SECTION 333453 - DISTRIBUTION CHAMBERS

This Section specifies materials and installation requirements for distribution chambers used to divert septic tank effluent to drainage fields.

Concrete septic tanks are specified in Section 333413.13 fiberglass septic tanks are specified in Section 333413.23, and polyethylene septic tanks are specified in Section 333413.33. Drainage field (leaching) systems are specified in Section 333451.

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes: Drainage fields connected to septic tanks.
          2. Related Requirements:

List other Sections directly related to or affecting Work of this Section. Include Sections specifying information expected to be found in this Section as well as Sections required to describe complete system or assembly requirements.

Section 310001 - Earthwork Materials: Bedding materials.

Section 310000 - Earthwork: Excavation and cover for filter piping.

Section 333413.13 - Concrete Septic Tanks: Materials and installation requirements for septic tanks constructed of concrete.

Section 333413.23 - Fiberglass Septic Tanks: Materials and installation requirements for septic tanks constructed of FRP.

Section 333413.33 - Polyethylene Septic Tanks: Materials and installation requirements for septic tanks constructed of HDPE.

Section 333451 - Drainage Field System: Materials and installation requirements for drainage fields (also called leach fields) used to further treat effluent from septic tanks.

* + - 1. REFERENCE STANDARDS

List reference standards included within text of this Section, with designations, numbers, and complete document titles.

LEED requires compliance with specific editions of referenced standards. Consider including publication dates for referenced standards in this Section to ensure that correct standard is used for LEED compliance.

* + - * 1. American Association of State Highway and Transportation Officials:

AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 10-lb Rammer and a 18-in. Drop.

* + - * 1. American Water Works Association:

AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

* + - * 1. ASTM International:

ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

ASTM C1227 - Standard Specification for Precast Concrete Septic Tanks.

ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

ASTM D3034 -Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

* + - * 1. Cast Iron Soil Pipe Institute:

CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

* + - 1. SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

* + - * 1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
        2. Manufacturer’s installation instructions shall be provided along with product data.
        3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
        4. Product Data: Submit manufacturer information on distribution chamber, piping, and <**\_\_\_\_\_\_\_\_**>.

USE PARAGRAPH BELOW WITH EPD REQUIREMENT WHEN PROJECT ESTIMATE IS $1M OR MORE.

* + - * 1. Submit an Environmental Product Declaration (EPD) from the manufacturer for each type of precast structure within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

* + - * 1. Shop Drawings: Indicate plan, location, and inverts [**and centerlines**] of connecting piping.
        2. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate paragraphs for additional certifications.

* + - * 1. Manufacturer Instructions: Submit special procedures for distribution chamber installation.
        2. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        3. Qualifications Statements:

Coordinate following subparagraph with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer and installer.

Remove paragraph if not a LEED project.

* + - 1. SUSTAINABLE DESIGN SUBMITTALS
         1. Section 018113 - LEED Documentation Requirements: Requirements for sustainable design submittals.
         2. Manufacturer's Certificate:

Certify that products meet or exceed specified sustainable design requirements.

Insert material certifications list below to suit products specified in this Section and Project sustainable design requirements. Specific certificate submittal and supporting data requirements are specified in Section 018113.

Materials Resources Certificates:

Certify recycled material content for recycled content products.

Certify source for regional materials and distance from Project Site.

* + - * 1. Product Cost Data:

Submit cost of products to verify compliance with Project sustainable design requirements.

Exclude cost of labor and equipment to install products.

Provide cost data for following products:

Edit list of material cost data below to suit products specified in this Section and Project sustainable design requirements. Specific cost data requirements are specified in Section 018113.

Products with recycled material content.

Regional products.

<**\_\_\_\_\_\_\_\_**>.

* + - 1. CLOSEOUT SUBMITTALS
         1. Section 017716 - Contract Closeout: Requirements for submittals.
         2. Project Record Documents: Record actual locations and [**inverts**] [**centerlines**] of buried pipe, components, and connections.
         3. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
      2. QUALITY ASSURANCE

Include following paragraph only when cost of acquiring specified standards is justified.

* + - * 1. Maintain <**\_\_\_\_\_\_\_\_**> [**copy**] [**copies**] of each standard affecting Work of this Section on Site.
      1. QUALIFICATIONS

Coordinate following paragraphs with requirements specified in SUBMITTALS Article.

* + - * 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience.
        2. Installer: Company specializing in performing Work of this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience.
      1. DELIVERY, STORAGE, AND HANDLING
         1. Section 016500 - Materials and Equipment: Requirements for transporting, handling, storing, and protecting products.
         2. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
         3. Transport and handle precast concrete units with equipment designed to protect units from damage.
         4. Store materials according to manufacturer instructions.
         5. Protection:

Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

Do not place concrete units in position that causes them to overstress, warp, or twist.

Provide additional protection according to manufacturer instructions.

* + - 1. EXISTING CONDITIONS
         1. Field Measurements:

Verify field measurements prior to fabrication.

Indicate field measurements on Shop Drawings.

1. PRODUCTS
   * + 1. DISTRIBUTION CHAMBERS
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13275&mf=04&src=wd):

Fort Miller Co., Inc., (518) 695-5000, PO Box 98, Schuylerville, NY 12871

Monarch Products, (717) 938-8303, 385 Sipe Road, York Haven, PA 17370.

Oldcastle Infrastructure, (888) 965-3227, 8392 Riverview Parkway, Littleton, CO 80125

Approved equivalent.

* + - * 1. Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.

Insert descriptive specifications below to identify Project requirements and to eliminate conflicts with products specified above. Edit manufacturer’s based on material selected.

* + - * 1. Description:

Material: [**Reinforced concrete**]

Provide single inlet, [**two**] <**\_\_\_\_\_\_\_\_**> outlets, gate, and removable cover with lift ring.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Accessories: As indicated on Drawings.

* + - 1. INTERCONNECTING PIPING

Following piping is intended for connecting components and is not normally used for filter piping.

If two or more piping material types are required, consider identifying each material by "Type," and coordinate with PART 3 of this Section and with Drawings.

* + - * 1. Ductile-Iron Pipe [**, Type <\_\_\_\_\_\_\_\_>**]:

Comply with ASTM A74.

Grade: [**Extra heavy**] [**Service**].

Nominal Inside Diameter: <\_\_\_\_\_\_\_\_> inches.

End Connections: Plain.

Joints:

Comply with AWWA C111.

Gasket: Ribbed rubber.

Clamping Ring: Stainless steel.

Sleeve Type: Expanding.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Cast-Iron Pipe [**, Type <\_\_\_\_\_\_\_\_>**]:

Comply with ASTM A74.

Grade: [**Extra heavy**] [**Service**].

Nominal Inside Diameter: <\_\_\_\_\_\_\_\_> inches.

End Connections: Bell and spigot.

Joints:

Rubber-gasket joint devices.

Comply with [**ASTM C564**] [**CISPI 310**] <**\_\_\_\_\_\_\_\_**>.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Joint Seal: [**Rope and calk**] [**Neoprene slip seal**].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. ABS Pipe [**, Type <\_\_\_\_\_\_\_\_>**]:

SDR: [**23.5**] [**35**] [**42**].

Nominal Inside Diameter: <\_\_\_\_\_\_\_\_> inches.

End Connections: Bell and spigot, solvent sealed.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. PVC Pipe [**, Type <\_\_\_\_\_\_\_\_>**]:

Comply with ASTM D3034.

SDR: [**35**] <**\_\_\_\_\_\_\_\_**>.

Nominal Inside Diameter: <\_\_\_\_\_\_\_\_> inches.

End Connections: Bell and spigot.

Fittings Material: PVC.

Joints:

Comply with ASTM F477.

Gaskets: Elastomeric, rubber-ring sealed.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. PVC Pipe [**, Type <\_\_\_\_\_\_\_\_>**]:

Comply with ASTM D2729.

Nominal Inside Diameter: <\_\_\_\_\_\_\_\_> inches.

End Connections: Bell and spigot, solvent sealed.

Fittings:

Same material as pipe.

Tee Bends, Elbows, Cleanouts, Reducers, and Ends: To suit pipe joint.

Remove paragraph if not LEED project.

* + - 1. SUSTAINABILITY CHARACTERISTICS

Insert sustainable design characteristics in this Article to suit content of this Section and Project sustainable design requirements as specified in Section 018113.

* + - * 1. Section 018113 - LEED Documentation Requirements: Requirements for sustainable design compliance.
        2. Material and Resource Characteristics:

Recycled Content Materials: Furnish materials with maximum available recycled content [**including:**] [**.**]

Insert list of materials specified in this Section required to have recycled content.

<**\_\_\_\_\_\_\_\_**>.

Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project Site [**including:**] [**.**]

Insert list of materials specified in this Section required to be regional materials.

<**\_\_\_\_\_\_\_\_**>.

1. EXECUTION
   * + 1. EXAMINATION
          1. Verify that septic tank connection and drainage field configuration are as indicated on Drawings.
       2. PREPARATION
          1. Ream pipe ends and remove burrs.
          2. Remove scale and dirt from components before assembly.
          3. Establish [**invert**] [**centerline**] elevations for each component in system.
          4. Remove stones, roots, and other obstructions.
       3. INSTALLATION
          1. Distribution Chamber: As specified in Section [**333413.13 - Concrete Septic Tanks**] [**333413.23 - Fiberglass Septic Tanks**] [**333413.33 - Polyethylene Septic Tanks**].
          2. Interconnecting Piping:

Connect outlets between septic tank and distribution box, and between distribution box and filter field header [**with Type <\_\_\_\_\_\_\_\_> pipe and fittings**] [**as indicated on Drawings**].

Place pipe and fittings on <\_\_\_\_\_\_\_\_>-inch bed of [**Type <\_\_\_\_\_\_\_\_>**] [**aggregate**] [**sand**], and [**tamp or compact until firm**] [**compact to 95 percent maximum density**] [**compact to <\_\_\_\_\_\_\_\_> percent maximum density**].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Place pipe and fittings on clean, excavated subsoil.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Place pipe and fittings as shown on the Contract Drawings.

Slope piping to each successive component at minimum slope of [**1/4**] <\_\_\_\_\_\_\_\_> in./ft.

* + - 1. FIELD QUALITY CONTROL
         1. Request inspection by [**Director’s Representative**] <**\_\_\_\_\_\_\_\_**> prior to placing cover over distribution chamber and piping.
         2. Hydrostatic Testing: Test tanks for watertightness using hydrostatic method according to ASTM C1227.

Consult geotechnical report to select compaction test method appropriate to fill materials being used and Project requirements.

Select test standards referenced in following paragraph as appropriate for fill materials and Project requirements.

AASHTO T 180 in following paragraph is similar to ASTM D1557.

* + - * 1. Compaction Testing:

Comply with Section 310000 - Earthwork.

If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

Testing Frequency: <**\_\_\_\_\_\_\_\_**>.

END OF SECTION 333453