

Chambered Leach Fields

The International Association of Plumbing and Mechanical Officials (IAPMO) has evaluated a type of dispersal system technology known as a gravelless chamber and has certified specific plastic leaching chambers as being compliant with the Uniform Plumbing Code. This policy summarizes the standards and requirements that will be applicable to a leachfield utilizing gravelless chambers in Imperial County.

1.0 Gravelless Chambers – Chambered dispersal system technology must be listed by IAMPO as being a product compliant with the Uniform Plumbing Code. Chamber installations shall follow the permitting and design requirements for disposal fields in Chapter 8.80 of the Codified Ordinances of Imperial County.

1.1 Installation – The chambers are placed in the bottom of the trench, connected end-to-end, and backfilled with native earthen material (or as otherwise directed by the manufacturer depending upon soil conditions). At both ends of each drainfield chamber line, solid end plates are installed for structural support and as a barrier to soil backfill. The use of a geotextile barrier between the chamber and the soil backfill varies from manufacturer-to-manufacturer and model-to-model (depending upon sidewall louver design and the type of soil in which the drainfield is installed). Chambered leach fields shall be installed in accordance with the manufacturer's instructions.

1.2 Inspection – An inspection of the chambered leach field installation is required by the Department after placement of the chambers in the excavated trenches and prior to placement of backfill material. Bedding and backfilling procedures must also be conducted pursuant to manufacturer recommendations.

2.0 Design Standards – Gravelless drainfield components are proprietary products. As such, there are no specific design requirements for the manufactured products if specified in the design of an OWTS. There are, however, design standards relative to: the required vertical separation and the method of wastewater distribution; effluent treatment standards; drainfield trench design; and the sizing of gravelless drainfields.

2.1 Vertical Separation – Varies depending on effluent treatment and distribution. The vertical separation shall meet the requirements of Imperial County Chapter 8.80.170.D for the soil type listed.

2.2 Effluent Treatment – Wastewater pretreatment to levels meeting or exceeding Treatment Standards 1 and/or 2 shall be included in the design of on-site sewage systems using chambered leach fields when required by Imperial County Chapter 8.80 and the Advanced Protection Management Program for Listed Areas of Special Concern or Impaired Water Bodies.

2.3 Drainfield Design – Gravelless trench design criteria must comply with Imperial County Chapter 8.80.170.K(1). No sand or gravel material is to be placed below the gravelless chambers due to the potential soil masking effect of the gravel or reduction of void space due to settling in sandy materials. Observation ports to grade shall be installed in a representative location on each drainfield line.

2.4 Drainfield Sizing – As a point of reference for a site-specific design, the amount of gravel-filled drainfield must first be determined. This is done by dividing the daily design

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flow (in gallons) by the soil application rate as delineated under Imperial County Chapter 8.80.170.C. Drainfield sizing for gravelless chambers is then based on the calculated effective trench bottom area of the chamber only, regardless of the total volumetric capacity of the chamber product.

2.5 Sizing Reduction – A maximum reduction of thirty percent (30%) may be applied to chambered leach field systems if designed in accordance with this Policy.¹ No reduction is allowed such that the minimum total length of drainfield lines within the irrigated farm areas of Imperial Valley is not met. Furthermore, no reduction may be applied in Soil Types 1-2; however, a bed configuration may be used consistent with Uniform Plumbing Code requirements.

2.6 Other Design Elements – Other design features, such as trench separation, maximum lateral lengths, vertical separation, maximum width and depth of trench, minimum depth of soil backfill, suitable backfill, required pretreatment, and setbacks shall be the same as for gravel drainfields.

3.0 Operation and Maintenance – The owner of the residence or facility served by the gravelless drainfield is responsible for assuring proper operation and providing timely maintenance for all components of the OWTS. For chambered dispersal systems, the owner shall:

- Assure that no surface water collects on the drainfield site;
- Prohibit any type of vehicular or livestock traffic over the drainfield area;
- Maintain a suitable, non-invasive shallow-rooted vegetative cover over the drainfield site; and
- Service all OWTS system components as required or as recommended by the manufacturer, including routine pumping of the septic tank and cleaning of the effluent filter to prevent solids from clogging the infiltrative surface of the chambered leach field system.

¹ **Drainfield Size & Long-term Performance** – An element of drainfield performance (gravel-filled and gravelless) is lifespan. The length of time a drainfield functions satisfactorily depends on many factors including:

- Accuracy of initial drainfield design in matching the site and soil characteristics to the anticipated facility use and wastewater generation;
- Quality of materials and methods used in the installation of the drainfield; and
- Care of use (operation) and timeliness of maintenance on the system.

While not addressed above as an element of the Design Criteria, the selection of an appropriate wastewater-to-soil application rate is critical to the treatment performance of the drainfield and the length of time that treatment performance is achieved. Gravelless drainfield manufacturers commonly encourage the use of their products in reduced configurations when compared to conventional gravel-filled drainfields. While this approach may be satisfactory due to unique elements of the product designs, these smaller drainfields may impact the life of the drainfield.