PlumbingVoid® System Technical Notes

The patented PlumbingVoid® System is comprised of corrosion-proof components made from materials that include fiber-reinforced polymer (FRP), polypropylene, and polyacetal plastics. The polypropylene material is produced as a fluted (i.e. channeled) plastic panel having supports perpendicular to the exterior faces that connect to create a rigid sheet. This sheet is used to fabricate the Side Panels, End Caps (i.e. bulkheads) and TopCaps™ that form the exterior shell, which is held in position with U-shaped Connectors and Crossbars. This assembly forms a rigid structure that resists lateral soil pressures. Additional Connector/Crossbar Assemblies, as well as the provided Washer Assemblies, are positioned on the top edge of the Side Panels and span between them. This provides a supporting structure by which the pipes can be temporarily suspended and adjusted to the proper slope. Two different configurations are available: one for trench depths up to 6' and another for trench depths ranging from 6' to 12'.

After the Side Panels and End Caps have been joined together with the appropriate Connectors and Crossbars, the clevis hanger spacing is determined. An embed plate, used with each clevis hanger assembly, is positioned at the top of a vertical threaded rod and will become anchored into the concrete slab as it sets for permanent support. (Note: Embed plates, clevis hangers, and threaded rods with nuts are not included with the PlumbingVoid® System.) Optional Stiffening Rods™ can be driven through the Side Panel channels into the ground below or interior Spacer Bracket™/Crossbar Assemblies may be positioned above and/or below the pipe to provide additional lateral support.

After the pipes are inspected (initially visible from above through the open top), the slit-scored TopCap™ is formed and held in place with Connectors and Crossbars to create an enclosing cover. Once the PlumbingVoid System is backfilled, the underlying, swelling soils can expand vertically through the open bottom and into the empty space that has been created. Side Panels in contact with the soil at the bottom can be safely forced upwards by vertical soil expansion; the system is designed to disengage from the supporting threaded rod at the Washer Assembly. The assembled PlumbingVoid® System effectively isolates the plumbing network from the damaging soil upheaval that causes broken, leaking pipes (see disclaimer below*).

TYPES AVAILABLE

- Shallow Trench (Standard) – single-layer Side Panels recommended for trenches up to 6' deep
- Deep Trench (Reinforced) – double-layer Side Panels with additional Connector/Crossbar Assemblies recommended for trenches up to 12' deep

TECHNICAL DATA

- Patented Connectors, Spacer Brackets™, & Stacking Pins™ – molded from high-density polyacetal plastic
- Crossbars & Stiffening Rods™ – extruded from fiber-reinforced polymer (FRP) plastic
- Side Panels, End Caps, & TopCaps™ – 1/2" or 3/4" thick fluted/corrugated/channeled panels formed from polypropylene plastic

AVAILABLE DIMENSIONS

- Heights – approximately 18", 24", 32" and 36" (can be stacked using Stacking Pins™ for greater heights)
- Widths – approximately 18" and 24"
- Length – approximately 48"

ADVANTAGES

- Lightweight components
- Easy to install in the procedural sequence as recommended below
- Connector/Crossbar Assemblies positioned approximately 12" O.C. resist typical lateral soil pressures and support the suspended plumbing
- Optional Stiffening Rods™ can be driven into the ground below through the Side Panel channels and/or Spacer Bracket™/Crossbar Assemblies may be added to the interior above or below the pipe for additional flexural strength
- Additional assemblies can be added for more resistance to vertical and lateral pressures
- All plastic components are impervious to water

RECOMMENDATIONS (Note: Separate installation instructions are available for specific applications.)

1. Excavate trenches at least 6” to 12” wider than the system to easily position assembled sections and to allow for pipe alignment flexibility.
2. Excavate trenches to include the desired void space below each pipe and approximately 6” deeper for additional gravel base material that will support the system in plastic soil (i.e. muddy soil) created by inclement weather. Trenches can be dug to match the general slope of the pipes or in level steps to achieve the desired elevation.
3. Fill the bottom of each trench with 6” of gravel base material and grade to an even plane.
4. Place Side Panel sections joined together at the bottom with Connector/Crossbar Assemblies into the open trench and connect the adjacent sections with Connectors at the top and bottom edges. Attach corner pieces with screws where needed and reinforce with Connectors, or alternatively, slit-score one face along the interior channel and bend to form a sealed corner or angle where required.
5. Slide Stiffening Rods™ (optional) into the Side Panel channels at approximately 12” O.C. and drive into the ground below until flush at the top edge for additional lateral support. (Note: Spacer Bracket™/Crossbar Assemblies are also available and may be required above and/or below the pipe to increase lateral load resistance. Position a distance away from the pipe in accordance with the site-specific geotechnical requirements.)
6. Install additional Connector/Crossbar Assemblies to create parallel pairs where needed (approximately 48” O.C.) to suspend the pipes by supporting threaded rods and clevis hangers using furnished Washer Assemblies.
7. Adjust the elevation of each clevis hanger to achieve the required slope by positioning the nut on each threaded rod.
8. Place the TopCap™ Assemblies over the open sections and seal around the edges or openings with expandable foam, tape or seam pads. (Note: Drill oversized holes where needed in the TopCap™ cover to slip over each vertical threaded rod.)
9. Backfill both sides of the installed PlumbingVoid® System equally and simultaneously to prevent shifting and over the top to the desired elevation. A non-cohesive backfill material is preferred, and large clumps of dirt or rocks should be avoided. Do not compact backfill material over the buried system and take care not to roll over it with heavy equipment without first placing adequate bridging sufficient to carry the additional weight.

***DISCLAIMER**

PlumbingVoid creates void space around pipes into which soil can expand vertically or move laterally. However, the PlumbingVoid System does not isolate plumbing, hangers and supports below the slab from all potential expansive soil loads. For example, the Washer Assembly mechanism that connects the supporting elements to the clevis hanger at the threaded rod is an initial support designed to release at specific uplift loads depending upon the washer configuration in each application. If that release is triggered through soil expansion, the system is designed to slide upward along the threaded rod. It is the responsibility of the contractor to determine whether a proposed PlumbingVoid system meets the requirements of each project application and submit to the appropriate engineer for approval.