CORE

Warranty

Limited Warranty: EPRO Services, Inc. believes to the best of its knowledge that performance tables are accurate and reliable. EPRO warrants this product to be free from defects. EPRO makes no other warranties with respect to this product, express or implied, including without limitation the implied warranties of MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. EPRO's liability shall be limited in all events to supplying sufficient product to retreat the specific areas to which defective product has been applied. EPRO shall have no other liability, including liability for incidental or resultant damages, whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives of EPRO or its distributors.

Equipment

Spray System: AD-55 Sprayer is available through EPRO. To discuss alternative spray machine options, please contact EPRO directly.

Smoke Testing: EPRO Smoke Test Machine for underslab applications

Technical Services and Information

Complete technical services and information are available by contacting EPRO at 800.882.1896 or www.eproinc.com.

Typical Physical Properties

Physical Property	Test Method	Results
Tensile Strength - Core only	ASTM 412	32 psi
Tensile Strength - Geo-Seal System	ASTM 412	662 psi
Elongation	ASTM 412	4140%
Resistance to Decay	ASTM E 154 Section 13	4% Perm Loss
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	.026 g/ft^2/hr
Hydrostatic Water Pressure	ASTM D 751	26 psi
Perm rating	ASTM E 96 (US Perms)	0.21
Methane transmission rate	ASTM D 1434	Passed
Adhesion to Concrete & Masonry	ASTM C 836 & ASTM C 704	11 lbf./inch
Hardness	ASTM C 836	80
Crack Bridging	ASTM C 836	No Cracking
Heat Aging	ASTM D 4068	Passed
Environmental Stress Cracking	ASTM D 1693	Passed
Oil Resistance	ASTM D543	Passed
Soil Burial	ASTM D 4068	Passed
Low Temp. Flexibility	ASTM C 836-00	No Cracking at -20°C

Resistance to Acids

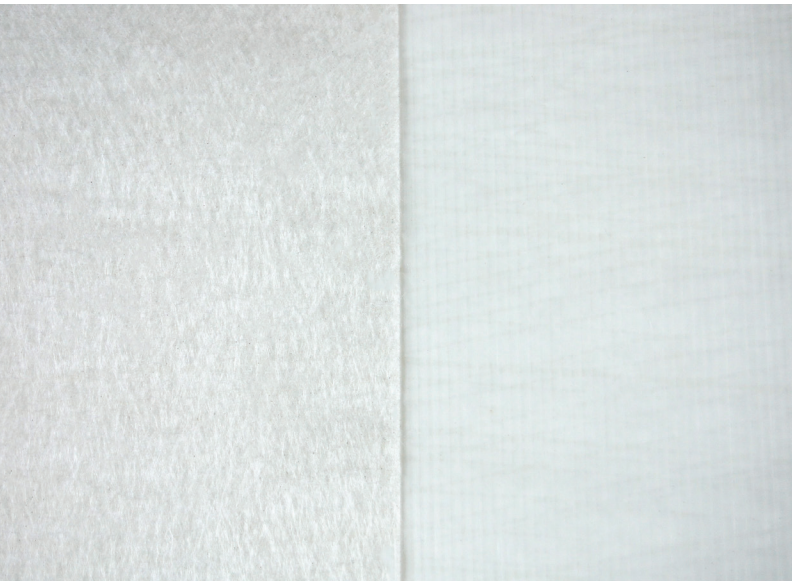
Acetic	30%
Sulfuric and Hydrochloric	13%

Temperature Effect

Stable	248°F
Flexible	13°F

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® BOND



Product Description

Basic Use: Geo-Seal BOND has been specifically designed to be high performance protection course for application over Geo-Seal CORE in Geo-Seal system assemblies. In addition to the advantages found by combining a high density polyethylene film (HDPE) and geotextile, Geo-Seal BOND mechanically bonds that is the system to the concrete slab.

Composition: Geo-Seal BOND is an extremely durable, high strength protection course made from the lamination of HDPE film and nonwoven polypropylene geotextile fabric.

Benefits

- Forms a mechanical bond directly to concrete
- Leverages the strengths of two materials to maximize performance and puncture resistance
- Minimal seams with 12′ x 150′ rolls
- Provides a contrasting protection course that increases ability to identify post installation damage

Limitations

- Bonding to underlying Geo-Seal CORE layer might take longer in colder temperatures

Technical Data

Properties: See physical properties table

Coverages: One roll covers 1800 square feet, not including overlaps or waste

Specification Writer: Contact EPRO before writing specifications on this product. Test information available upon request.

Installation

Preparation: Please refer to manufacturer's specifications for substrate requirements. Rolls should be inspected for damage prior to application. Geo-Seal BOND may be applied over a nominally cured Geo-Seal CORE membrane.

Application: Should be applied in accordance with specific application guide specifications. Whenever possible, Geo-Seal BOND should be applied perpendicular to the underlying base course. Overlap all seams a minimum of 6" with seam overlap detail per project specification.

Availability and Packaging

Contact a local EPRO installer or authorized applicator (www.eproinc.com).

Roll Size: 12′ x 150′ unfolded rolls, 108 lbs.

Warranty

Limited Warranty: EPRO Services, Inc. believes to the best of its knowledge that performance tables are accurate and reliable. EPRO warrants this product to be free from defects. EPRO makes no other warranties with respect to this product, express or implied, including without limitation the implied warranties of MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. EPRO's liability shall be limited in all events to supplying sufficient product to repair the specific areas to which defective product has been applied. EPRO shall have no other liability, including liability for incidental or resultant damages, whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives of EPRO or its distributors.

Equipment

Seaming: AD-55 Sprayer, available through EPRO for application of Geo-Seal CORE in seam overlaps, or by hand using Geo-Seal CORE Detail.

Technical Services and Information

Complete technical services and information are available by contacting EPRO at 800.882.1896 or www.eproinc.com.

Geo-Seal® Vapor Intrusion Barrier

Geo-Seal® BOND

Typical Physical Properties

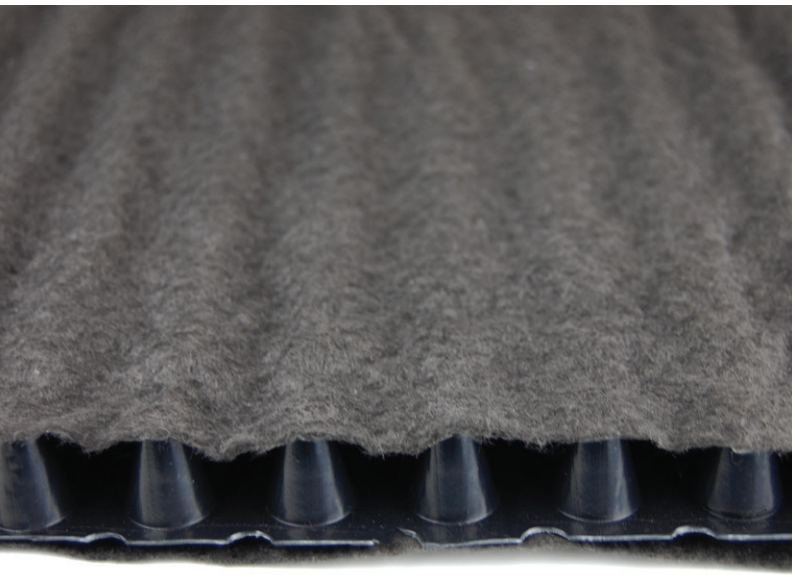
Physical Property	Test Method	Value
Film Material		HDPE
Film Color		White
Fabric Material		Non-woven Polypropylene
Fabric Color		White
Film Thickness		5 Mil
Composite Thickness		18 Mil
Tensile @ ULT	ASTM D 882	TD 32.0 lbs/in
		MD 37.3 lbs/in
Elongation @ ULT	ASTM D 882	TD 65.3%
		MD 51.0%
Dart Impact	ASTM D 1709	Method A >1070 grams
		Method B 894 grams
Modulus	ASTM D 882	TD 270.6 lbs/in
		MD 295.5 lbs/in
Elmendorf Tear	ASTM D 1922	TD 5,140 grams
		MD 5,260 grams
Puncture-Prop Tear	ASTM D 2582	TD 13,250 grams Sled: 1-lb
		MD 11,290 grams Sled: 1-lb
Beach Puncture Tear	ASTM D 751	TD 165 in-lbs
		MD 160 in-lbs
Water Permeance	ASTM E 96	0.11 perms (US)

Dimensions: 12’ x 150’
Weight: 108 pounds

Geo-Seal® Vapor Intrusion Barrier

Vapor-Vent

Vapor-Vent™ Vapor Collection System



Product Description

Basic Use: Vapor-Vent vapor collection system is a composite low profile pressure relief and collection system designed to mitigate the build up of methane gas and contaminated vapor under an overlying structure. Vapor-Vent is most commonly designed to operate passively, but may also be designed as an active system when conditions require.

Composition: Vapor-Vent features a lightweight, three-dimensional, highly flexible polypropylene core and a non-woven geotextile filter fabric. The filter fabric is bonded to the polypropylene core to prevent fine substrates, such as sand, from clogging the vent pipe.

Benefits

- Cost effective alternative to traditional trenched PVC or ADS pipe systems
- Placed directly below the barrier system to drastically reduce vapor accumulation under the structure
- Can operate as a passive system with the ablity to activate in the future

Limitations

- Not effective when constantly submerged
- Should be placed within permeable substrates

Technical Data

Properties: See physical properties table
Coverages: One roll covers 165 lineal feet. Radius of influence is 25', maximum spacing between Vapor-Vent runs is 50'. Vent riser locations should be identified by an environmental engineer prior to installation.

Specification Writer: Contact EPRO before writing specifications on this product. Geo-Seal system assemblies should be reviewed in order to meet project specific site conditions.

Installation

Preparation: Please refer to manufacturer's specifications for substrate requirements. Rolls should be inspected for cosmetic damage prior to application. Substrate must be compacted and inspected prior to installation, to make certain it is in accordance with manufacturer's requirements.

Application: Please refer to manufacturer's specifications. Installation of Vapor-Vent shall occur after the preparation of substrate and prior to the placement of the barrier system. Vapor-Vent end outs shall be used in transition to vertical vent risers as required.

Availability and Packaging

Contact EPRO sales representative for local distributors or authorized applicators (www.eproinc.com).

Roll: 165' x 12" x 1", 65 lbs.

Warranty

Limited Warranty: EPRO Services, Inc. believes to the best of its knowledge that performance tables are accurate and reliable. EPRO warrants this product to be free from defects. EPRO makes no other warranties with respect to this product, express or implied, including without limitation the implied warranties of MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE. EPRO's liability shall be limited in all events to supplying sufficient product to retreat the specific areas to which defective product has been applied. EPRO shall have no other liability, including liability for incidental or resultant damages, whether due to breach of warranty or negligence. This warranty may not be modified or extended by representatives of EPRO or its distributors.

Equipment

No special equipment is required.

Technical Services and Information

Complete technical services and information are available by contacting EPRO at 800.882.1896 or www.eproinc.com.

Geo-Seal® Vapor Intrusion Barrier

Vapor-Vent

Typical Physical Properties

Physical Property	Test Method	Vapor-Vent Poly	Value
Material		Polystyrene	HDPE
Comprehensive Strength	ASTM D 1621	9,000 lbs/ft^2	11,400 lbs/ft^2
In-plane flow (Hydraulic gradient-0.1)	ASTM D 4716	30 gpm/ft of width	30 gpm/ft of width
Chemical Resistance		N/A	Excellent
FABRIC PROPERTIES			
Grab Tensile Strength	ASTM D 4632	100 lbs	110 lbs
Puncture Strength	ASTM D 4833	65 lbs	30 lbs
Mullen Burst Strength	ASTM D 3786	N/A	90 PSI
AOS	ASTM D 4751	70 U.S. Sieve	50 U.S. Sieve
Flow Rate	ASTM D 4491	140 gpm/ft^2	95 gpm/ft^2
UV Stability (500 hours)	ASTM D 4355	N/A	70% Retained
DIMENSIONAL DATA			
Thickness		1 inch	1 inch
Standard Widths		12 inches	12 inches
Roll Length		165 ft	165 ft
Roll Weight		65 lbs	68 lbs

Applications: Slab On Grade Gas Containment Composite Vapor Intrusion Barrier
Spec Version: EproGS60.VB.v1.10.24.23gs
Date issued: October 24, 2023
Note: This specification may be superseded at any time. Check eproinc.com for the most up to date version of this specification.

SECTION 02 56 16
GAS CONTAINMENT
SECTION 02 56 19.13
FLUID APPLIED GAS BARRIER

Geo-Seal 60
Composite Vapor Intrusion Barrier
Guide Specification

Slab On Grade

Geo-Seal 60 is designed to provide a cost-effective alternative for sites desiring a pre-emptive mitigation solution, but also wish to have a vapor intrusion barrier that is more robust and resistant to construction traffic than simple single sheet membranes. This guide specification has been prepared according to the principles established in the Manual of Practice published by the Construction Specification Institute.

Note: If areas will be subjected to water and/or hydrostatic conditions, contact EPRO for appropriate system recommendations.

For additional questions, your local EPRO technical representative can be contacted through: EPRO Services, Inc., Wichita KS; 1.800.882.1896; HYPERLINK "http://www.eproinc.com" **www.eproinc.com.**

GEO-SEAL 60 SLAB ON GRADE COMPOSITE VAPOR INTRUSION BARRIER SPECIFICATION
VERSION 1.40

SECTION 02 56 16 – GAS CONTAINMENT
SECTION 02 56 19.13 – FLUID-APPLIED GAS BARRIER

Part 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions, and Division 1 specification section, apply to this section.

1.2 SECTION INCLUDES

A. The installation of materials designed to provide vapor intrusion protection when installed per project specification, this section covers the methane mitigation and vapor intrusion membrane, along with the following:

1. Surface preparation and substrate treatment

2. Auxiliary materials

3. Prefabricated drainage mat (if applicable)

4. Foundation drain (if applicable)

1.3 RELATED SECTIONS

A. Section 02 24 00: Environmental Assessment

B. Section 02 32 00: Geotechnical Investigation

C. Section 03 15 00: Concrete Accessories

D. Section 03 30 00: Cast-in-Place Concrete

E. Section 03 40 00: Precast Concrete

F. Section 07 90 00: Joint Protection

G. Section 31 30 00: Earthwork Methods

H. Section 33 41 00: Subdrainage

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide a vapor mitigation system that prevents the passage of methane gas, contaminant vapors including chlorinated solvents and petroleum hydrocarbons, and complies with the physical requirements as demonstrated by testing performed by an independent testing agency.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's printed technical data, tested physical and performance properties, instructions for evaluating, preparing, and treating substrates, and installation instructions.

B. Shop Drawings: Project specific drawings showing locations and extent of vapor intrusion barrier system, details for overlaps, penetrations, transitions, and termination conditions.

C. Samples: Submit two standard size samples of the each of the following:

1. Individual components of the specified composite vapor intrusion barrier system.

D. Applicator Certification: Submit written confirmation at the time of bid that applicator is currently approved by the membrane manufacturer.

1.6 QUALITY ASSURANCE

A. Applicator Qualifications: System applicator shall be an EPRO Authorized Applicator who is trained to perform work that in accordance with EPRO standards and policies.

B. Manufacturer Qualification: Obtain vapor intrusion barrier materials and system components from a single manufacturer source, EPRO. Manufacturer must have 20 years of experience in the manufacture of vapor intrusion barrier systems.

C. Third Party Inspection: Independent inspection of the composite system installation may be required based on project conditions and desired warranty coverage, or as required based on local building code/government agency jurisdiction. Inspection reports shall be submitted directly to the composite vapor intrusion barrier manufacturer and made available to other parties per the owner's direction.

D. Pre-Construction Meeting: A meeting shall be held prior to application of the barrier system to assure proper substrate preparation, confirm installation conditions, and any additional project specific requirements. Attendees of the meeting shall include, but are not limited to the following:

1. EPRO authorized applicator

2. Third party inspector

3. General contractor

4. Owner's representative

5. Architect and Engineer

6. Concrete/Shotcrete contractor

7. Rebar contractor

8. All appropriate related trades

E. Field Sample: Apply vapor intrusion barrier system field sample to 100 ft^2 (9.3 m^2) of each assembly to demonstrate proper application techniques and standard of workmanship.

1. Notify composite membrane system manufacturer representative, architect, certified inspector, and other appropriate parties one week in advance of the dates and times when field sample will be prepared.

2. If architect and certified inspector determines that field sample does not meet requirements; reapply composite membrane system until field sample is approved.

3. Retain and maintain approved field sample during construction in an undisturbed condition as a standard for judging the completed composite membrane system. An undamaged field sample may become part of the completed work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials to site labeled with manufacturer's name, product brand name, material type, and date of manufacture. Upon the arrival of materials to the jobsite, inspect materials to confirm material has not been damaged during transit.

B. Storage: Proper storage of onsite materials is the responsibility of the certified applicator. Consult product data sheets to confirm storage requirements. Storage area shall be clean, dry, and protected from the elements. If ambient air temperatures are expected to fall below 40◦F, precautions will need to be taken to protect any emulsion product from near freezing temperatures. Protect stored materials from direct sunlight.

C. Disposal: Remove and replace any material that cannot be properly applied in accordance with local regulations and specification section 01 74 19.

1.8 PROJECT CONDITIONS

A. Substrate Review: Substrates shall be reviewed and accepted by the certified applicator and independent inspector prior to application.

B. Penetrations: **All plumbing, electrical, mechanical, and structural items to be passing through the composite membrane system shall be properly spaced, positively secured in their proper positions, and appropriately protected prior to system application and throughout the construction phase.** Braided grounding rods are not allowed to pass through the vapor intrusion barrier.

C. Reinforcement Steel and Concrete Forms: Vapor intrusion barrier shall be installed before placement of reinforcing steel. When penetrations post system installation occurs, it is the responsibility of the general contractor to notify the vapor intrusion barrier applicator to immediately make repairs prior to the placement of overburden, this includes the use of solid plastic “VaporStakes” used to secure concrete forms.

D. Clearance: Minimum clearance of 24 inches is required for application of spray applied polymer modified asphalt, ***Geo-Seal CORE***. For areas with less than 24-inch clearance, the product may be applied by hand using ***Geo-Seal CORE Detail***.

E. Overspray: Protect all adjacent areas not receiving the barrier application. Masking is necessary to prevent unwanted overspray from adhering to, or staining, areas not receiving the membrane. Once ***Geo-Seal CORE*** adheres to a surface it is extremely difficult to remove.

F. Weather Limitations: Perform work only when existing and forecast weather conditions are within manufacturer's recommendations.

1. Spray Applied Polymer Modified Asphalt Membrane: Minimum ambient temperature should be 40◦F (7◦C) and rising. For applications temperatures below 38◦F, but greater than +19ºF/-7ºC, special equipment and material handling is required. Substrate shall be clean and free from standing moisture.

2. EPRO applicators reserve the right not to install product when application conditions might be within manufactures acceptance, but ambient conditions may limit a successful application.

1.9 WARRANTY

A. Special Warranty: Submit a written warranty signed by vapor intrusion barrier manufacturer agreeing to replace system materials that do not conform to manufacturer's published specifications or are deemed to be defective. Warranty does not include failure of vapor intrusion barrier due to failure of soil substrate prepared and treated according to requirements or formation of new joints and cracks in the concrete that exceed 1/8 inch (3.175 mm) in width.

1. Warranty Period: 1 year after date of substantial completion. Longer warranty periods are available upon request.

2. Coverage: Manufacturer will guarantee that the material provided is free of defects for the warranty period.

B. Additional Warranty Options: Upgraded warranties are available by contacting the manufacturer. These warranties may have additional requirements and approval must be granted in accordance to the manufacturer's warranty requirements. Additional warranty options include:

1. Standard Labor and Material (Geo-Seal L&M): Manufacturer will provide non-prorated coverage for the warranty term, agreeing to repair or replace material that does not meet requirements or remain vapor tight.

2. Waterproofing Warranties: For below grade project that require vapor intrusion barriers and below grade waterproofing for foundation walls, single source warranties are available from EPRO.

Part 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: EPRO Services, Inc. (EPRO), P.O. Box 347; Derby, KS 67037; Tel: (800) 882-1896; www.eproinc.com

B. Basis of Design: Geo-Seal 60 (58 mils) – ***Geo-Seal FILM 11***, ***Geo-Seal CORE*** (30 mils), ***Geo-Seal BOND***

2.2 VAPOR INTRUSION BARRIER MATERIALS

A. The physical properties listed in this section reflect testing on the entire composite system. Physical properties of the individual system composite can be found in Specification Section 2.3.

1. **Geo-Seal 60 Vapor Intrusion Barrier** consists of a 30 mil layer of ***Geo-Seal CORE*** (polymer modified asphaltic membrane) sandwiched between two HDPE geocomposite membranes ***Geo-Seal FILM 11*** layer and ***Geo-Seal BOND*** protection sheet. ***Geo-Seal*** is ideal for moisture protection on sites that may also contain methane gas, contaminated soil, or contaminated groundwater.

PROPERTIES	TEST METHOD	VALUE
Tensile Strength	ASTM D412	527.7 psi
Elongation	ASTM D412	45%

Adhesion to Concrete	ASTM D903	8 lbf/in
Puncture Resistance	ASTM D1709	310 lbf
Water Vapor Transmission	ASTM E96	0.020 perms
PCE Diffusion Rate	Geokinetics	1.16×10^{-17} m^2/sec
Benzene Diffusion Rate	Geokinetics	2.31×10^{-18} m^2/sec
Naphthalene Diffusion Rate	Geokintetics	5.30×10^{-17} m^2/sec
Vapor Barrier Classification	ASTM E1745	A, B & C

2.3 VAPOR INTRUSION BARRIER MATERIALS

A. Polymer Modified Asphalt

1. ***Geo-Seal CORE***: ***Geo-Seal CORE*** is a non-hazardous, low-viscosity, water-based, anionic asphalt emulsion modified with a blend of synthetic polymerized rubbers and proprietary additives. ***Geo-Seal CORE*** is highly stable during transit and when properly stored but becomes highly reactive during the spray application to form a rapidly cured membrane with exceptional bonding, elongation, and hydrophobic characteristics.

PROPERTIES	TEST METHOD	VALUE
Color		Brown to Black
Solvent Content		No Solvents
Shelf Life		6 months
Tensile Strength	ASTM 412	32 psi
Elongation	ASTM 412	4140%
Resistance to Decay	ASTM E 154 Section 13	4% Perm Los
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	0.026 g./sq. ft./hr.
Hydrostatic Water Pressure	ASTM D 751	26 psi
Perm Rating	ASTM E 96 (US Perms)	0.21
Methane Transmission Rate	ASTM D 1434	0
Adhesion to Concrete & Masonry	ASTM C 836 & C 704	20 lbf./inch
Adhesion to HDPE	ASTM C 836	28.363 lbf./inch
Adhesion to Polypropylene Fabric	ASTM C 836	31.19 lbf./inch
Hardness	ASTM C 836	80
Crack Bridging	ASTM C 836-00	No Cracking
Low Temp. Flexibility		No Cracking at -20° C
Packaging: 55 gallon drum, 275 gallon tote, 330 gallon tote		

2. ***Geo-Seal CORE Detail***: ***Geo-Seal CORE Detail*** is single component, medium viscosity, water-based, polymer-modified anionic asphalt emulsion, which exhibits exceptional bonding, elongation and hydrophobic characteristics.

PROPERTIES	TEST METHOD	VALUE
Color		Brown to Black
Solvent Content		No Solvents
Shelf Life		6 months
Tensile Strength	ASTM 412	32 psi
Elongation	ASTM 412	3860%
Resistance to Decay	ASTM E 154 SECTION 13	9% Perm Loss
Accelerated Aging	ASTM G 23	No Effect
Moisture Vapor Transmission	ASTM E 96	0.071 g/sq. ft./hr.

Hydrostatic Water Pressure	ASTM D 751	28 psi
Perm Rating	ASTM E 96 (US Perms)	0.17
Methane Transmission Rate	ASTM D 14334	0
Adhesion to Concrete & Masonry	ASTM C 836	1 lbf/inch
Hardness	ASTM C 836	85
Crack Bridging	ASTM C 836	No Cracking
Low Temp. Flexibility	ASTM C 836-00	No Cracking at -20° C
Packaging: 5 gallon bucket		

B. Base Sheet

1. **Geo-Seal FILM 11**: **Geo-Seal FILM 11** is a base course comprised of an 11 mil HDPE film. The film is cross laminated to a create ridges that enhance the bond between the **Geo-Seal FILM 11** and **Geo-Seal CORE**.

PROPERTIES	TEST METHOD	VALUE
Film Material		HDPE
Film Color		Green
Film Thickness		11 Mil
Classification	ASTM E 1745	Exceeds Class A, B, and C
Tensile Strength	ASTM E 154 (ASTM D 882)	50 lbf/in
Puncture Resistance	ASTM D 1709	2400 grams Method A
Life Expectancy	ASTM E 154-93	Indefinite
Chemical Resistance	ASTM E 154-93	Unaffected
Water Permeance	ASTM E 96	0.020 Perms (US)
Dimensions: 12' x 200'		
Weight: 144 pounds		

C. Geocomposite Protection Course

1. **Geo-Seal BOND: Geo-Seal BOND** is an extremely durable, high strength protection course made from the lamination of HDPE film and nonwoven polypropylene geotextile fabric.

PROPERTIES	TEST METHOD	VALUE
Film Material		HDPE
Film Color		White
Fabric Material		Non-woven Polypropylene
Fabric Color		White
Film Thickness		5 Mil
Composite Thickness		18 Mil
Tensile @ ULT	ASTM D 882	TD 32.0 lbs/in
		MD 37.3 lbs/in
Elongation @ ULT	ASTM D 882	TD 65.3%
		MD 51.0%
Dart Impact	ASTM D 1709	Method A >1070 grams
		Method B 894 grams
Modulus	ASTM D 882	TD 270.6 lbs/in
		MD 295.5 lbs/in
Elmendorf Tear	ASTM D 1922	TD 5,140 grams

		MD 5,260 grams
Puncture-Prop Tear	ASTM D 2582	TD 13,250 grams Sled: 1-lb
		MD 11,290 grams Sled: 1-lb
Beach Puncture Tear	ASTM D 751	TD 165 in-lbs
		MD 160 in-lbs
Water Permeance	ASTM E 96	0.11 perms (US)
Dimensions: 12' x 150'		
Weight: 108 pounds		

2.4 AUXILIARY MATERIALS

A. General: All accessory products shall be provided by the specified vapor intrusion barrier manufacturer. Auxiliary products used in lieu of, or in addition to, the manufactures products must be approved in writing by EPRO prior to installation.

B. Reinforcement Fabric: Manufacturer's polyester fabric, ***Geo-Seal Reinforcement Fabric*** is available in 6 inch, 12 inch, and 40 inch widths.

C. Detailing Material: ***Geo-Seal CORE Detail***, a roller applied, water based, high viscosity, polymer modified asphaltic material.

D. Backer Rod: Closed cell polyethylene foam

E. Termination Bar: ***e.term hd***, or approved alternate

Part 4 - EXECUTION

4.1 EXAMINATION

A. Comply with project documents, manufacturer's product information, including product application and installation guidelines, pre-job punch list, as well as, manufacturer's shipping and storage recommendations.

4.1.3 SURFACE PREPARATION

A. The general contractor shall engage the certified vapor intrusion barrier contractor and certified inspector to ensure surfaces are prepared in accordance with manufacturer's instructions. Unless, explicitly stated in the contract documents, the vapor intrusion barrier contractor is not responsible for surface preparation.

B. Examine all substrates, areas, and conditions under which the composite membrane system will be installed, applicator and inspector must be present. Do not proceed with installation until unsatisfactory conditions have been corrected and surface prepration requirements have been met. If conditions exist that are not addressed in this section, notify inspector and contact EPRO for additional clarification.

C. Soil and Sand Substrates: Native soil and sand substrates shall be uniformly compacted to meet structural and building code requirements. All surfaces shall be free from protrusions and debris that may compromise the membrane system. Free standing water must be removed prior to application.

D. Aggregate Substrates: Aggregate substrates shall be compacted to meet structural and building code requirements and then rolled flat to provide a uniform substrate. ¾ inch minus aggregate with no more than one fractured face is recommended, but other aggregates substrates may be approved by the manufacturer provided they do not create sharp angular protrusions that may compromise the vapor intrusion system.

E. Working Slab: Mud slab, rat slab, or other concrete working slab shall have a uniform plane with a light broom or light trowel finish.

F. Concrete Surfaces: Clean and prepare concrete surface to manufacturer's recommendations. In general, only apply the Geo-Seal CORE material to dry, clean and uniform concrete substrates with a light trowel, light broom, or equivalent finish.

G. Cast-in-Place or Shotcrete Walls: Application to green concrete is acceptable provided the substrate is prepared in accordance with manufacturers specifications and published instructions.

1. Provide clean, dust-free, and dry substrate for vapor intrusion barrier application.

2. Surfaces shall be power washed to remove grease, oil, form release agents, or any other penetrating contaminants from the concrete.

3. Remove all fins, ridges, and other protrusions.

4. Fill honeycomb, aggregate pockets, tie holes, and other voids with hydraulic cement, or rapid-set grout.

4.2 VAPOR INTRUSION BARRIER INSTALLATION

A. General: The underslab vapor intrusion system shall be installed under strict accordance with the manufacturer's guideline and project specifications.

1.9.2 BASE COURSE – GEO-SEAL FILM 11

A. Whenever possible roll out ***Geo-Seal FILM 11*** in the same direction over the substrate. When multiple pours will occur, extend the ***Geo-Seal FILM 11*** a minimum of 2 feet past the pour joint.

B. Overlap ***Geo-Seal FILM 11*** a minimum of 6 inches.

C. At the seam overlap, peel back the top layer of ***Geo-Seal FILM 11*** and apply 60 mils into the overlapping seam, making certain to apply ***Geo-Seal CORE*** to both the top of the bottom sheet and the bottom of the top sheet. Embed the top sheet into the bottom sheet.

D. Visually verify there are no gaps/fish-mouths in seams.

1.9.3 TERMINATION SEQUENCE

A. System Termination: The termination process is appropriate for terminating the membrane onto exterior footings, pile caps, interior footings and grade beams. When terminating the membrane to stem walls or vertical surfaces the same process should be used.

1. Concrete surfaces that are not a light trowel, light broom or equivalent finish, will need to be repaired.

2. Terminations on horizontal and vertical surfaces should extend 6" onto the termination surface. Job specific conditions may prevent a 6" termination. In these conditions exist, contact manufacturer for recommendations.

3. Apply 60 mils of ***Geo-Seal CORE*** to the terminating surface and then embed the ***Geo-Seal FILM 11*** layer by pressing it firmly into the ***Geo-Seal CORE*** layer.

4. Apply 30 mils of ***Geo-Seal CORE*** to the ***Geo-Seal FILM 11*** layer.

5. Apply the ***Geo-Seal BOND*** layer and apply a final 30 mil seal of the ***Geo-Seal CORE*** layer over the edge of the termination. For further clarification, refer to the termination detail provided by manufacturer.

1.9.4 SEALING OF PENETRATIONS

A. Sealing of Standard Pipe Penetrations: Prepare membrane penetrations so they are free of any material that will inhibit a direct bond to the penetration surface: foam, insulation, protective coatings, etc.

1. Trim ***Geo-Seal FILM 11*** to within 1/8 inch of the penetration.

2. Apply ***Geo-Seal CORE Detail*** 3 inches horizontally and 3 inches vertically around the base of the penetration.

3. Embed ***Geo-Seal Reinforcement Fabric*** reinforcement fabric 3 inches horizontally and 3 inches vertically around the base of the penetration.

4. Apply a second layer of ***Geo-Seal CORE Detail*** to reinforcement fabric until the reinforcement fabric is fully saturated. Secure ***Geo-Seal Reinforcement Fabric*** reinforcement fabric to penetration with a cable tie. For further clarification, refer to the termination detail provided by manufacturer.

1.9.5 POLYMER MODIFED ASPHALT MEMBRANE – GEO-SEAL CORE

A. Mask off adjoining surfaces where unwanted ***Geo-Seal CORE*** polymer modified asphalt membrane may be exposed on finished surfaces or impact other construction trades.

B. Commence application of ***Geo-Seal CORE*** polymer modified asphalt when ambient air temperatures are within manufacturer recommendations.

C. Surfaces that will receive the membrane must be clean and free from standing moisture.

D. Start installing ***Geo-Seal CORE*** in presence of approved 3rd party inspector or required city inspector.

E. Apply one application of ***Geo-Seal CORE*** membrane in accordance to manufacturer's instructions in order to obtain a seamless membrane with a minimum dry film thickness of 30 mils (1.5 mm).

F. Apply ***Geo-Seal CORE/Geo-Seal CORE Detail*** in and around penetrations and cavities to ensure the formation of monolithic seal around all penetrations.

G. Apply ***Geo-Seal CORE/Geo-Seal CORE Detail*** to prepared wall terminations and vertical surfaces to heights indicated according to manufacturer's recommendations and details. (if applicable)

H. Verify ***Geo-Seal CORE*** thickness of every 1000 ft^2 (93 m^2), or as required by specifying engineer.

1.9.6 GEOCOMPOSITE PROTECTION COURSE – GEO-SEAL BOND

A. Sweep off any water that has collected on the surface of the ***Geo-Seal CORE*** layer, prior to the placement of the ***Geo-Seal BOND*** layer. Install ***Geo-Seal BOND*** protection course perpendicular to the direction of the ***Geo-Seal BASE***.

B. Overlap ***Geo-Seal BOND*** seams a minimum of 6 inches.

C. Secure the seams of ***Geo-Seal BOND*** by applying 30 mils of ***Geo-Seal CORE*** in-between the seam overlap OR by applying a 30 mil layer of ***Geo-Seal CORE*** on top of the seam overlap, completely covering the seam overlap.

D. To expedite the construction process, the ***Geo-Seal BOND*** layer can be placed over the ***Geo-Seal CORE*** immediately after the spray application is complete, provided the ***Geo-Seal CORE*** mil thickness has been verified and smoke tested.

E. Do not penetrate the membrane system once it has been applied. If the vapor intrusion barrier is penetrated, immediately contact the applicator. Failure to bring the breach of the membrane to the applicators attention and not allowing adequate time to make the necessary repair will result in voidance of warranty.

1.10 FIELD QUALITY CONTROL

A. Smoke Test: Conduct smoke test on all underslab areas upon installation of the ***Geo-Seal FILM 11*** sheet, the sealing of all penetrations, and application of ***Geo-Seal CORE***. All deficient areas shall be noted, marked for repair, and repairs verified. Refer to manufacturer's smoke testing protocol for additional guidance.

1. For projects that will require a Labor and Material warranty, a certified 3rd party inspector is required to inspect and verify the integrity of the membrane

B. Field Inspection: Contact EPRO for independent certification process.

C. Thickness Verification: Use a digital mil reading caliper to measure the thickness of coupon samples. To measure coupon samples correctly, the thickness of the systems ***Geo-Seal FILM 11*** layer must be measured and calibrated in the field when verifying coupon sample thicknesses. Mark coupon sample area for repair. Contact EPRO for coupon sampling protocol.

1. It should be noted that taking too many destructive samples can be detrimental to the membrane. Areas where coupon samples have been removed need to be marked for repair.

D. Take care to prevent contamination and damage during application stages and curing. Machinery, additional trades, or general construction, shall NOT take place over the membrane until inspection is complete and concrete has been placed. The membrane shall always be properly protected when equipment is operated near the membrane.

E. Prevent damage during the placement of reinforcement steel and overburden.

F. Damage Observation: Prior to the placement of concrete a visual inspection to confirm no damage has occurred from construction traffic or during the placement of reinforcement steel is recommended.

1.11 REPAIRS

A. Underslab:

1. Inspect damaged area to determine which system components have been damaged.

2. If the ***Geo-Seal FILM 11*** sheet has not been compromised, patch only the areas that have been damaged by re-installing the damaged materials. The patch should extend 6 inches beyond the damaged area in all directions.

3. If the ***Geo-Seal FILM 11*** sheet has been breached but no additional system components have been installed, install a patch below and above the base sheet that extends 6 inches beyond the damaged area. Area shall be sealed using the specified method for sealing the base sheet.

4. If the damaged area has breached the base sheet and additional components have been installed over the ***Geo-Seal FILM 11*** sheet, the area will require removal of the overlying components to expose the ***Geo-Seal FILM 11*** sheet.

5. If the damage is less than 3 inches, the base sheet will need to be opened up to create a minimum 4-inch diameter circle to allow access

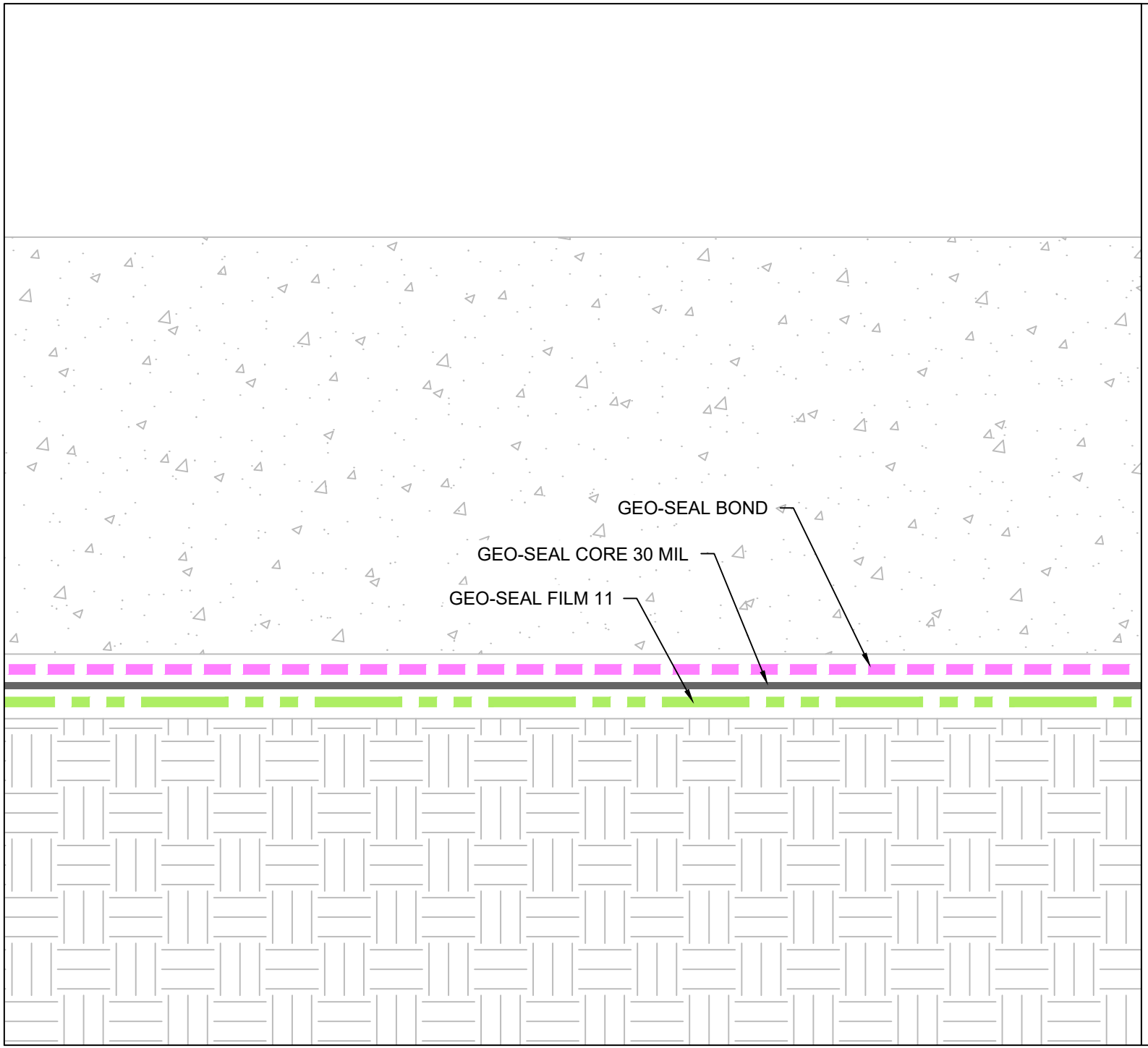
6. Place a minimum 8-inch diameter coupon under the base sheet and seal using the specified method for seaming the base sheet. If heat welding the seam, probe the seam to ensure a uniform seal.

7. Apply a reinforcement detail of ***Geo-Seal CORE Detail*** and reinforcement fabric 6 inches beyond the edge of the repair area.

8. Apply the remaining layers as specified.

9. Refer to manufacturer's detail for further repair clarification.

End of Section



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EPROINC.COM

Geo-Seal® Vapor Intrusion Barrier

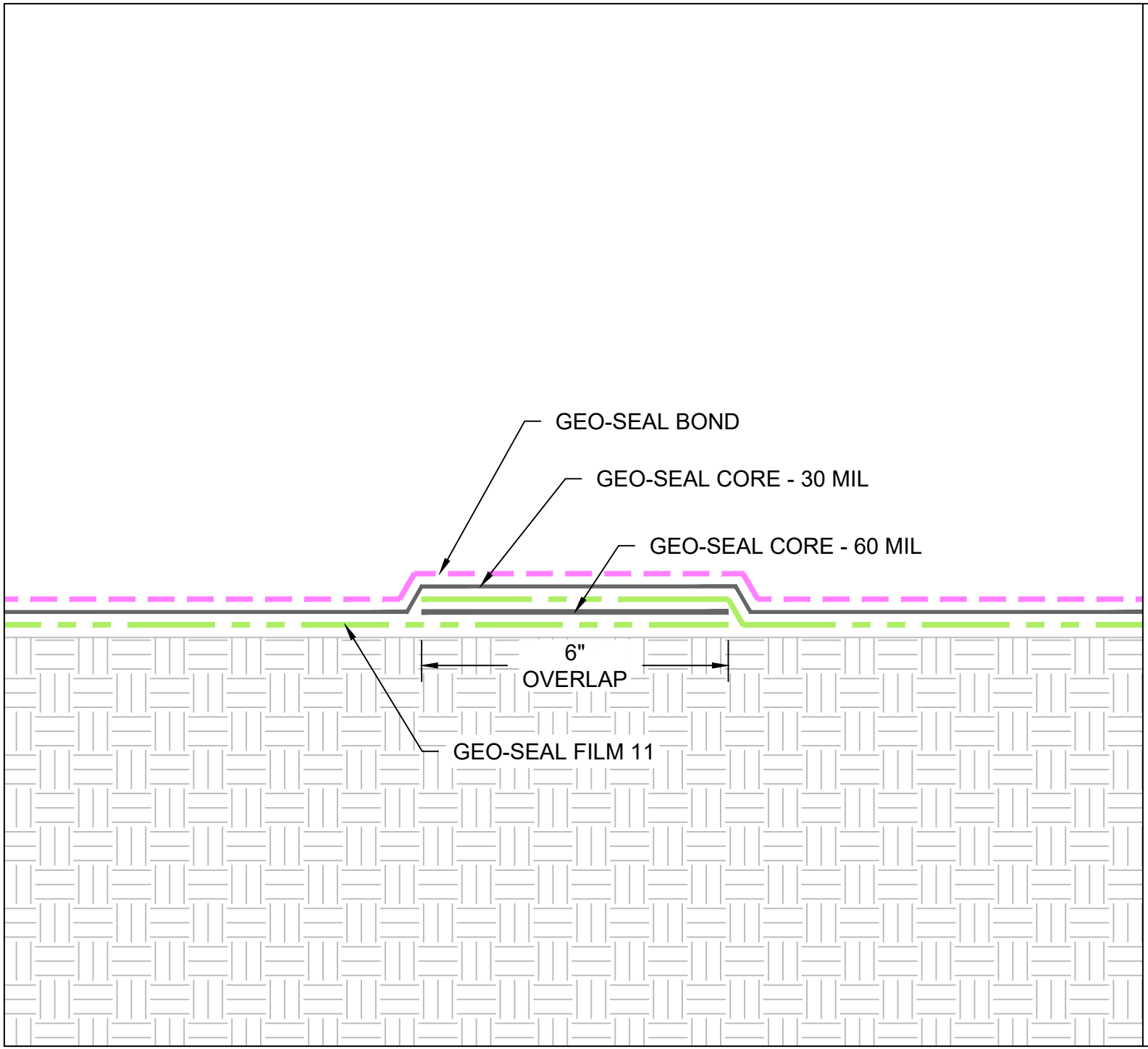
DRAWIMG NUMBER
41.100.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDERSLAB ASSEMBLY

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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Geo-Seal® Vapor Intrusion Barrier

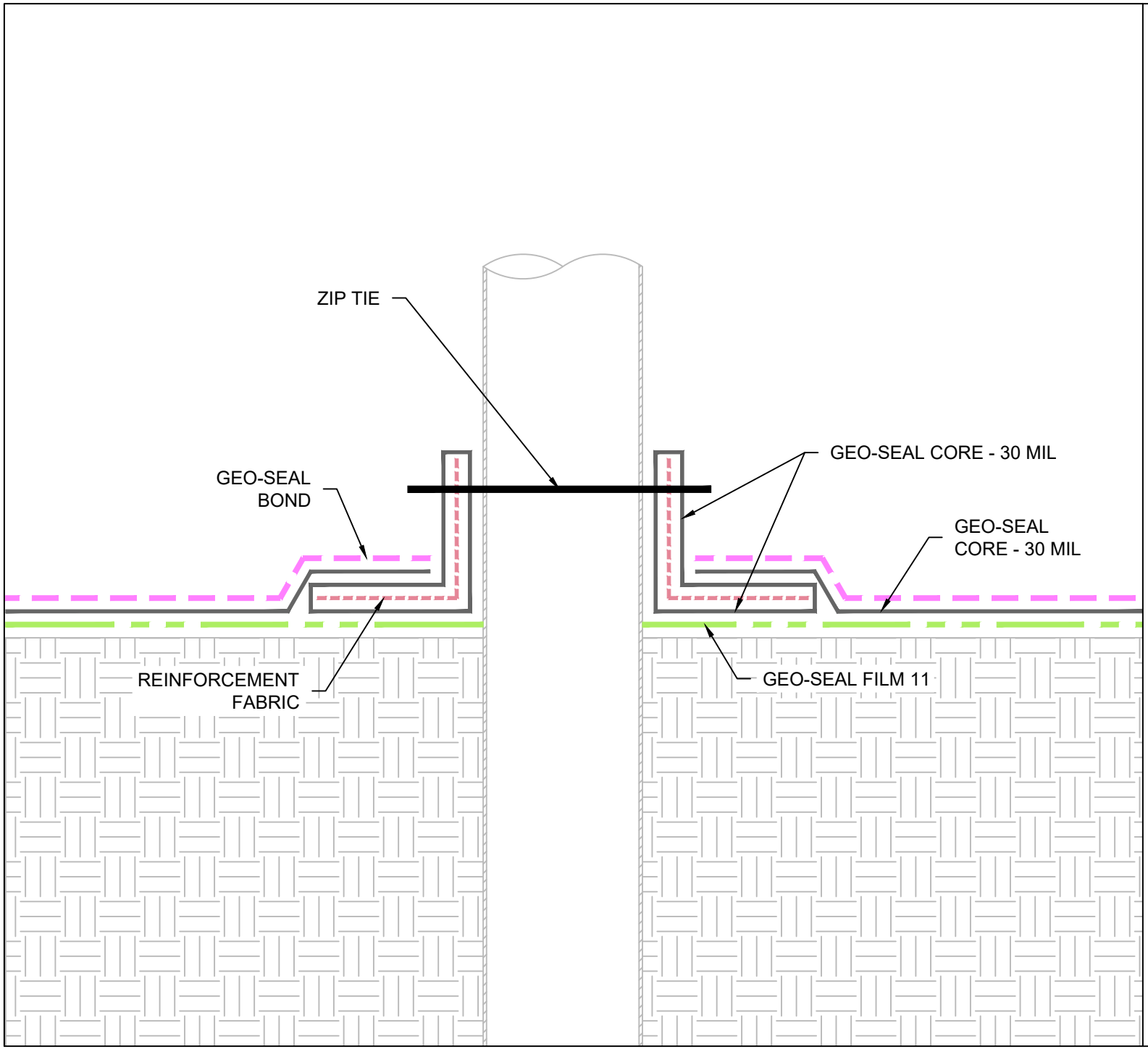
DRAWIMG NUMBER
41.110.5

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
FILM 11 OVERLAP

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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Geo-Seal® Vapor Intrusion Barrier

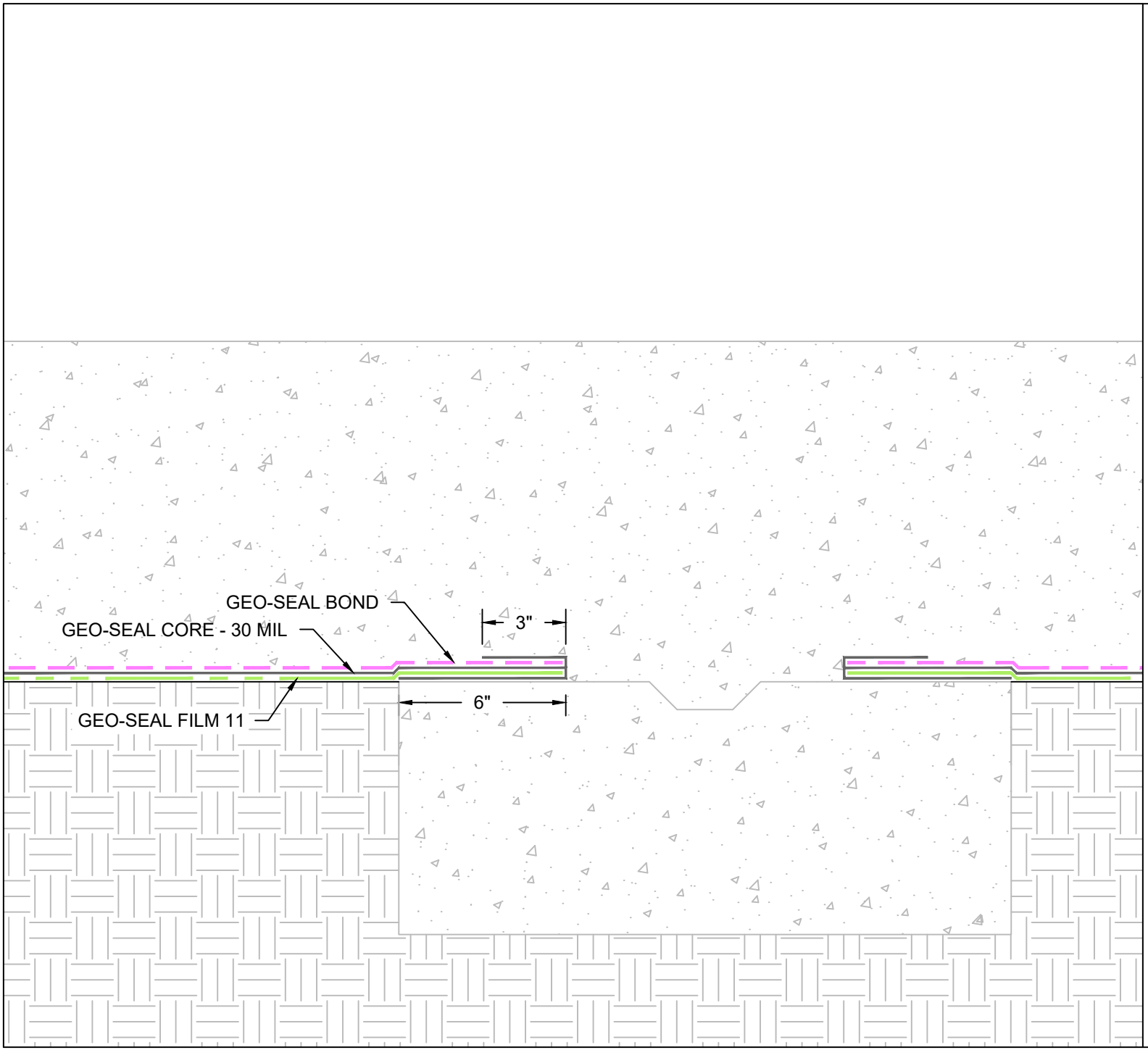
DRAWIMG NUMBER
41.120.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDERSLAB PIPE PENETRATION

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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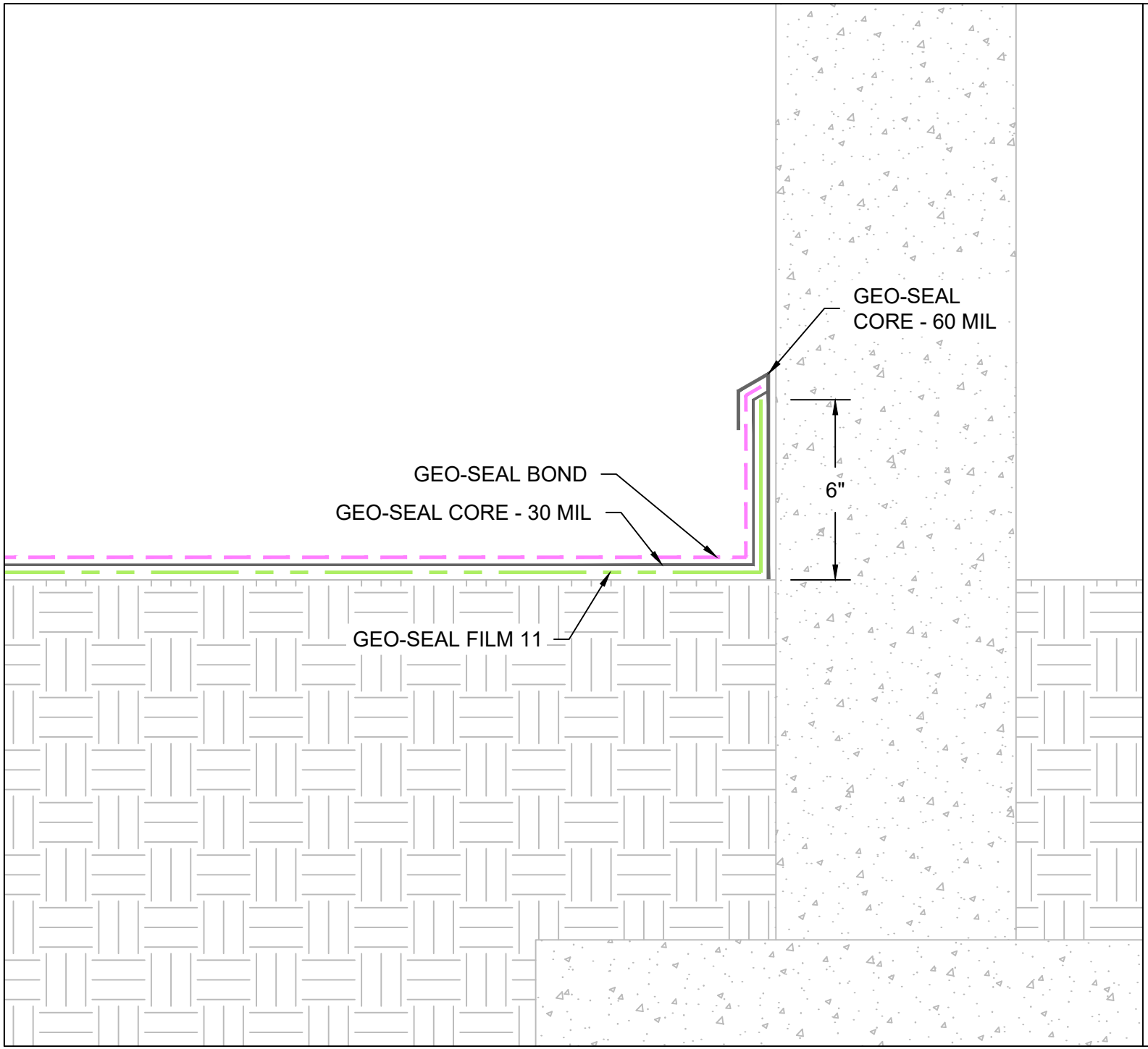
Geo-Seal® Vapor Intrusion Barrier

DRAWIMG NUMBER	41.130.1
SYSTEM NAME	GEO-SEAL 60
SYSTEM DESCRIPTION	UNDERSLAB GRADE BEAM 6" TERMINATION
DATE	08/31/2020
DRAWN BY	RJT
SCALE	NTS



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Geo-Seal® Vapor Intrusion Barrier

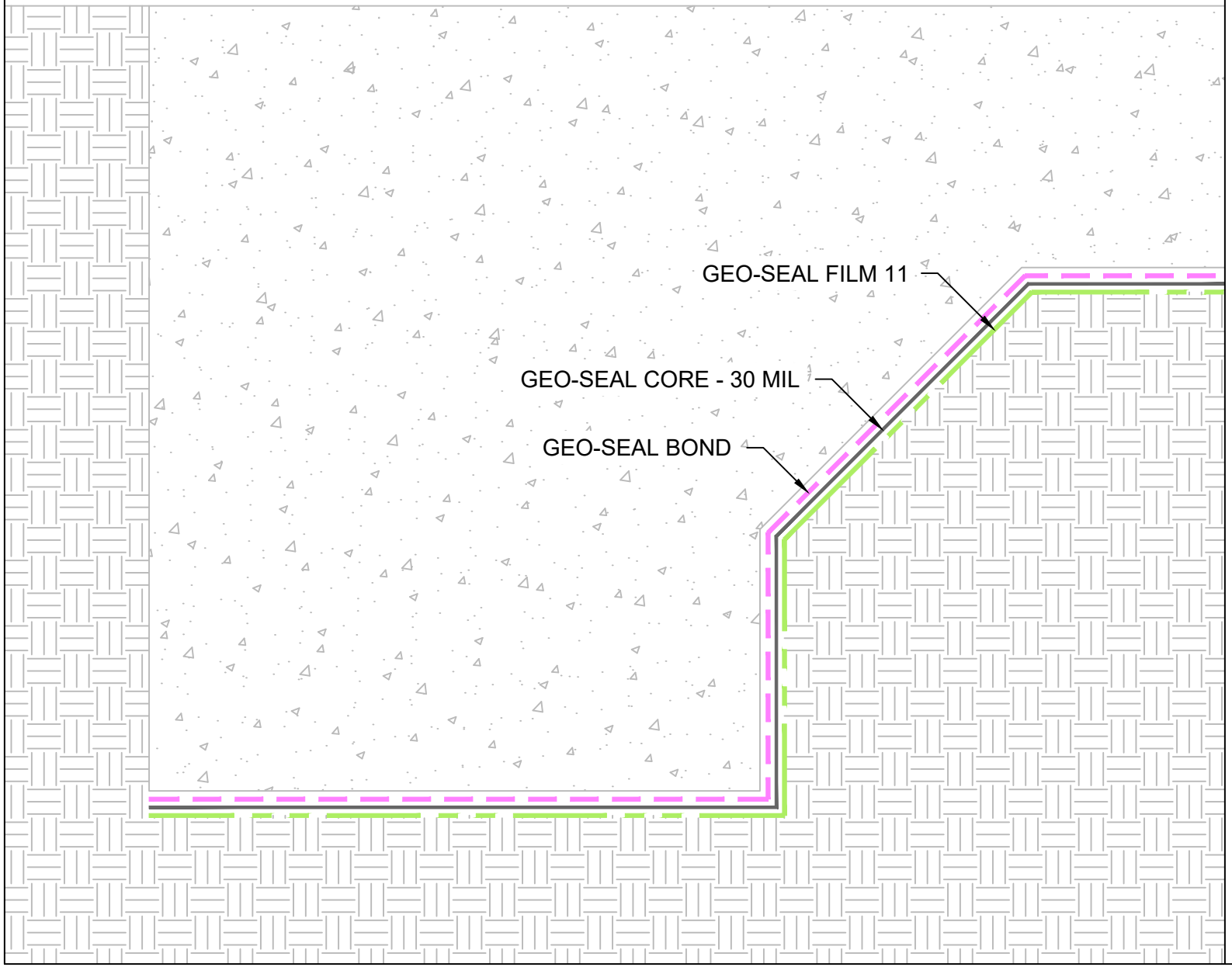
DRAWIMG NUMBER
41.131.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
VERTICAL TERMINATION

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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Geo-Seal® Vapor Intrusion Barrier

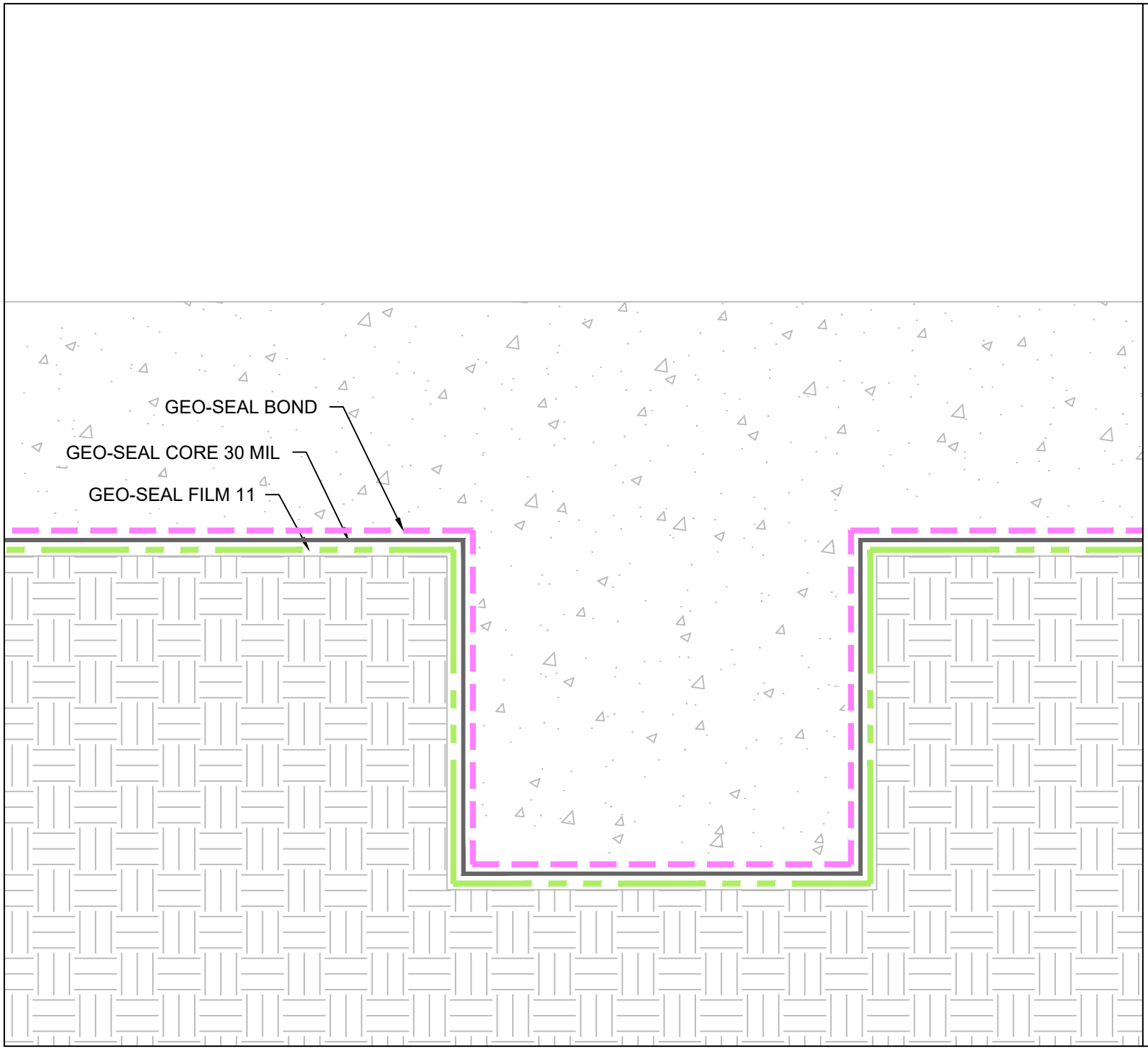
DRAWIMG NUMBER
41.132.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
PERIMETER FOOTING TERMINATION

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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Geo-Seal® Vapor Intrusion Barrier

DRAWIMG NUMBER
41.142.1

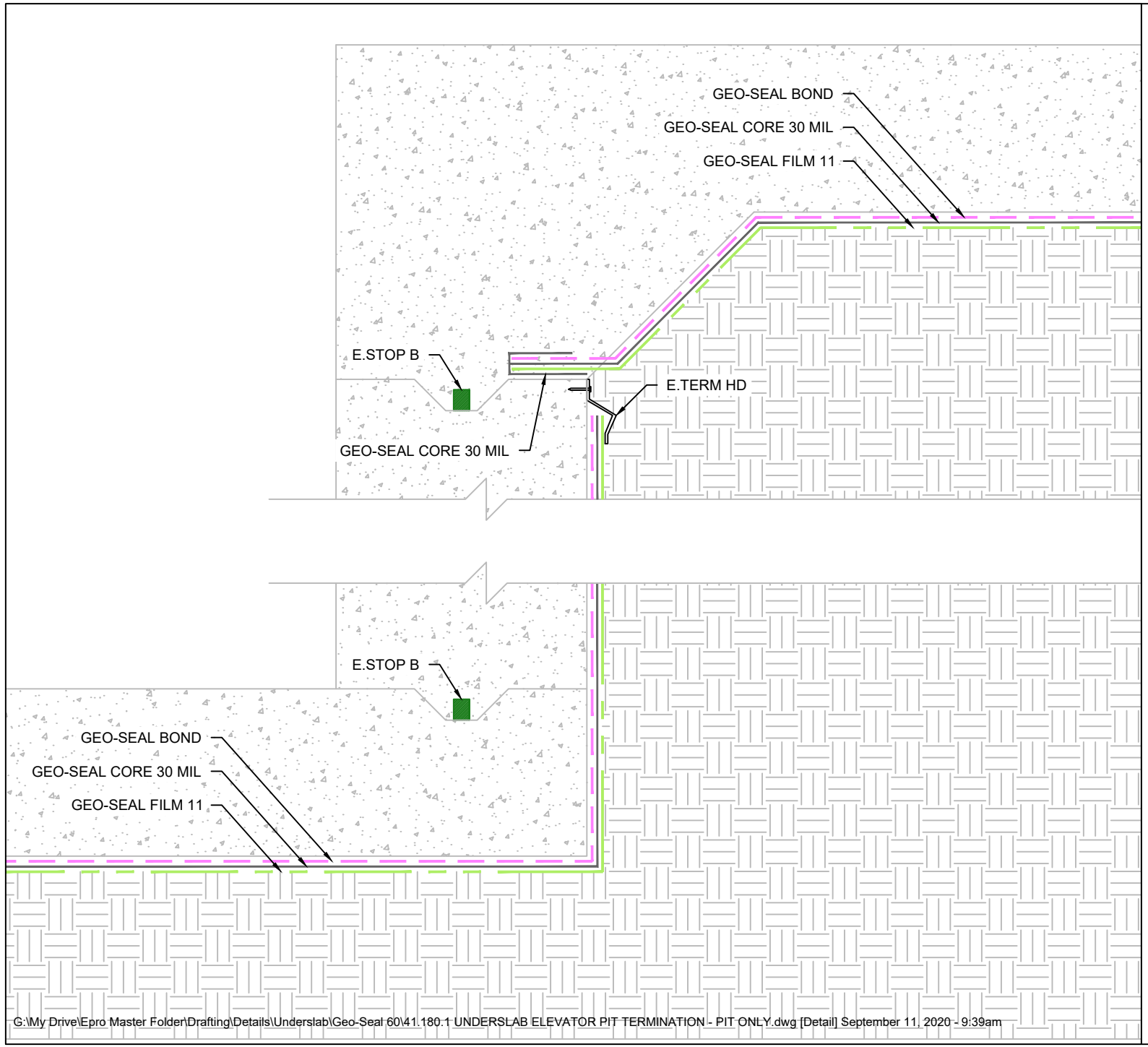
SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDER GRADE BEAM ASSEMBLY

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS

PAGE 1 OF 1



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Geo-Seal® Vapor Intrusion Barrier

DRAWIMG NUMBER
41.180.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
ELEVATOR PIT DETAIL

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS

PAGE 1 OF 1

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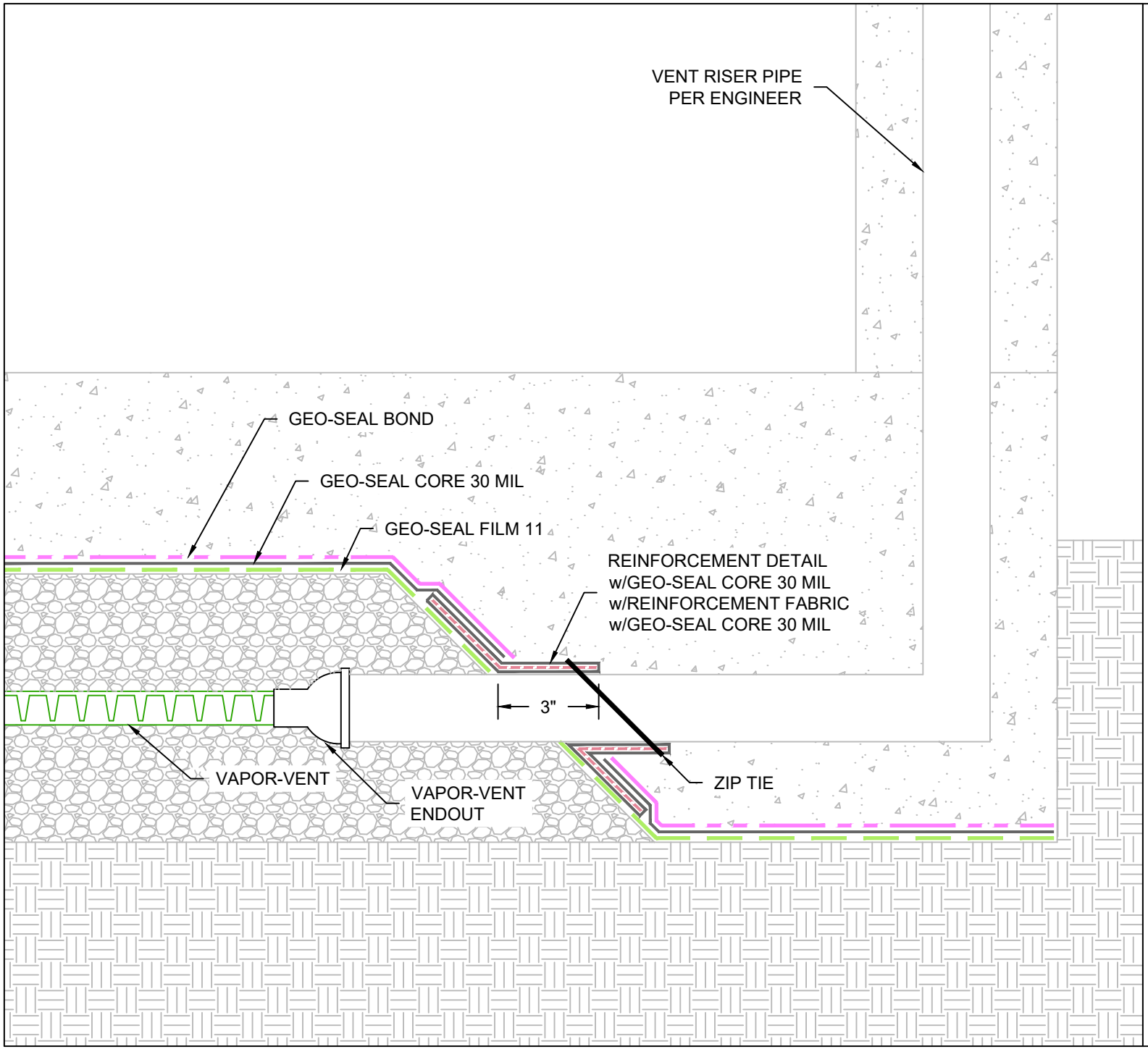

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Geo-Seal® Vapor Intrusion Barrier

DRAWIMG NUMBER
41.190.1

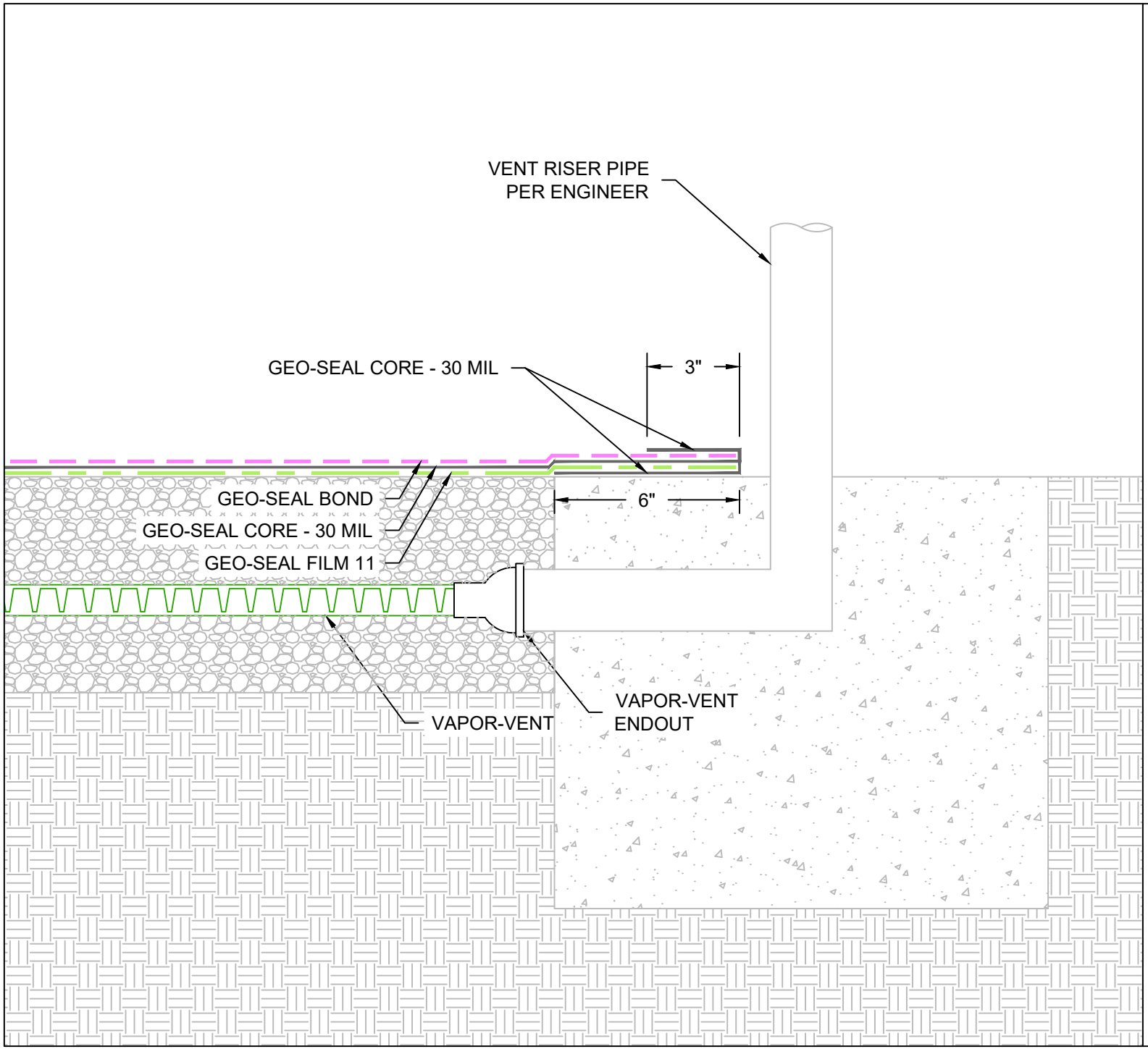
SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDERSLAB @ PIPE PENETRATION

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS

PAGE 1 OF 1



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Geo-Seal® Vapor Intrusion Barrier

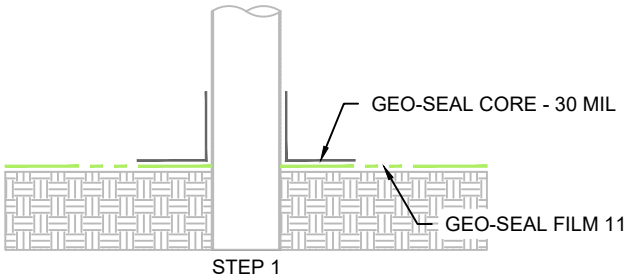
DRAWIMG NUMBER
41.190.3

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDERSLAB AT VENT RISER

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS



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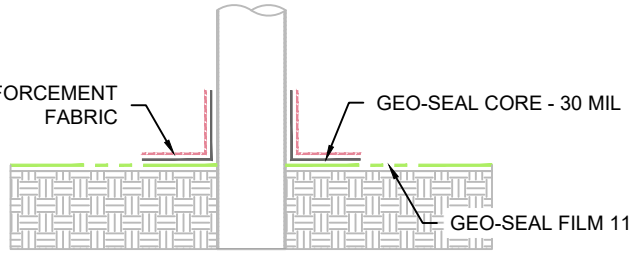
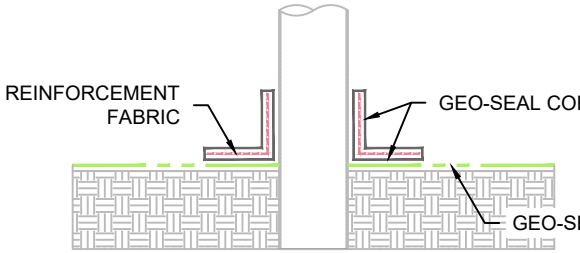
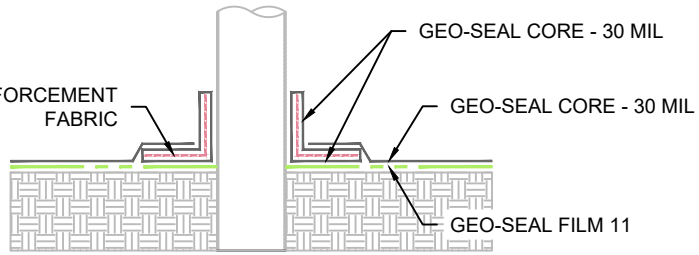


STEP 2



STEP 3



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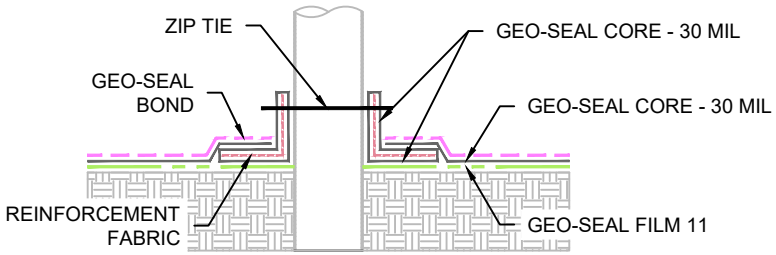

STEP 5

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WICHITA, KS 67211
1-800-882-1896
EPROINC.COM

Geo-Seal® Vapor Intrusion Barrier

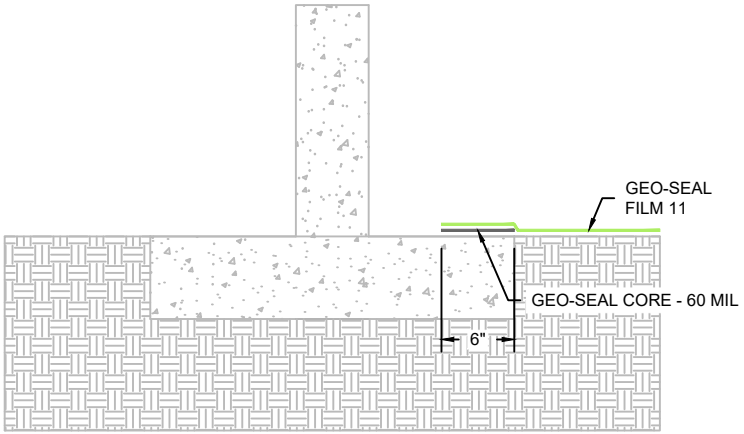
DRAWIMG NUMBER
41.900.1

SYSTEM NAME
GEO-SEAL 60

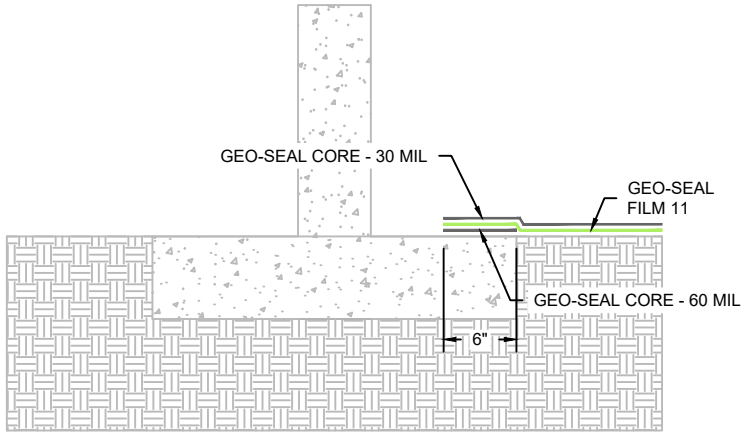
SYSTEM DESCRIPTION
UNDERSLAB PIPE PENETRATION SEQUENCE

DATE
08/31/2020

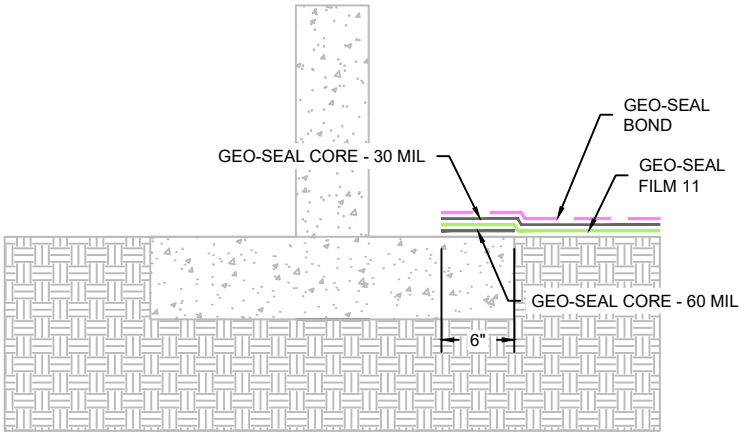
DRAWN BY	SCALE
RJT	NTS



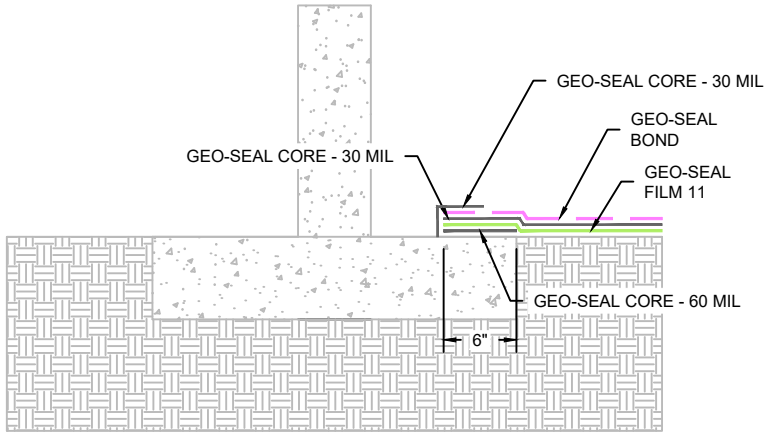
STEP 1



STEP 2



STEP 3



STEP 4

AS A SUPPLIER OF FINISHED RPODUCTS ONLY, EPRO SERVICES, INC. DOES NOT ASSUME RESPONSIBILITY FOR ERRORS IN DESIGN, ENGINEERING OR DIMENSIONS. THE PROJECT TEAM MUST VERIFY ALL DIMENSIONS AND SUITABILITY OF DETAILS. THE PRODUCTS LISTED ARE TRADEMARKS OF EPRO SERVICES, INC.

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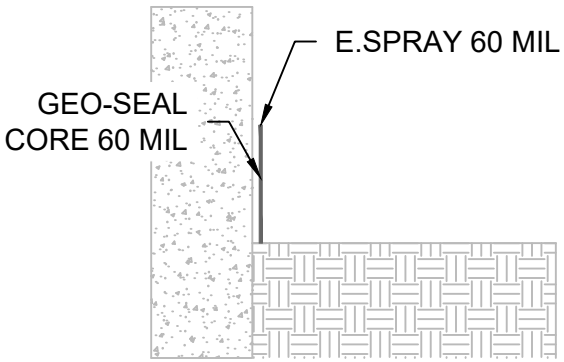
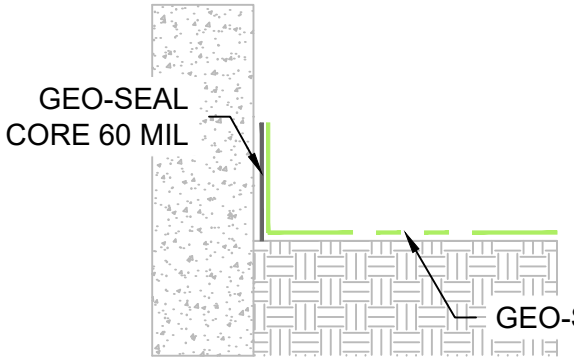
Geo-Seal®
Vapor Intrusion Barrier

DRAWIMG NUMBER
41.901.1
SYSTEM NAME
GEO-SEAL 60
SYSTEM DESCRIPTION
UNDERSLAB TERMINATION @ PERIMETER FOOTING SEQUENCE
DATE
08/31/2020

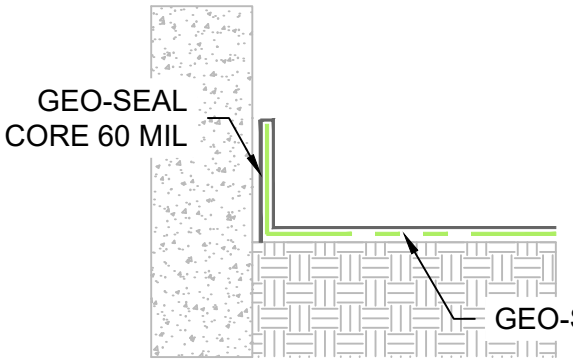
DRAWN BY	SCALE
RJT	NTS



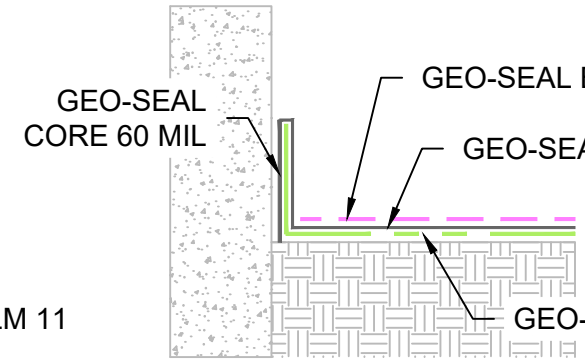
STEP 1



STEP 2



STEP 3



STEP 4

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Geo-Seal® Vapor Intrusion Barrier

DRAWIMG NUMBER
41.902.1

SYSTEM NAME
GEO-SEAL 60

SYSTEM DESCRIPTION
UNDERSLAB TERMINATION @ WALL SEQUENCE

DATE
08/31/2020

DRAWN BY	SCALE
RJT	NTS