

Geo-Seal® Vapor-Vent
SOIL GAS COLLECTION SYSTEM
Version 1.2

SECTION 02292 – BROWNFIELD/METHANE GAS CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Substrate preparation.
 - 2. Strip Composite installation.
 - 3. Strip Composite accessories.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 2 Section “Earthwork”, “Pipe Materials”, “Sub-drainage systems”, “Gas Control System”, “Vapor intrusion barrier”.
 - 2. Division 3 Section “Cast-in-Place Concrete” for concrete placement, curing, and finishing.
 - 3. Division 5 Section “Expansion Joint Cover Assemblies”, for expansion-joint covers assemblies and installation.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide a gas venting material that collects gas vapors and directs them to discharge or to collection points as specified in the gas vapor collection system drawings and complies with the physical requirements set forth by the manufacturer.

1.4 SUBMITTALS

- A. Submit Product Data for each type of gas venting system specified, including manufacturer’s specifications.
- B. Sample – Submit representative samples of the following for approval:
 - 1. Gas venting, strip geocomposite.
 - 2. Strip composite accessories.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified in writing and approved by Vapor intrusion barrier manufacturer Land Science Technologies for the installation of the Geo-Seal® Vapor intrusion barrier System.
- B. Manufacturer Qualification: Obtain gas venting, vapor intrusion barrier and system components from a single manufacturer Land Science Technologies
- C. Pre-installation Conference: A pre-installation conference shall be held prior to installation of the venting system, vapor intrusion barrier and waterproofing system to assure proper site and installation conditions, to include contractor, applicator, architect/engineer and special inspector (if any).

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site as specified by manufacturer labeled with manufacturer’s name, product brand name and type, date of manufacture, shelf life, and directions for handling.

- B. Store materials as specified by the manufacturer in a clean, dry, protected location and within the temperature range required by manufacturer. Protect stored materials from direct sunlight.
- C. Remove and replace material that is damaged.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Land Science Technologies, San Clemente, CA. 949-366-8000

- 1. Strip Geocomposite – Geo-Seal Vapor-Vent

2.2 GAS VENT MATERIALS

- A. Strip Geocomposite – Geo-Seal Vapor-Vent is a low profile, trenchless, flexible, sub slab vapor collection system used in lieu or in conjunction with perforated piping. Vapor-Vent is offered with two different core materials, Vapor-Vent PS is recommended for sites with inert methane gas and Vapor-Vent HD is recommended for sites with aggressive chlorinated volatile organic or petroleum vapors. Manufactured by Land Science Technologies
- B. Strip Geocomposite physical properties

VENT PROPERTIES	TEST METHOD	VAPOR-VENT PS	VAPOR-VENT HD
Material		Polystyrene	HDPE
Comprehensive Strength	ASTM D-1621	9,000 lbs / ft ²	9,200 lbs / ft ²
Shear Strength	ASTM D-1621	9,500 lbs / ft ²	N/A
Peel Strength	ASTM D-1876	38 lbs / ft	35 lbs / ft
Fungus Resistance (core)	ASTM G-21	No Growth	No Growth
In-plane flow (Hydraulic gradient-0.1, loading-10 psi)	ASTM D-4716	21 gpm / ft of width	21 gpm / ft of width
Unobstructed inflow area Pavement side		85%	85%
Chemical Resistance		N/A	Excellent
FABRIC PROPERTIES	TEST METHOD	VAPOR-VENT-PS	VAPOR-VENT-HD
Weight	ASTM D-3776	4.0 oz.	4.5 oz.
Grab Tensile Strength	ASTM D-4632	115 lbs.	120 lbs.
Puncture Strength	ASTM D-3787	70 psi	65 psi
Trapezoidal Tear	ASTM D-4533	50 lbs.	30 lbs.
Mullen Burst Strength	ASTM D-3786	240 psi	50 psi
Elongation	ASTM D-4632	50%	50%
EOS (AOS)	ASTM D-4751	80	70
Permeability	ASTM D-4491	20 cm/sec	21 cm / sec
Flow Rate	ASTM D-4491	170 gpm / ft ²	135 gpm / ft ²
UV Stability (500 hours)	ASTM D-4355	85% Retained	70% Retained
Fungus Resistance	ASTM D-G21	No Growth	No Growth
DIMENSIONAL DATA			
Thickness		1"	1"
Standard Widths		12"	12"
Roll Length		150 ft	150 ft
Roll Diameter		7 ft	7 ft
Roll Weight		60 lbs	60 lbs

2.3 AUXILIARY MATERIALS

- A. Geo-Seal Vapor-Vent pipe reducers.
- B. Reinforced Tape.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions under which gas vent system will be installed, with installer present, for compliance with requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 SUBSTRATE PREPARATION

- A. Verify substrate is prepared according to project requirements.

3.3 PREPARATION FOR STRIP COMPOSITE

- A. Mark the layout of strip geocomposite per layout design developed by engineer.

3.4 STRIP GEOCOMPOSITE INSTALLATION

- A. Install Geo-Seal Vapor-Vent over substrate material where designated on drawings with the flat base of the core placed down and shall be overlapped in accordance with manufacturer's recommendations.
- B. At areas where Geo-Seal Vapor-Vent strips intersect cut and fold back fabric to expose the dimpled core. Arrange the strips so that the top strip interconnects into the bottom strip. Unfold fabric to cover the core and use reinforcing tape, as approved by the manufacturer, to seal the connection to prevent sand or gravel from entering the core.
- C. When crossing Geo-Seal Vapor-Vent over footings or grade beams, **consult with the specifying environmental engineer and structural engineer for appropriate use and placement of solid pipe materials**. Place solid pipe over or through concrete surface and attach a Geo-Seal Vapor-Vent pipe reducer at both ends of the pipe before connecting the Geo-Seal Vapor-Vent to the pipe reducer. Seal the Geo-Seal Vapor-Vent to the Geo-Seal Vapor-Vent pipe reducer using fabric reinforcement tape. Refer to Vapor-Vent detail provided by Land Science Technologies.
- D. Place vent risers per specifying engineer's project specifications. Connect Geo-Seal Vapor-Vent to Geo-Seal Vapor-Vent pipe reducer and seal with fabric reinforced tape. Use Geo-Seal Vapor-Vent pipe reducer with the specified diameter piping as shown on system drawings.

3.5 PLACEMENT OF OVERLYING AND ADJACENT MATERIALS

- A. All overlying and adjacent material shall be placed or installed using approved procedures and guidelines to prevent damage to the strip geocomposite.
- B. Equipment shall not be directly driven over and stakes or any other materials may not be driven through the strip geocomposite.