



GEO-SEAL EFC SUBMITTAL PACKET





Geo-Seal EFC



Product Description

Basic Use: Geo-Seal EFC is a highly chemically resistant, impervious epoxy coating specially formulated to protect existing structures from contaminant vapor intrusion without the need for additional concrete protection. Geo-Seal EFC is resistant to both PCE, TCE, and other organic solvents commonly found in contaminated soils. Applied as the key component of EPRO's Geo-Seal EFC coating system, Geo-Seal EFC can be combined with various functional topcoat materials to create an abrasion-resistant wearing surface or any desired aesthetic appearance; this optional enhancement ensures Geo-Seal EFC can meet the performance needs of any project. Most commonly applied to horizontal concrete substrates, various functional primers part of the Geo-Seal EFC system can be utilized for various substrate conditions common in existing structures, including oil saturated concrete and substrates with high moisture content and high moisture vapor drive.

Composition: Geo-Seal EFC is a plural component, zero VOC, 100% solids, low odor, medium viscosity, highly chemically resistant impermeable epoxy coating.

Benefits

- Virtually eliminates chemical vapor intrusion through concrete without the need for additional concrete protection or removal of the concrete slab.
- Specially formulated to provide superior chemical resistance to soil contaminants including TCE, PCE and petroleum hydrocarbons.
- Reduces overall remediation costs while providing multiple options for surface finishes including cast aggregate or floor coverings.
- Low odor and fast cure times reduce the application impact on existing buildings.
- Zero VOCs, 100% solids, USDA and FDA approved.

Limitations

- Material should be stored above 40°F and not allowed to freeze.
- Ambient application temperature range is recommended between 40°F and 90°F.
- Cold temperatures will prolong cure time and high temperatures will result in shortened working times.
- Proper substrate preparation including the use of certain primers and concrete surface repair must be employed in accordance with the manufacturer's application guidelines.

Technical Data

Shelf life: 1 year when maintained between a 40°F and 80°F.

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.

Installation

Surface Preparation: All surfaces shall be prepared in accordance with manufacturer's specifications and ICRI Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair. Apply the appropriate primer based on the specific conditions of the substrate following that primer's application guidelines. See EPRO's Technical Bulletin: Selecting a Primer.

Application: Please refer to manufacturer's specifications. Mix at lowest RPM setting. Geo-Seal EFC is applied at a rate of 80 square feet per gallon to a total applied thickness of 20 mils.

Availability and Packaging

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

Geo-Seal EFC is available in 1 gal. and 5 gal. kits.

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.



Geo-Seal EFC

Equipment

Disposable brushes, variable low speed drill with impeller mixing paddle, non-shedding phenolic core rollers, and V-notched rubber squeegees and/or guage rake and trowels.

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	Value
Color		Standard and custom colors
VOC Content		0 gr./lt.
Shelf Life		1 year
Viscosity at 77°F		1000-2000 cps
Viscosity at 60°F		2200-4000 cps
Benzene Diffusion		$4.0 \times 10^{-17} \text{ m}^2/\text{sec}$
PCE Diffusion		$2.1 \times 10^{-17} \text{ m}^2/\text{sec}$
Compressive Strength	ASTM D695	14,500 PSI (16,500 PSI with aggregate)
Flexural Strength	ASTM D790	19,200
Tensile Elongation	ASTM D638	1.0%
Abrasion Resistance	ASTM D1044	20-25 mg.
Bond Strength	ACI 503	>350 psi 100% concrete failure
Hardness (Shore D)	ASTM D 2240	89-93
Impact Resistance	ASTM D 2794	160 in./lbs.
Freeze Thaw Resistance	ASTM C666	300 cycles pass

Packaging: 1 gallon and 5 gallon kits.

Mix Ratio by Volume: 2:1

Mix Ratio by Weight: 2.16:1 (lbs.)

Minimum Substrate Application Temperature: 40°F

Pot Life at 77°F: 15 min.

Dry to Touch (50°F-90°F): 7 to 12 hours

Recoat Time (77°F): 7 to 8 hours

Recoat Time (60°F): 10 to 12 hours

Light Foot Traffic (50°F-90°F): 7 to 12 hours



Geo-Seal EFC Primer



Product Description

Basic Use: Geo-Seal EFC Primer is a high performance 2-component 100% solids, concrete penetrating epoxy primer. As a component to the Geo-Seal EFC system, it is designed to bond to properly prepared concrete substrates including substrates that may have been contaminated by common concrete surface hardeners or curing agents. Geo-Seal EFC Primer contains no migratory plasticizers, phenols or unreacted amines which often leads to adhesion problems, especially when concrete moisture problems exist.

Composition: Geo-Seal EFC Primer is a plural component, low VOC, water based, low viscosity epoxy primer.

Benefits

- VOC and EPA Compliant in all states and provinces in North America. Cures to an inert finish.
- Penetrates into concrete substrates and exhibits excellent adhesive properties.
- Low odor during application & cure, can be applied in occupied facilities.
- Designed for new concrete substrates and for resurfacing existing substrates.

Limitations

- This product is best suited for applications in temperatures between 55°F to 85°F. Do not apply when relative humidity exceeds 85%.
- Higher temperatures will result in shortened working time and faster drying time.
- Substrate must be dry.
- Must not be thinned.

Technical Data

Shelf life: 1 year. Protect from direct sunlight exposure. Maintain temperature between 40°F - 80°F.

Properties: See physical properties table

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

Installation

Surface Preparation: Concrete substrate preparation by means of shot-blasting or diamond grinding to an ICRI CSP 2/3 is recommended (see ICRI Guideline No. 03732 for additional details). The pH of the concrete substrate should be at 9 or above. All materials that may inhibit bonding must be removed. Sub-slab moisture vapor drive must be less than 4 lbs. A test area should always be done prior to application using the same cleaning preparation and application procedures to be used on the project.

Application: Please refer to manufacturer's specifications. Mix at lowest RPM setting. Geo-Seal EFC Primer is applied at a minimum 10 mil thicknesses at a rate of approximately 160 SF per gallon.

Coverage rates may vary based on quality of slab surface porosity and consistency of concrete surface profile (CSP) achieved during prep work.

Only mix the amount of product that can be properly applied within 20-40 minutes and not left in the mixing bucket.

Availability and Packaging

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

Geo-Seal EFC Primer is available in 1 gal., 3 gal. and 15 gal. kits.

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.



Geo-Seal EFC Primer

Equipment

Disposable brushes, variable low speed drill with impeller mixing paddle, 3/8" non-shedding phenolic core rollers, roller frame and V-notched rubber squeegees.

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	Value
Solids Content.....		100%
VOC Content		0 gr./lt.
Shelf Life		1 year
Viscosity at 77°F		300-500 cps
Hardness, Shore D	ASTM D2240.....	73-78 (>48 hours)

Packaging: 1 gallon, 3 gallon and 15 gallon kits.

- Mix Ratio by Volume: 2:1
- Mix Ratio by Weight: 2.24:1 (lbs.)
- Dry to Touch (70°F): 7 to 9 hours
- Recoat Time (70°F): 7 to 24 hours (after 24 hours lightly sand product)
- Light Foot Traffic (70°F): 24 hours



Geo-Seal EFC Gel



Product Description

Basic Use: Geo-Seal EFC Gel is a plural component, semi-rigid, 100% solids epoxy used as cove paste, joint sealant, and crack filler. It features a combination of excellent adhesion and elongation not available in general purpose epoxies. Formulated to produce a workable paste with the addition of fine aggregate or decorative color quartz aggregate, it reinforces concrete joint edges, and minimizes the deterioration of concrete joint/crack edges to impacts. Geo-Seal EFC Gel should be used in lieu of elastomeric sealants that meet ASTM C920 Standard Specification for Elastomeric Joint Sealants which do not reinforce concrete joint edges. Geo-Seal EFC Gel can also be used as a "cove gel" for hanging a semi-rigid cove or skim coat for vertical wall applications.

Composition: Geo-Seal EFC Gel is a plural component, thixotropic, 100% solids, semi-rigid epoxy.

Benefits

- Easily workable concrete surface repair material of common spalls, cracks, bug holes and other concrete imperfections when mixed with fine aggregate.
- Versatile application as a concrete surface repair material, concrete edge reinforcement material or "cove gel" material.
- Self priming as a concrete repair material.
- Complies with USDA and FDA requirements.
- VOC and EPA Compliant in all states and provinces in North America.

Limitations

- Best suited for applications in temperatures between 55°F to 90°F. Do not apply when relative humidity exceeds 85%.
- Higher temperatures will result in shortened working time and faster drying time.

Technical Data

Shelf life: 1 year maintained between a 40°F and 100°F.

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.

Installation

Surface Preparation: All materials that may inhibit bonding must be removed. No surface priming is necessary when mixed with aggregate and applied as a concrete repair material or cove gel. Coating applications may require a primer. See EPRO Tech Bulletin: How to Choose a Primer. A test area should always be done prior to application using the same cleaning preparation and application procedures to be used on the project.

Application: Please refer to manufacturer's specifications.

Cleaning: Clean all tools and equipment with an acetone solvent or equivalent.

Availability and Packaging

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

Geo-Seal EFC Gel is available in 1 gallon kits with gel additive. Silica aggregate sold separately.

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.



Geo-Seal EFC Gel

Equipment

Variable low speed drill with impeller mixing paddle. Clean margin trowels or spatula for patching applications. 1 1/2" blade for filling cracks.

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	Value
Color	Clear
Solids Content.....	100%
VOC Content	0 gr./lt.
Shelf Life	1 year

Packaging: 1 gallon with gel additive.

- Mix Ratio by Volume: 2:1
- Mix Ratio by Weight: 2.29:1
- Minimum Substrate Application Temperature: 40°F
- Pot Life at 77°F (Standard): 30 minutes
- Dry to Touch (40°F - 90°F. Standard): 6 - 8 hours
- Recoat Time (40°F - 90°F. Standard): 12 - 72 hours
- Light Traffic (40°F - 90°F. Standard): 6 - 8 hours



PM Sealant

Product Description

Basic Use: PM Sealant is a Silyl Terminated Polyether (STPE) non-isocyanate, non-solvent detailing sealant that combines the strength of polyurethanes with the weathering resistance of silicones. PM Sealant can withstand the most stringent requirements for high performance bonding and elasticity under severe aging and UV weathering conditions without cracking or yellowing when subjected to extended UV-light exposure.

PM Sealant is used for penetration detailing, as a seam edge and patching detailing sealant, along the transition construction joint between two pours, and for sealing applied termination bar.

Compliances: Conforms to ASTM C920, Type S, Grade NS, Class 25, and AAMA 802.3 Type II Back Bedding Compound. USDA accepted.

Composition: PM Sealant is a gray, single-component, 100% solids, moisture-cured, elastomeric STPE sealant.

Benefits

- Replaces Silicone and Urethane sealants.
- Does not require a primer.
- Cures rapidly, even at low temperatures, and retains its properties to -75°F (-59°C).
- Non-reactive, PM Sealant will not oxidize or corrode metals.
- PM Sealant does not contain VOC's.
- Provides a continuous smooth surface.

Limitations

- Surfaces must be clean and dry for application.
- Surfaces must be free from frost or ice.

Technical Data

Properties: See physical properties table.

Coverages: Coverage is dependent on the size of application bead. Minimum Bead Size & Estimated Linear Coverage:

- 3/8" x 3/8" (10 mm x 10 mm): Penetrations, seam edges, corner & patch detailing.
 - Sausage: 21' (6.4 m)
- 3/4" x 3/4" with 1" cant (19 mm x 19 mm with 25 mm cant): Horizontal to vertical footing or brick ledge transition joint, wall vertical inside corner.
 - Sausage: 11' (3.4 m)

Storage and Handling: Store raised off the floor, away from moisture and sun, between 55-80°F (13-27°C).

Shelf Life: Sausage = 12 months.

Specification Writer: Contact EPRO before writing specifications on this product. EPRO System selection should be reviewed in order to meet project specific site conditions.

Installation

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

Application: Please refer to manufacturer's specifications.

Substrate Preparation: Use with adequate ventilation. Wipe substrates to receive PM Sealant clean to remove any dirt, dust, or moisture. Clean the surface of penetrations or protrusions with a wire brush to remove dirt, dust, rust, and loose particles. Surface must be free of frost or ice. No priming is necessary.

Installation: Determine minimum bead thickness and tool into surface.

Horizontal to vertical transition joints shall be applied like a caulk into a 1" (25 mm) cant, making sure product is injected into the joint with as well as applied to the surface.

Availability and Packaging

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

Sausage Size: 20 oz (591 ml), 2.5 lbs (1.13 kg)
Case Size: 20 sausages, 50 lbs (22.7 kg)

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

Caulking gun (20 oz. sausage capacity), knife, box cutter.

Technical Services and Information

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

This product was formally known as Primetak Detail Sealant by Kingfield Construction Products.



PM Sealant

Physical Property	Test Method	Value
Material		STPE
Color		Gray
Corrosive Properties		Non-corrosive
High Temperature Resistance		Up to 300°F for short periods
Low Temperature Flexibility		Properties retained to -75°F (-59°C)
Skin Time		< 30 minutes @ 77°F & 50% RH
Tack Free Time	ASTM C 679	< 60 minutes @ 77°F & 50% RH
Sag	ASTM D 2202	Non-sagging
Staining	ASTM C 510	Non-staining
Tensile Strength	ASTM D 412	225 PSI
Lap Shear (shear rate = 1"/min)	(internal eq. ASTM D 1002)	275 PSI
Elongation	ASTM D 412	275%
Hardness	ASTM C 661	45-50
Ultraviolet Radiation (UV) Rating	ASTM G 26	2000+ hours UV-A, no change in appearance or physical properties

Dimensions: Sausage: 20 oz (591 ml)

Weight: Sausage: 2.5 lbs (1.13 kg)



Applications: Vapor Intrusion Coating for Existing Structures
Spec Version: EPRO SPEC Geo-SealEFC.v7.01.23
Date issued: July, 2023
Note: This specification may be superseded at any time. Check eproinc.com for the most up to date version of this specification.

SECTION 09 96 56 EPOXY FLOOR COATINGS

Geo-Seal EFC Guide Specification Contaminate Vapor Intrusion Epoxy Floor Coating

Geo-Seal EFC is a highly chemically resistant, impervious epoxy coating specially formulated to protect existing structures from contaminant vapor intrusion without the need for additional concrete protection. This guide specification has been prepared according to the principles established in the Manual of Practice published by the Construction Specification Institute.

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

GEO-SEAL EFC CONTAMINATE VAPOR INTRUSION EPOXY FLOOR COATING SPECIFICATION

SECTION 09 96 56 – EPOXY FLOOR COATING

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 Work of this Section includes, but is not limited to, Geo-Seal EFC Contaminate Vapor Intrusion Epoxy Floor Coating.
- B. Related Sections:
 - 1. Section 02 24 00: Environmental Assessment
 - 2. Section 02 32 00: Geotechnical Investigation
 - 3. Section 03 30 00: Cast-in-Place Concrete
 - 4. Section 03 40 00: Precast Concrete
 - 5. Section 07 92 00: Joint Sealants
 - 6. Section 09 00 00: Finishes

1.3 REFERENCE STANDARDS

- A. The following standards and publications are applicable to the extent referenced in the text.
- B. American Standard Testing Methods (ASTM):
 - D 695 Standard Test Method for Compressive Properties of Rigid Plastics
 - D 790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
 - D 638 Standard Test Method for Tensile Properties of Plastics
 - D 1044 Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion by the Taber Abraser
 - D 2240 Standard Test Method for Rubber Property—Durometer Hardness
 - D 2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
 - C 666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing

- D 4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- D 522 Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings
- F 1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
- F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

C. American Concrete Institute (ACI):

- 503 Guide for the Selection of Polymer Adhesives in Concrete

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide a complete contaminate vapor intrusion epoxy floor coating system for concrete surfaces that meet the requirements for specific use indicated in the contract documents. Include all applicable substrate testing, surface preparation, and detail work.

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 coating, details for substrate joints and cracks, drains, penetrations, transitions, and termination conditions.
- C. Samples: Submit two standard size samples of the following:
 - 1. Individual components of the specified coating system.
- D. Applicator Certification: Submit written confirmation at the time of bid that applicator is currently approved by the coating manufacturer.
- E. Manufacturer's Warranty Requirements: Submit complete documentation of manufacturer's warranty requirements and sample warranty.

1.6 QUALITY ASSURANCE

- A. Applicator Qualifications: Epoxy coating applicator shall be an EPRO Authorized Applicator who is trained and approved for **Geo-Seal EFC** application in accordance with EPRO standards and policies.
- B. Pre-Construction Meeting: A meeting shall be held prior to application of the epoxy floor coating 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 representative
 - 2. EPRO certified applicator
 - 3. General contractor
 - 4. Owner's representative

5. Project design team
 6. All appropriate related trades
- C. Field Sample: Apply epoxy coating system field sample to 100 ft² (9.3 m²) of each assembly to demonstrate proper application techniques, standard of workmanship, and to confirm the aesthetic of the coating is acceptable.
1. Notify epoxy coating system manufacturer representative, architect, and other appropriate parties one week in advance of the dates and times when field sample will be prepared.
 2. If architect and manufacturer representative determine that field sample does not meet requirements; reapply epoxy coating 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 epoxy coating system. An undamaged field sample may become part of the completed work.
- D. Materials: Epoxy coating system and auxiliary materials shall be single sourced from the epoxy coating manufacturer.

1.7 MATERIAL DELIVERY, STORAGE AND DISPOSAL

- A. Delivery: Deliver materials to site labeled with manufacturer's name, product brand name, material type, and batch number. 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. 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 by the certified applicator and accepted by the certified inspector prior to application.

1.9 WARRANTY

- A. General Warranty: The special warranty specified in this section shall not deprive the owner of other rights the owner may have under other provisions of the contract documents, and shall be in addition to, and run concurrent with, other warranties made by the contractor under requirements of the contract documents.
- B. Special Warranty: Submit a written warranty signed by waterproofing manufacturer agreeing to replace system materials that do not conform with manufacturer's published specifications or are deemed to be defective. Warranty does not include failure of the epoxy coating due to failure of concrete substrate prepared and treated according to requirements or formation of new joints and cracks in the specially applied concrete that exceed 1/8 inch (3.175 mm) in width.
1. Warranty Period: 1 year after date of substantial completion.
 2. Coverage: Manufacturer will guarantee that the material provided is free of defect for the warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 MATERIALS

- A. Contaminate vapor intrusion epoxy coating: **Geo-Seal EFC** is a highly chemically resistant, impervious epoxy coating specially formulated to protect existing structures from contaminant vapor intrusion without the need for additional concrete protection. Provide system with the following physical properties:

PROPERTIES	VALUE	TEST METHOD
Compressive Strength	14,500 PSI (16,500 PSI with aggregate)	ASTM D 695
Flexular Strength	19,200	ASTM D 790
Tensile Elongation	1.0%	ASTM D 638
Abrasion Resistance	20-25 mg.	ASTM D 1044
Bond Strength	>350 psi 100% concrete failure	ACI 503
Hardness (Shore D)	89-93	ASTM D 2240
Impact Resistance	160 in. / lbs.	ASTM D 2794
Freeze Thaw Resistance	300 cycles (pass)	ASTM C 666
Benzene Diffusion	$4.0 \times 10^{-17} \text{ m}^2/\text{sec}$	
PCE Diffusion	$2.1 \times 10^{-17} \text{ m}^2/\text{sec}$	

Primer

1. **Geo-Seal EFC Primer** is a plural component, zero VOC, 100% solids, low viscosity, concrete penetrating epoxy primer with the following physical properties:

PROPERTIES	VALUE	TEST METHOD
Hardness (Shore D)	73-78 (>48 hours)	ASTM D 2240

Optional Moisture Mitigating Primer

1. **Geo-Seal EFC MM** is a plural component, zero VOC, 100% solids, ultra-low viscosity concrete penetrating moisture mitigating epoxy primer with the following physical properties:

PROPERTIES	VALUE	TEST METHOD
Hardness (Shore D)	73-78 (>48 hours)	ASTM D 2240
Adhesion to Concrete	>500 PSI ¹	ASTM D 7234
Moisture Vapor Emission Rate	>80% Reduction ¹	ASTM F 1869

1. Tested at >20 lbs/1000 ft²/24 hrs MVTR

Optional Top Coat

1. **Geo-Seal EFC Clear Coat** is a plural component abrasion, stain-resistant, fast curing epoxy top coat designed to increase the longevity of the system and has the following physical properties:

PROPERTIES	VALUE	TEST METHOD
Solids Content, by volume (Clear Gloss)	100%	ASTM D 2697
Hardness (Shore D)	75-79 @ 55 F	ASTM D 2240
Abrasion Resistance	<50 mg.	ASTM D 1044

2.3 AUXILIARY MATERIALS

- A. General: All auxiliary materials shall be provided by the specified coating manufacturer. Auxiliary materials used in lieu of, or in addition to, the manufacturer's materials must be approved in writing by EPRO prior to installation.
1. Detailing Material: **PM Sealant** an STPE moisture cure detailing sealant.
 2. Substrate Patching Material: **Geo-Seal EFC Gel** is a plural component, thixotropic, 100% solids, semi-rigid epoxy.
 3. Backer Rod: Closed cell polyethylene foam

PART 3 - EXECUTION

3.1 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.
- B. Examine all substrates, areas, and conditions under which the epoxy coating system will be installed, applicator and inspector must be present. Do not proceed with installation until unsatisfactory conditions have been corrected and surface preparation requirements have been met. If conditions exist that are not addressed in this section notify inspector and contact EPRO for additional clarification.
1. That the concrete deck surface is free of ridges and sharp projections, sound and dry.
 2. That the concrete was cured for a minimum of 28 days. (Minimum of 3,500 psi compressive strength). The use of concrete curing agents, if any, shall be of the sodium silicate base only; others require written approval by EPRO.
 3. That damaged areas of the concrete substrate be restored to match adjacent areas. Use Geo-Seal EFC Gel for filling and leveling mixed with recommended amount of aggregate/filler.
 4. Due to hydrostatic, capillary and moisture vapor pressure, the moisture vapor emission of concrete shall not exceed 3 lbs/1,000 sq. ft./24 hrs, when tested by the quantitative calcium chloride test method (ASTM F1869). Relative Humidity is not to exceed 75% when tested by In-situ Probe Test (ASTM F2170). If site conditions exceed these parameters, moisture mitigation primers are available.

3.2 SUBSTRATE PREPARATION

- A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean, relatively smooth, dust free, and dry substrate for epoxy coating application. The pH of the concrete substrate should be at 9 or above.

- B. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from substrate. Contaminated surfaces must be vigorously scrubbed with a power broom and a strong non-sud detergent. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods.
- C. Mechanically prepare surface by shot-blasting or diamond grinding to industry standard surface texture (ICRI's CSP3-4) without causing additional surface defects to substrate. Shot-blasting and diamond grinding does not remove deep penetrating oils, grease, tar or asphalt stains. Follow proper cleaning procedures to ensure proper bonding of the epoxy coating. Note: Contact EPRO Technical Service for alternative surface preparation methods.
- D. Fill all non-moving cracks with Geo-Seal EFC Gel after shotblasting. Fill control and cold joints flush with Geo-Seal EFC Patch at 3/4" depth. Install backer rod if necessary to limit depth to 3/4".
- E. Seal expansion and isolation joints $\geq$ 1" in width PM Sealant. Sealant shall be applied to inside of joint only, not applied to floor surface.

3.3 APPLICATION

- A. General: The contaminate vapor intrusion epoxy floor coating shall be applied to the vertical wall or slab under strict accordance with the manufacture's guideline and project specifications. Complete all substrate preparation before applying the coating over the field of the substrate.
- B. Primer Application
 - 1. Mix at lowest RPM to prevent air entrapment in prepared mix and apply Geo-Seal EFC Primer at a minimum rate of 160 square feet per gallon (10 mils WFT) to prepared substrate with a notched squeegee. Back roll with a short napped phenolic roller to assure even coverage.
- C. Base Coat Application
 - 1. Mix at lowest possible RPM to prevent air entrapment in prepared mix and apply 20 mil coat of Geo-Seal EFC at a minimum rate of 80 square feet per gallon (20 mils WFT) to properly primed and prepared substrate with a notched squeegee. Back roll with a short napped phenolic roller to assure even coverage.
- D. Aggregate Application
 - 1. Broadcast blended silica quartz into wet epoxy base coat until refusal at a rate of approximately 50 pounds per 100 square feet. Maintain a one to two foot wet edge without any aggregate to allow for a smooth transition to the next pass of neat epoxy. Allow to cure 8 to 12 hours at 70°F/21°C. Remove excess aggregate and lightly sand with a circular floor sander and #50 grit sandpaper to remove any rough spots.
- E. Top Coat Application
 - 1. Mix at lowest RPM to prevent air entrapment in prepared mix and apply Geo-Seal Clear Coat a minimum rate of 160 square feet per gallon (10 mils WFT) over Geo-Seal EFC base coat with a notched squeegee. Back roll with a short napped phenolic roller to assure even coverage.

3.4 QUALITY CONTROL

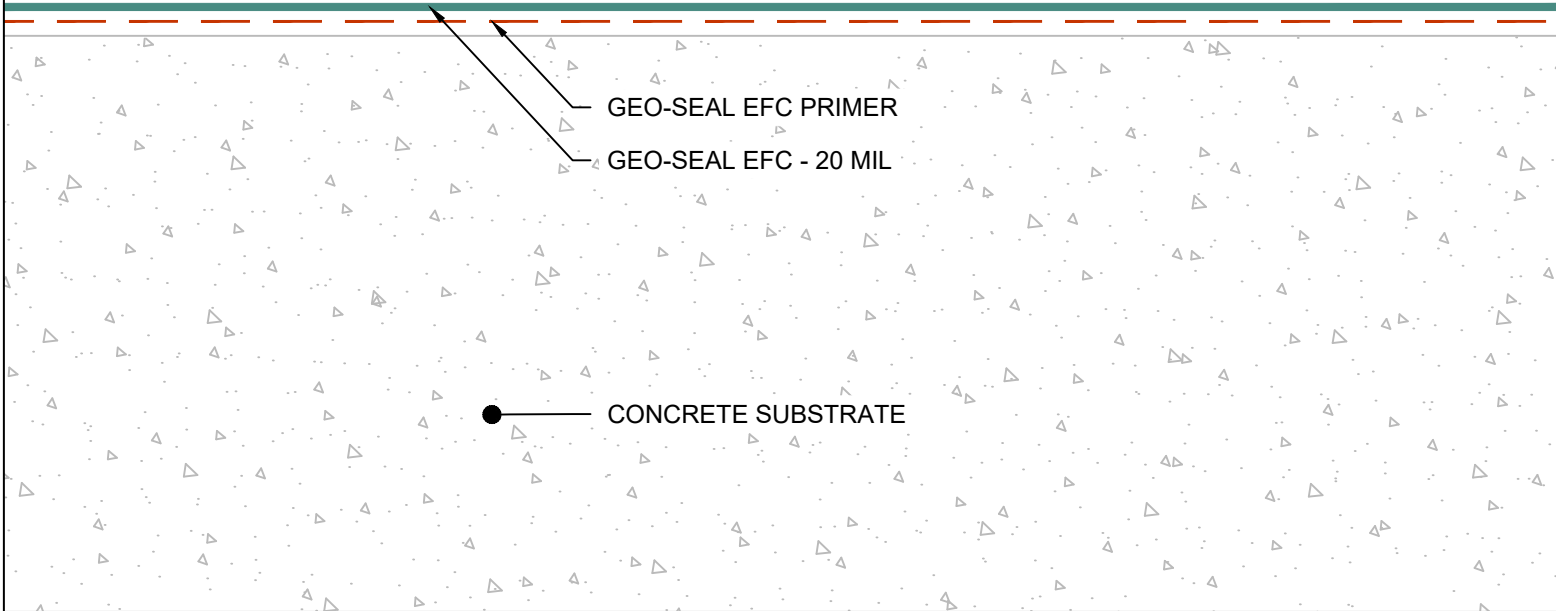
- A. **Geo-Seal EFC** is 100% solids. When applied 1 gallon will yield 80 square feet. Confirm the amount of material used corresponds the square footage of application.

- B. Use a wet film gauge to spot check the thickness of **Geo-Seal EFC** to make certain the proper mil thickness has been applied. Since the material is 100% solid, the material will not shrink after curing. Due to the thickness of the coating and the uneven substrate professional judgement will need to be utilized because of high or low points in the underlying substrate.

3.5 PROTECTION AND CLEANING

- A. Strictly comply with installation guidelines in manufacturer's published literature, including but not limited to, the following:
 - 1. After completion of application, allow system to cure for 24 hours at 75°F/23°C before allowing foot traffic, 48 hours before allowing heavy loading.
 - 2. Properly dispose of all debris and unused materials.
 - 3. Clean tools and surfaces before the materials cure.
- B. Proper and routine floor care will extend the life of **Geo-Seal EFC**. Use a damp mop to clean dust and debris from coating, conventional commercial cleaners are acceptable. Never use any abrasive cleaners to clean the coating system.

End of Section



AS A SUPPLIER OF FINISHED PRODUCTS 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.

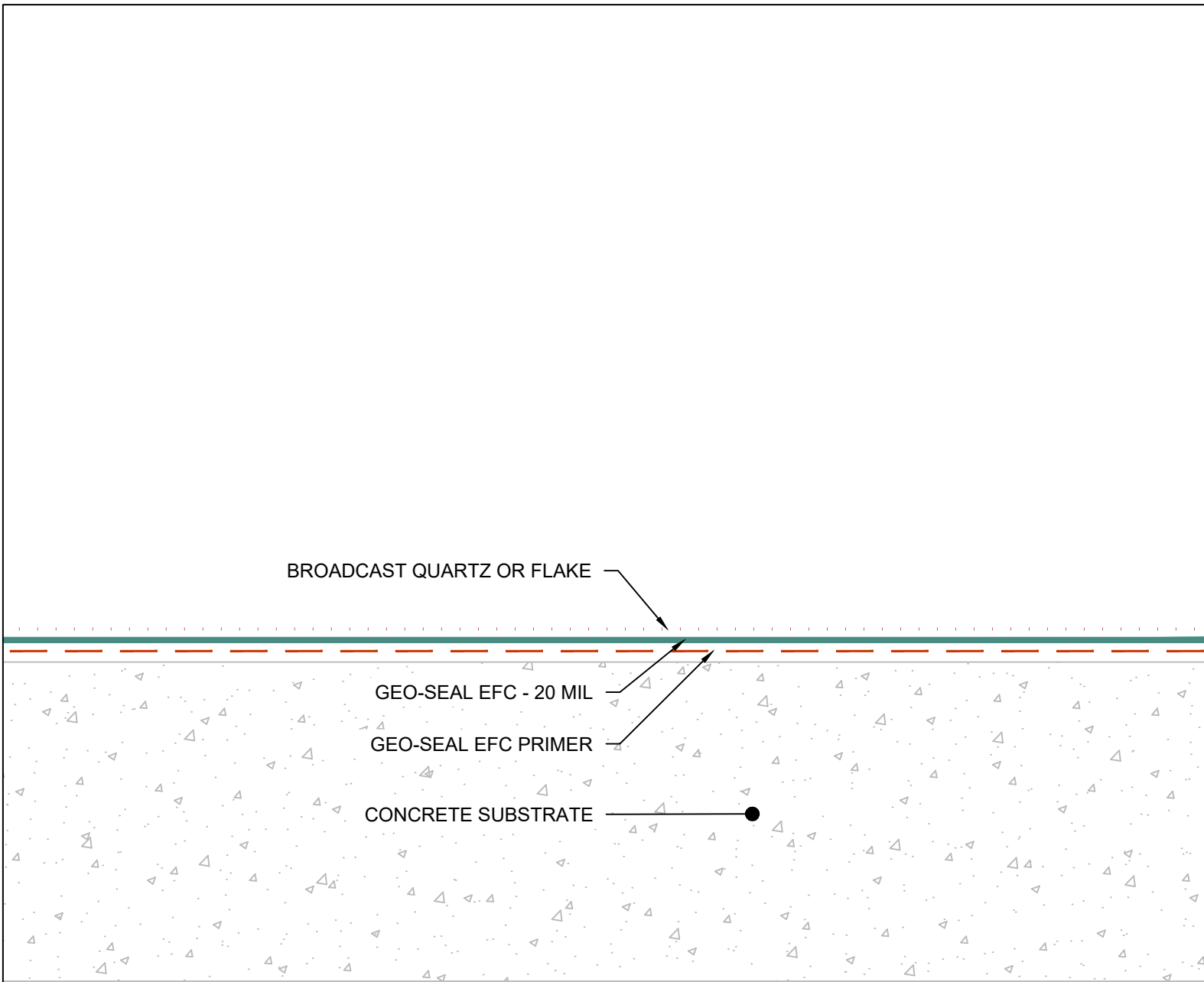


1328 E. KELLOGG DRIVE
WICHITA, KS 67211
1-800-882-1896
EPROINC.COM

Geo-Seal®
Vapor Intrusion Barrier



DRAWING NUMBER	
60.001.0	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
STANDARD APPLICATION	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



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DRAWING NUMBER

60.002.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**BROADCAST
APPLICATION**

DATE

12/08/2021

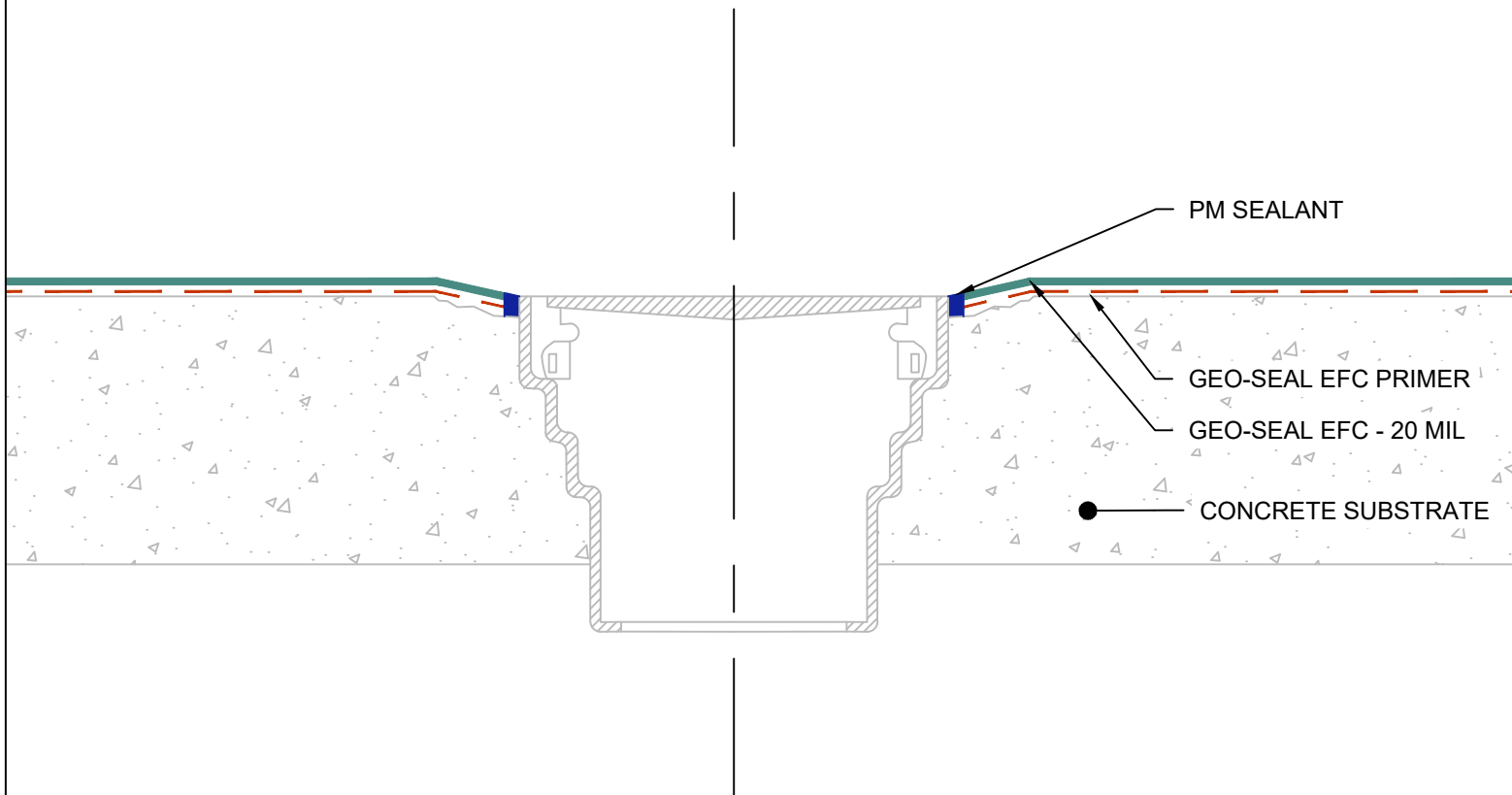
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RJT

SCALE

NTS

PAGE 1 OF 1



PM SEALANT

GEO-SEAL EFC PRIMER

GEO-SEAL EFC - 20 MIL

CONCRETE SUBSTRATE

epro
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Geo-Seal®
Vapor Intrusion Barrier

DRAWING NUMBER

60.003.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**AREA
DRAIN
DETAIL**

DATE

12/08/2021

DRAWN BY

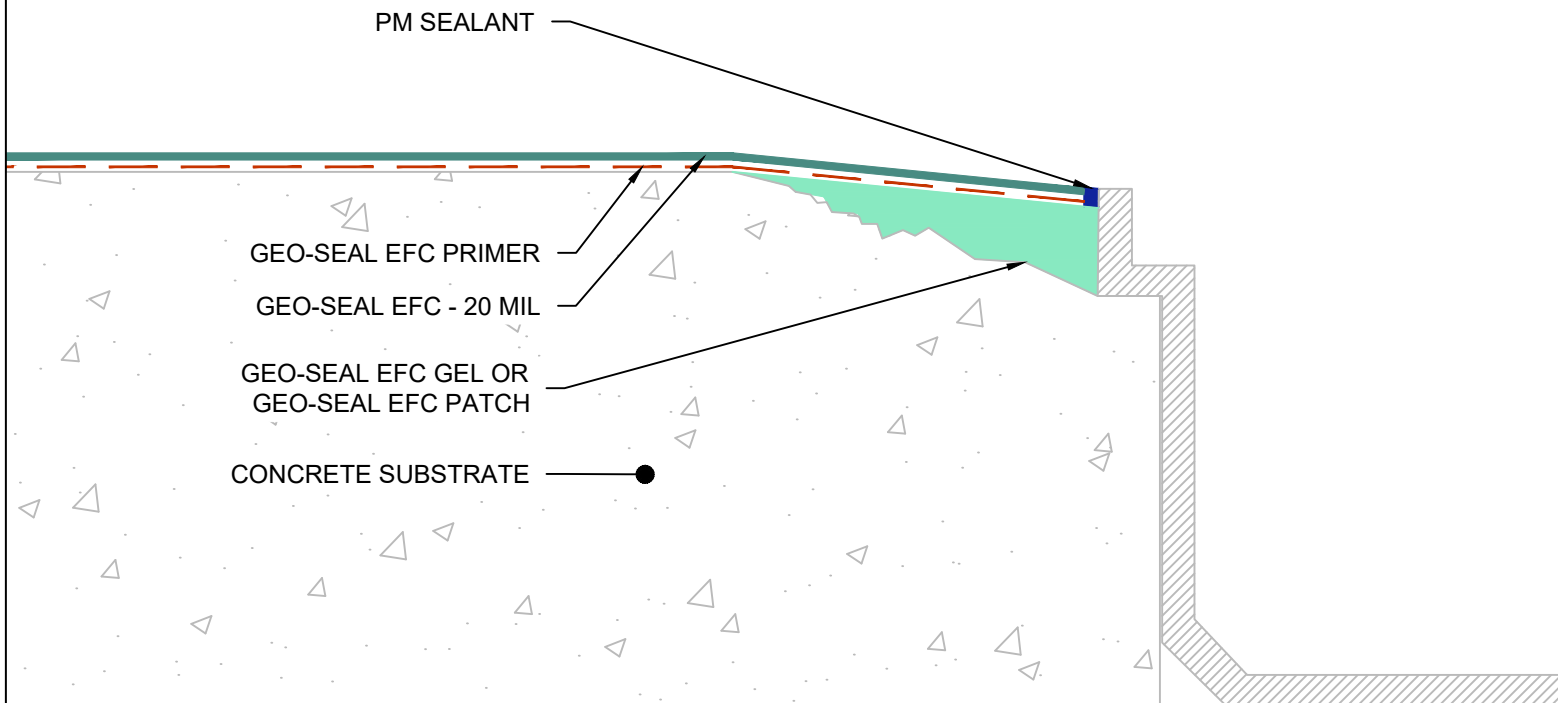
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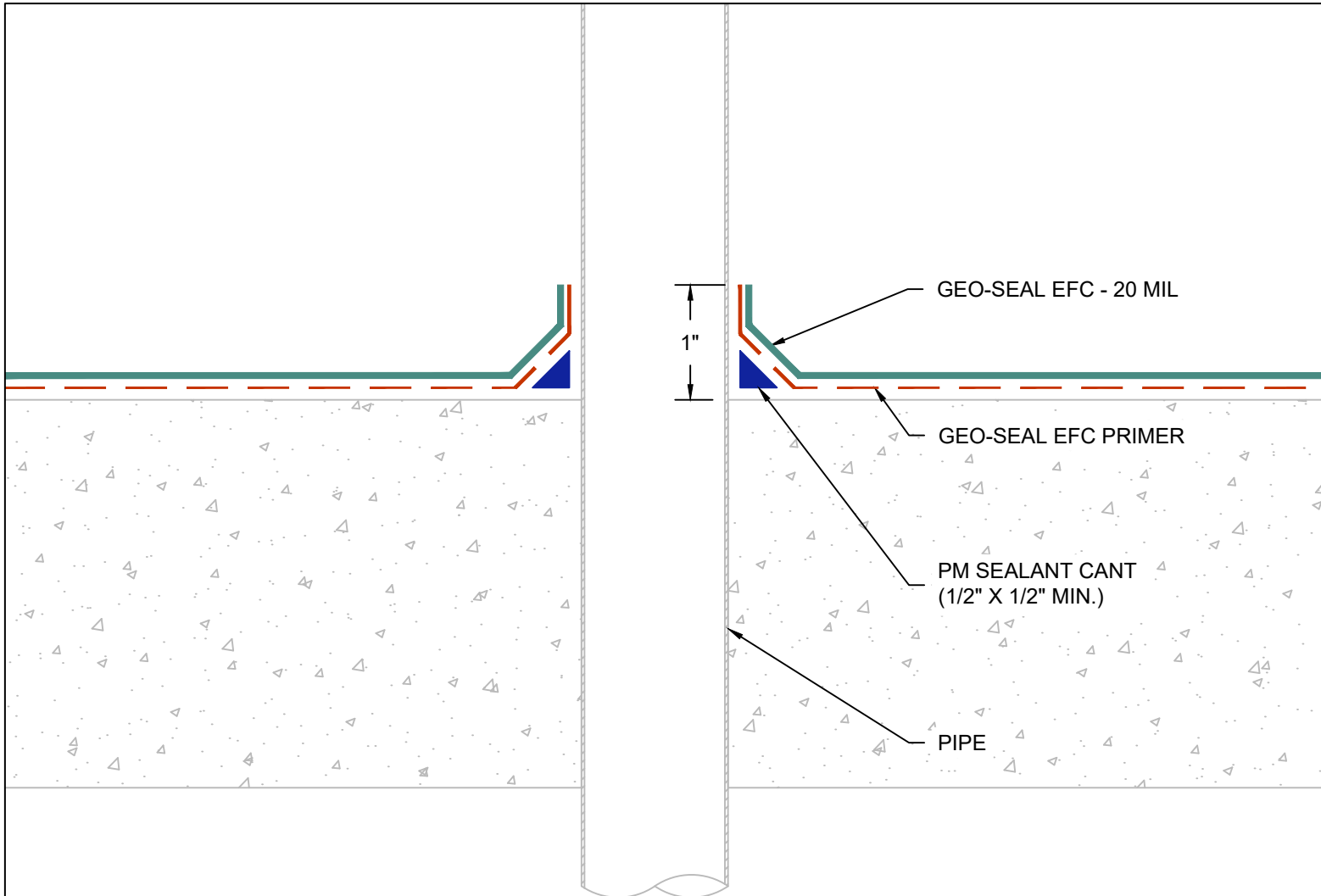
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Geo-Seal®
Vapor Intrusion Barrier

DRAWING NUMBER	
60.004.0	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
PRE-FABRICATED TRENCH DRAIN	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



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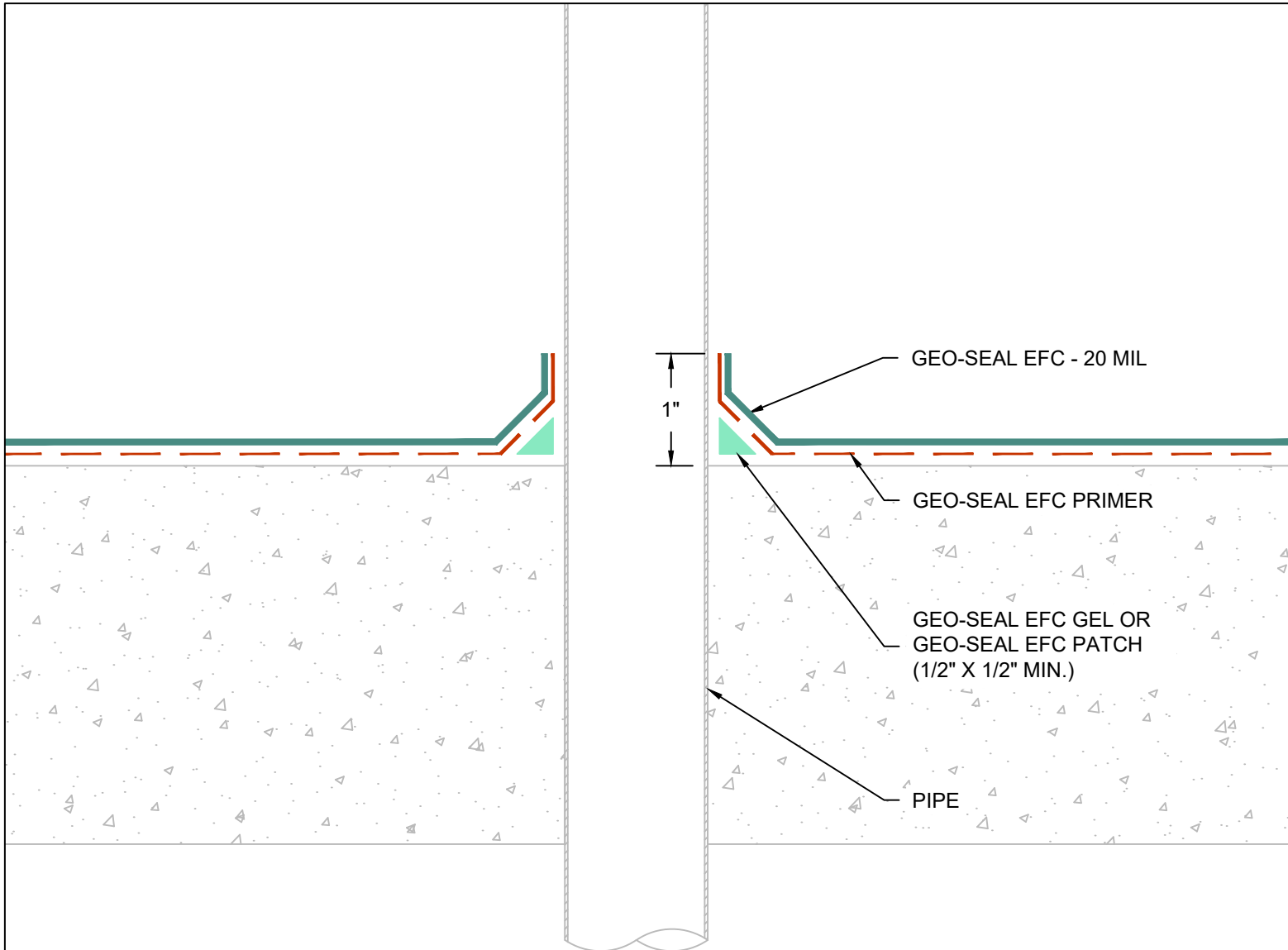
1. ALL PIPES, CONDUITS, AND SLEEVES SHALL BE FREE OF DIRT, CONCRETE SPLATTER, PAINT, OIL, AND RUST.

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 1-800-882-1896
 EPROINC.COM

Geo-Seal®
 Vapor Intrusion Barrier

DRAWING NUMBER	
60.005.1	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
PIPE PENETRATION OPTION 1	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



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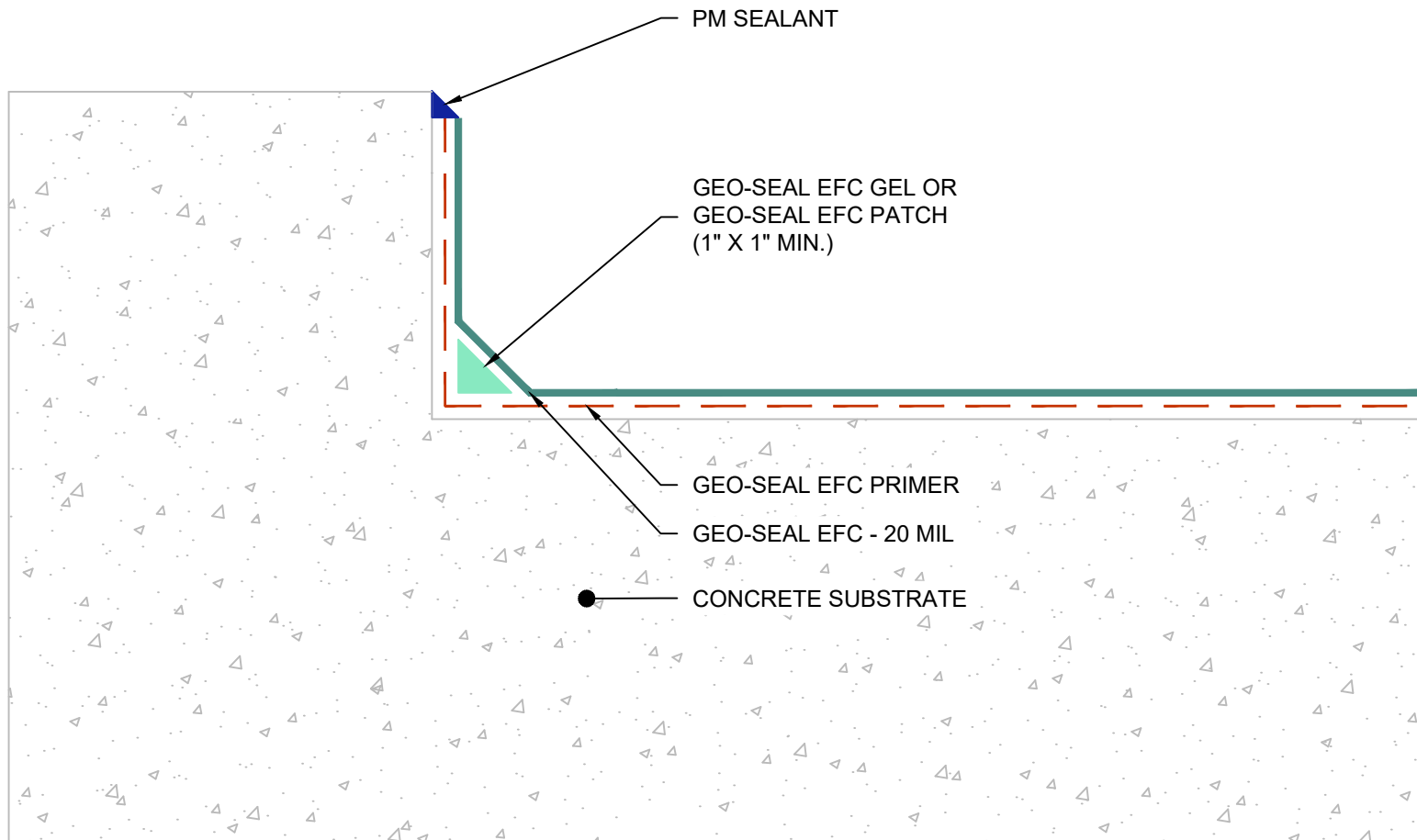
1. ALL PIPES, CONDUITS, AND SLEEVES SHALL BE FREE OF DIRT, CONCRETE SPLATTER, PAINT, OIL, AND RUST.

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Geo-Seal®
Vapor Intrusion Barrier

DRAWING NUMBER	
60.005.2	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
PIPE PENETRATION OPTION 2	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



PM SEALANT

GEO-SEAL EFC GEL OR
GEO-SEAL EFC PATCH
(1" X 1" MIN.)

GEO-SEAL EFC PRIMER

GEO-SEAL EFC - 20 MIL

CONCRETE SUBSTRATE

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Geo-Seal®
Vapor Intrusion Barrier

DRAWING NUMBER

60.006.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**STANDARD
TROWEL COVE
BASE**

DATE

12/08/2021

DRAWN BY

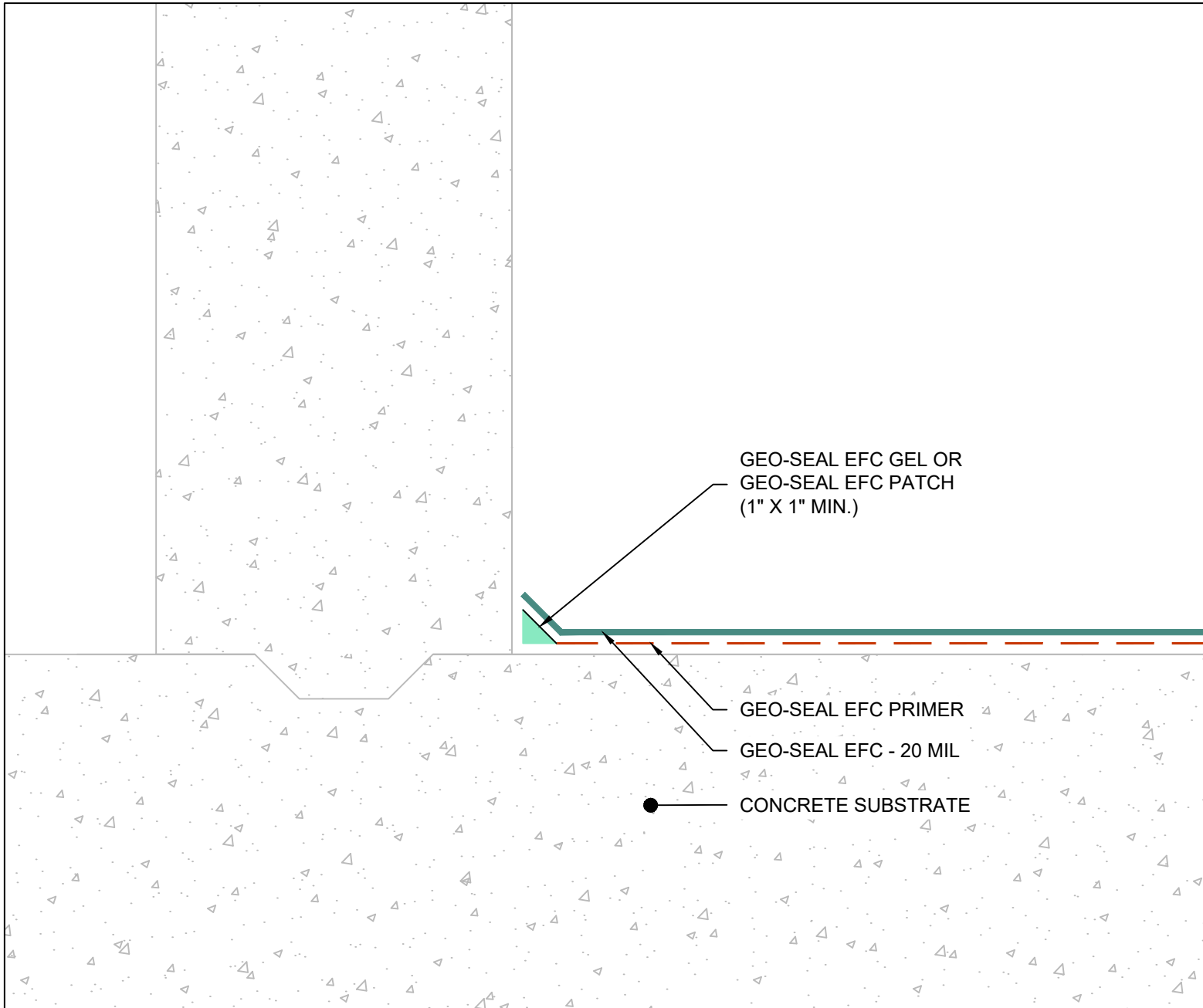
RJT

SCALE

NTS

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Geo-Seal®
Vapor Intrusion Barrier



DRAWING NUMBER

60.007.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**TERMINATION AT
COVE BASE**

DATE

12/08/2021

DRAWN BY

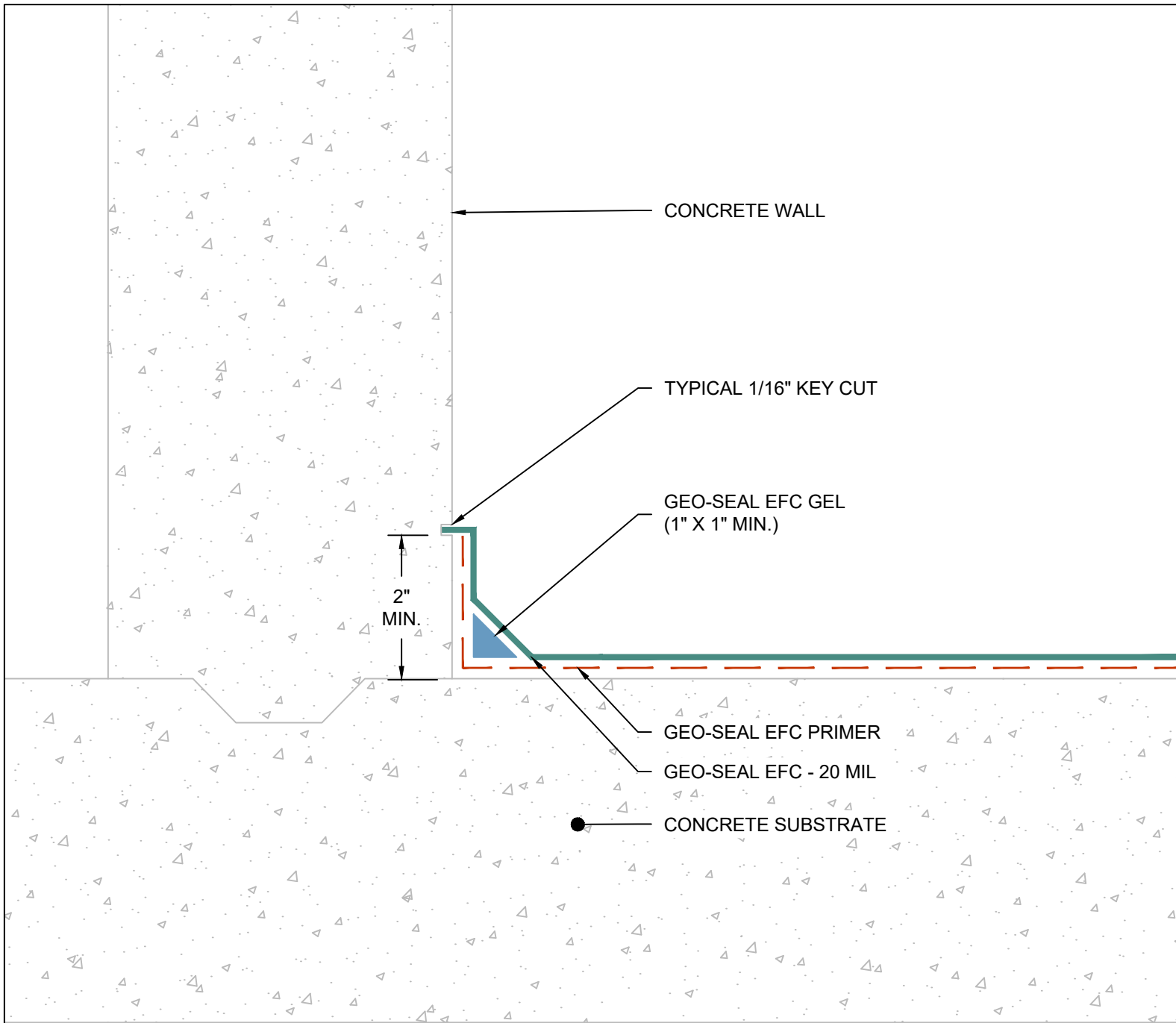
RJT

SCALE

NTS

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Geo-Seal®
Vapor Intrusion Barrier



DRAWING NUMBER

60.008.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**HORIZONTAL TO
VERTICAL
STANDARD COVE
BASE
TERMINATION**

DATE

12/08/2021

DRAWN BY

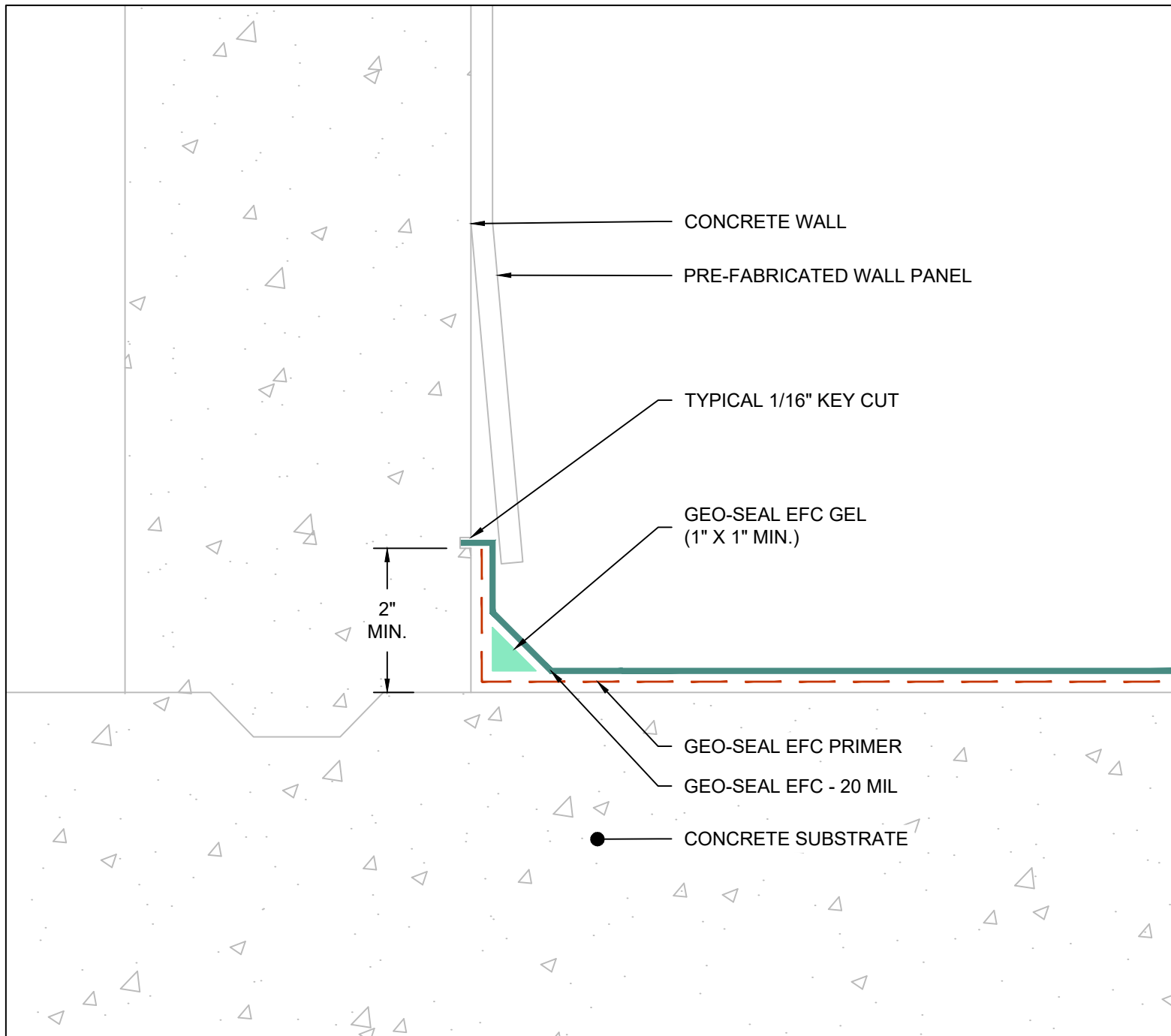
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SCALE

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G:\My Drive\Epro Master Folder\Drafting\Details\Top Coat\60.009.0 Geo-Seal EFC - Horizontal to Vertical Standard Cove Base Termination at Prefabricated Wall System.dwg [Detail] December 08, 2021 - 10:29am

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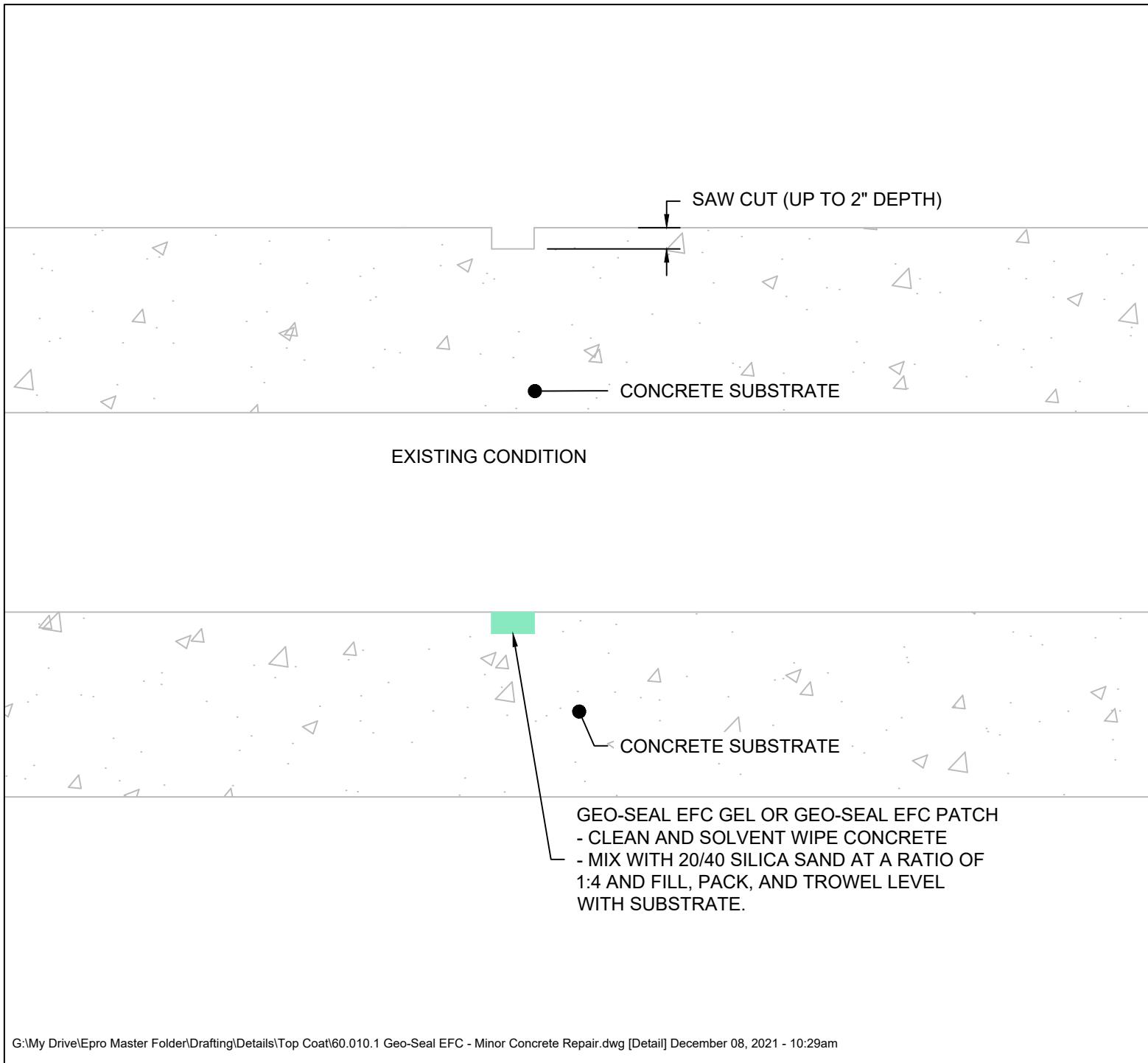


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Vapor Intrusion Barrier



DRAWING NUMBER	
60.009.0	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
HORIZONTAL TO VERTICAL STANDARD COVE BASE TERMINATION AT PRE FABRICATED WALL SYSTEM	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



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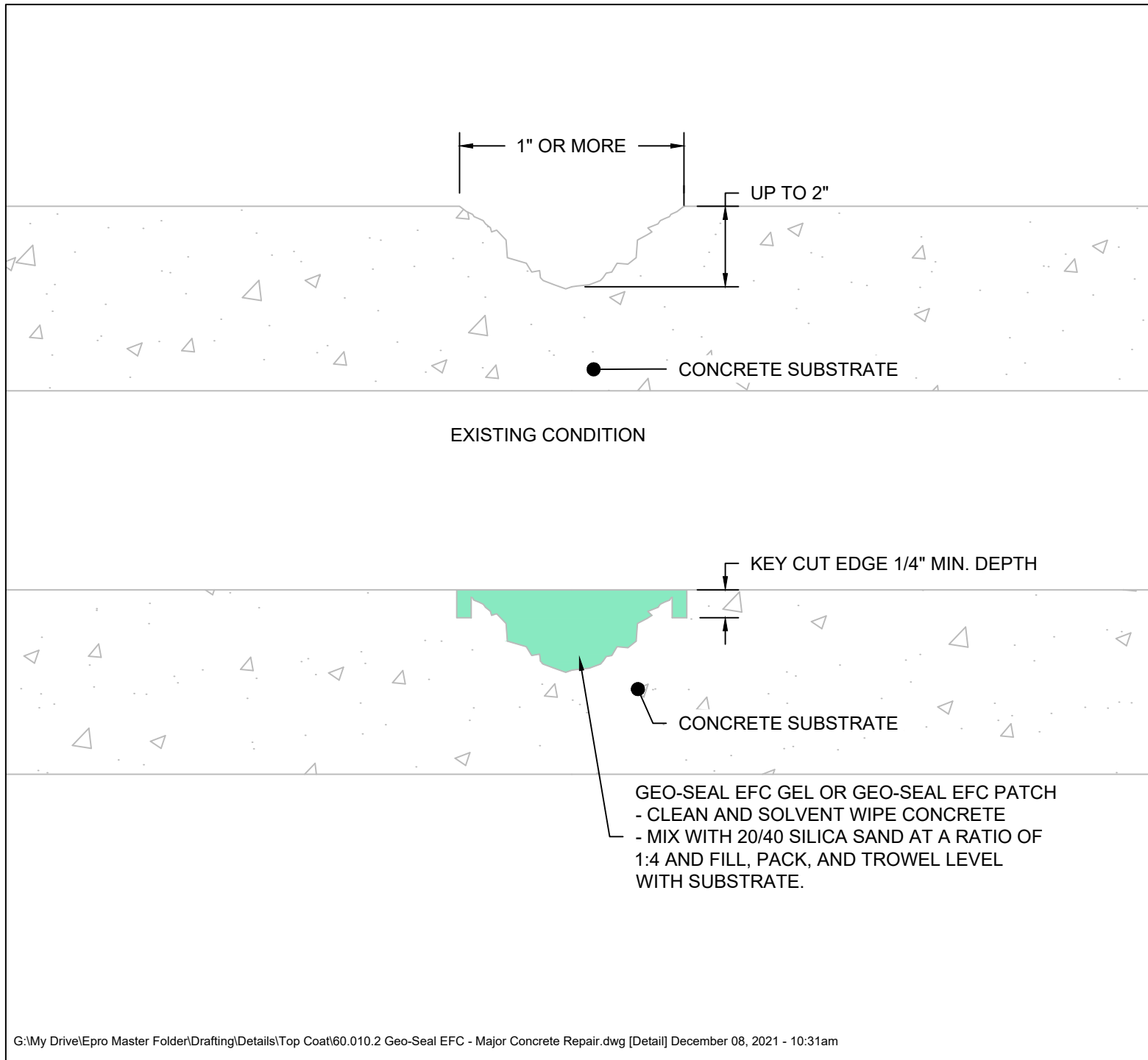


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1-800-882-1896
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DRAWING NUMBER	
60.010.1	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
MINOR CONCRETE REPAIR	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	



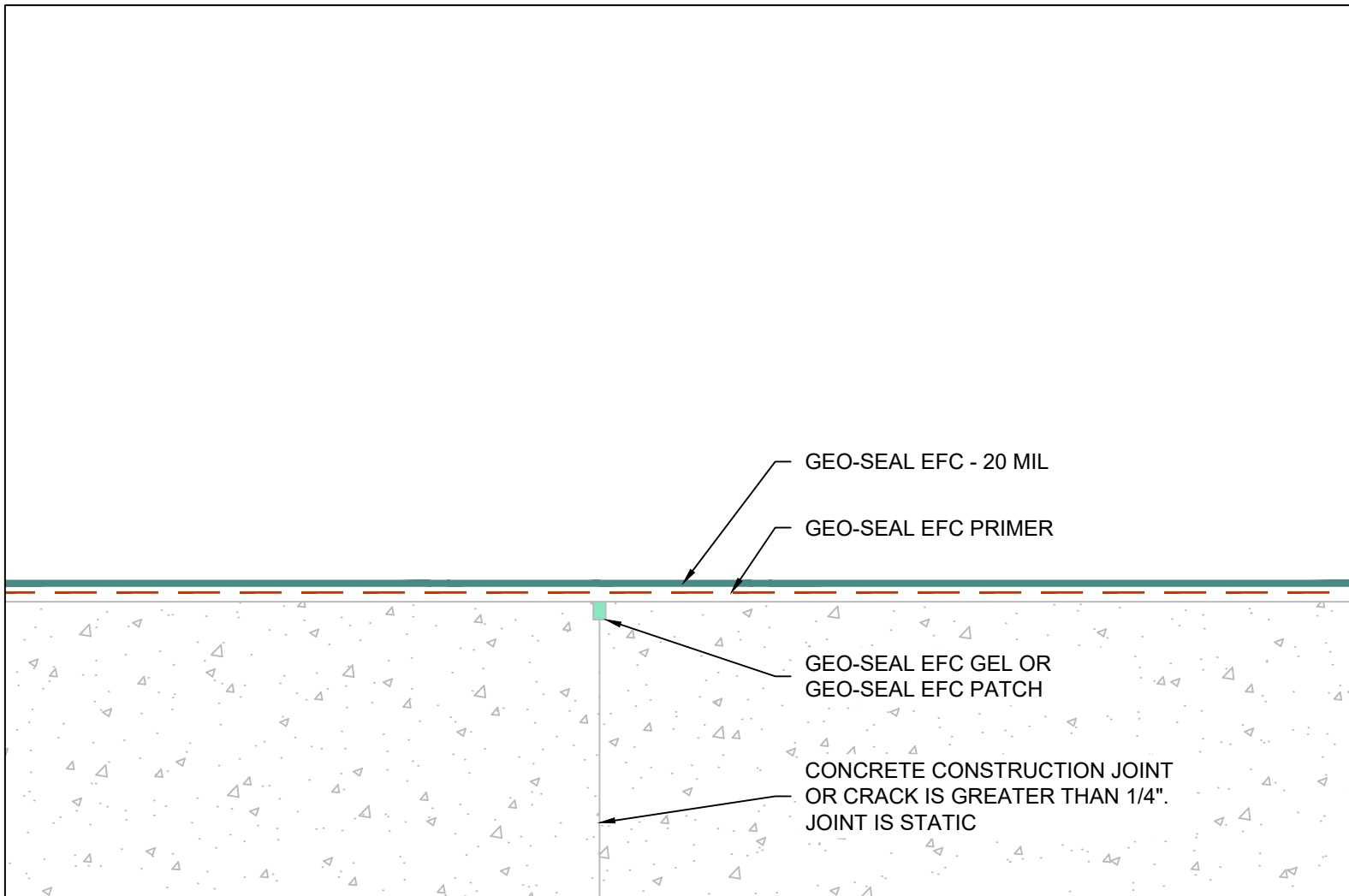
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DRAWING NUMBER	
60.010.2	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
MAJOR CONCRETE REPAIR	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
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Geo-Seal®
Vapor Intrusion Barrier



DRAWING NUMBER

60.011.0

SYSTEM NAME

GEO-SEAL EFC

SYSTEM DESCRIPTION

**CRACK
WITHOUT
MOVEMENT
REPAIR**

DATE

12/08/2021

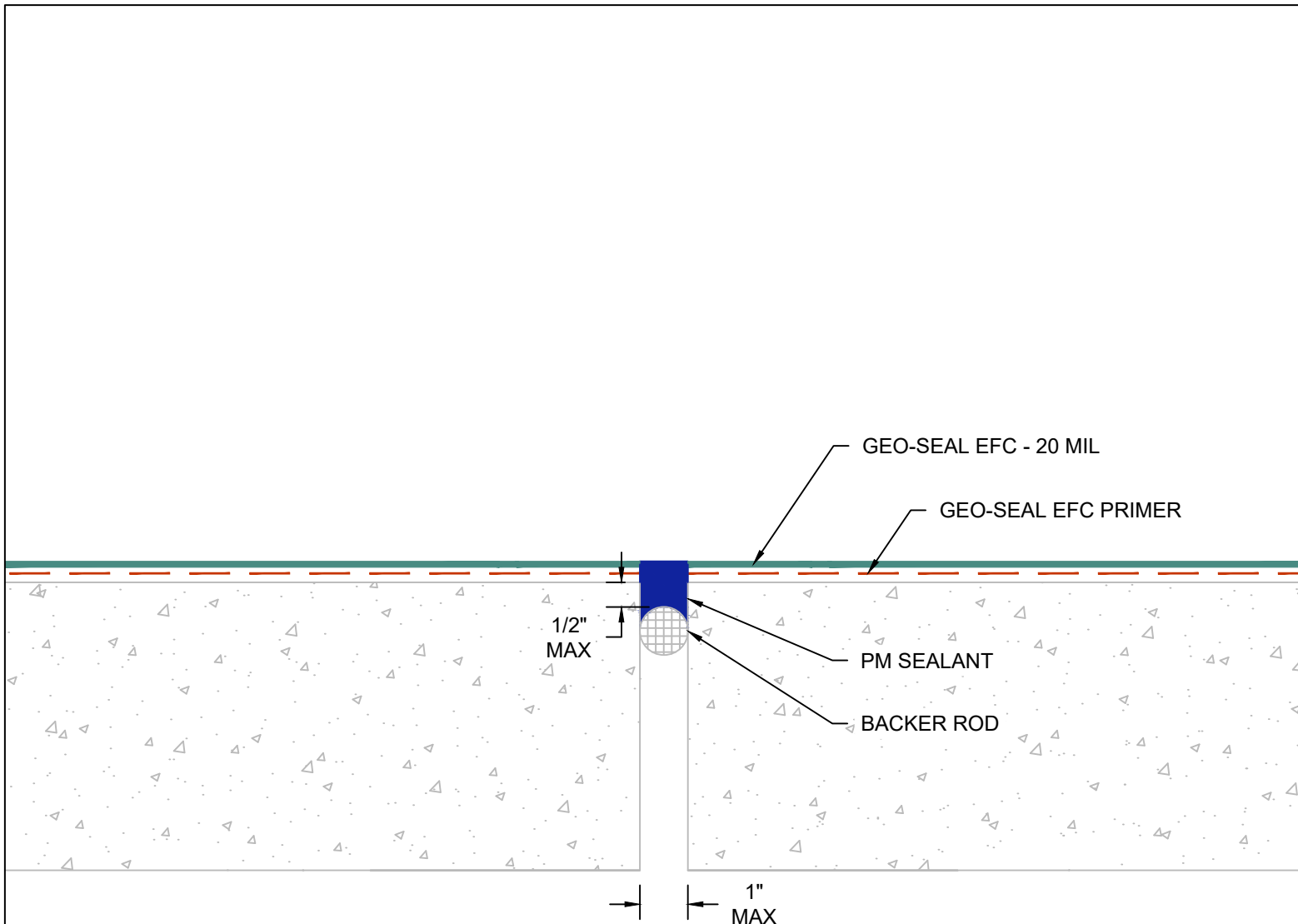
DRAWN BY

RJT

SCALE

NTS

PAGE 1 OF 1



- NOTES:
1. JOINT MOVEMENT NO MORE THAN 1/4".
 2. DO NOT EXTEND GEO-SEAL EFC OVER JOINT SEALANT.

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1-800-882-1896
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Geo-Seal[®]

Vapor Intrusion Barrier



DRAWING NUMBER	
60.012.0	
SYSTEM NAME	
GEO-SEAL EFC	
SYSTEM DESCRIPTION	
EXPANSION JOINT	
DATE	
12/08/2021	
DRAWN BY	SCALE
RJT	NTS
PAGE 1 OF 1	