



SECTION 33 46 13.13

FOUNDATION DRAINAGE PIPING
"Form-A-Drain" 3-in-1 Solution

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Foundation Drainage System.
- B. Perimeter Radon Gas Evacuation System.

1.2 RELATED SECTIONS

- A. 01 81 13 – Sustainable Design Requirements
- B. 03 31 13 – Heavyweight Structural Concrete
- C. 31 21 13.13 – Radon Venting
- D. 31 23 16 – Excavation
- E. 31 23 23.13 – Backfill
- F. 33 46 19.13 – Underslab Drainage Piping
- G. 33 46 23.16 – Gravel Drainage Layers

1.3 REFERENCES

- A. ASTM D 2729 - Standard Specification for Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
- B. ASTM F 405 - Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings.
- C. ASTM F 891 - Standard Specification for Coextruded Polyvinyl Chloride (PVC) Plastic Pipe with a Cellular Core.
- D. EPA 402R94009 - Model Standards and Techniques for Control of Radon in New Buildings; Environmental Protection Agency.
- E. ICC-ES Legacy Report 95-37-01.
- F. CCMC Report 13942-R.
- G. US Green Building Council LEED Reference Guide for Green Building Design and Construction, 2009 Edition.
- H. US Green Building Council LEED for Home Reference Guide, 2009 Edition.

- I. National Green Building Standard ICC 700 – 2008.

1.4 PERFORMANCE REQUIREMENTS

- A. Perimeter Radon Evacuation System: Provide products that can be assembled into system that meets requirements of:
 - 1. EPA 402R94009.
 - 2. Provide test reports from independent testing laboratory supporting compliance.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Certainteed 40-95-04F1 Installation Guide.
- C. Shop Drawings: Indicate layout of system; include all components specified in manufacturer's descriptive literature or installation instructions, and components indicated on the Drawings.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. LEED NC / LEED Schools 2009: MR4 – Recycled Content.
- F. LEED H 2009:
 - 1. ID 2 – Durability Management Process
 - 2. IEQ 9 – Radon Protection
- G. National Green Building Standard ICC 700 – 2008 Green Approved:
 - 1. 602.3 – Foundation Drainage
 - 2. 604.1 – Recycled Content
 - 3. 902.3 – Radon Control
- H. National Green Building Standard ICC 700 – 2008: 608.1 – Indigenous Materials.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products horizontally with slotted sides down, on pallets off the ground in manufacturer's unopened packaging until ready for installation.
- B. Do not store in direct sunlight or in high heat environment exceeding 150 degrees F (66 degrees C).
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 WARRANTY

- A. Submit manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: CertainTeed Corp., Foundation and Pipe Products, which is located at: 750 E. Swedesford Rd. P. O. Box 860 ; Valley Forge, PA 19482; Toll Free Tel: 800-233-8990; Email: [request info \(building.solutions@saint-gobain.com\)](mailto:request_info(building.solutions@saint-gobain.com)) www.certainteed.com/products/foundations/waterproofing/311520
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.
- D. Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.

2.2 COMPONENTS

- A. Linear Components: Polyvinyl chloride (PVC) containing post-consumer recycled plastic materials, extruded in closed-channel cross-section, with slot perforations along length to permit moisture migration, 12 foot (3.65 m) lengths.
 - 1. Load Deflection and Impact Resistance: Comply with requirements of ASTM F 891 for Type PS 25 PVC pipe.
 - 2. Flow Characteristics: Meet or exceed the flow characteristics of 4 inch (100 mm) diameter corrugated polyethylene slotted pipe conforming to ASTM F 405, when subjected to 30-7/8 inch (770 mm) pressure head.
 - 3. Type: Form-A-Drain Part LN124, size 2-1/4 inches (57 mm) wide by 4 inches (101 mm) deep, single-channel.
 - 4. Type: Form-A-Drain Part LN126, size 2-1/4 inches (57 mm) wide by 6 inches (152 mm) deep, dual-channel.
 - 5. Type: Form-A-Drain Part LN128, size 2-1/4 inches (57 mm) wide by 8 inches (203 mm) deep, dual-channel.
 - 6. Type: Form-A-Drain Part LN1210, size 1-1/2 inches (38 mm) wide by 10 inches (254 mm) deep, dual-channel.
- B. Fittings:
 - 1. Material: Extruded polyvinyl chloride (PVC) or molded polypropylene (PP) in profiles and shapes as follows:
 - a. Coupling: Extruded PVC, Form-A-Drain Part XCPLx.
 - b. Coupling with hole: Molded PP, Form-A-Drain Part COUPx.
 - c. 90-degree corner coupling: Molded PP, Form-A-Drain Part CN90x.
 - d. 45-degree corner coupling: Extruded PVC, Form-A-Drain Part CN45x.
 - e. Outlet, 4 inch diameter stub: Extruded PVC base with molded PP outlet, Form-A-Drain Part OUT4x.
 - f. Double outlet, 4 inch diameter stubs: Extruded PVC base with molded PP outlets, Form-A-Drain Part DOF4x.
 - g. 90-degree vertical "L": Extruded PVC, Form-A-Drain Part VL90x.
 - h. 90-degree vertical "T": Extruded PVC, Form-A-Drain Part VTEEx.
 - 2. Size: As required for linear components specified.
- C. Accessories:
 - 1. Grade stake: Form-A-Drain Part GS018, length 18 inches (457 mm).
 - 2. Grade stake: Form-A-Drain Part GS030, length 30 inches (762 mm).
 - 3. Spacer strap: Form-A-Drain Part SS416, width 10 inches (254 mm).
 - 4. Spacer strap: Form-A-Drain Part SS416, width 16 inches (406 mm).
 - 5. Spacer strap: Form-A-Drain Part SS420, width 20 inches (510 mm).

6. Spacer strap: Form-A-Drain Part SS424, width 24 inches (610 mm).
 7. Spacer strap: Form-A-Drain Part SS820, width 20 inches (510 mm).
 8. Spacer strap: Form-A-Drain Part SS824, width 24 inches (610 mm).
 9. Fasteners: drywall screws.
 10. Reinforcing bar: #4 deformed steel used as corner pins.
- D. Piping connecting foundation drains to sump pit outlets: PVC, ASTM D 2729, of diameter required.
 - E. Piping connecting foundation drains to stack vents: PVC, ASTM D 2729, of diameter required.
 - F. Filter aggregate, bedding materials and filter fabric as specified in Section 31 20 00.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation.
- B. Remove large stones or other hard matter which could damage drainage system or impede consistent backfilling or compaction.

3.3 INSTALLATION

- A. Install products in accordance with Certainteed Form-A-Drain Installation Instructions 40-95-04F1.
- B. Lay out system to footing footprint indicated on Drawings; locate fittings in accordance with manufacturer's instructions and as indicated.
- C. Maintain indicated footing widths by installing spacer straps; locate in accordance with manufacturer's instructions and as indicated.
- D. Raise top of system to indicated top-of-footing elevations, using reinforcing bars driven through holes in corner couplings into soil; maintain elevations by using grade stakes, located in accordance with manufacturer's instructions and as indicated, driven into soil and screw-fastened to system.
- E. Ensure that all required and indicated components are in place, and system is level at indicated top-of-footing elevations, before beginning installation of cast-in-place concrete footings.
- F. Installation of cast-in-place concrete footings is specified in Section 03 31 13.
- G. Placement of stone fill specified in Section 33 46 23.16; placement of geotextile layer specified in Section 31 05 19.13. Do not displace or damage pipe when compacting.
- H. Connection to storm utility drainage piping as specified in Section 33 41 00.

3.4 FIELD QUALITY CONTROL

- A. Request inspection prior to and immediately after placing concrete footings and/or after placing aggregate cover and filter fabric over pipe.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Protect system and aggregate cover from damage or displacement until backfilling operations begin.

END OF SECTION