

## General On-Site Wastewater Treatment System Construction Guidelines

The following is a summary of frequently asked questions and general construction requirements from the Larimer County On-Site Wastewater Treatment System Regulations;

### Tank Lids and Access Risers

- Access risers must be provided to grade on all tank lids, distribution boxes, and other components that require access for inspection or periodic maintenance. Lids must be watertight, and secured either with screws, bolts, chains or sufficient weight (>59 pounds). *Examples of plastic and concrete lids and risers below.*



### System Dimensions

- Standard, gravity style systems are limited to 12 feet wide and 100 feet long. If additional area is required, multiple beds may be installed with six feet of undisturbed soil between bed areas.
- Systems may be installed no more than 48" below grade (to bottom of gravel or chambers). Permit details will specify if a shallower depth is necessary to provide adequate separation to bedrock or groundwater.



## Distribution Boxes

- If a distribution box (d-box) is used, flow equalizers must be installed on the outlet lines to adjust flow, and the d-box must have a watertight riser to grade for access. *Photo below left indicates flow equalizers/levelers on distribution box outlet line, an approved 24" diameter riser on a d-box at middle. D-box risers must be at least 24" in diameter if more than 24" of riser height is needed. 8" diameter riser on the far right is too narrow for access.*

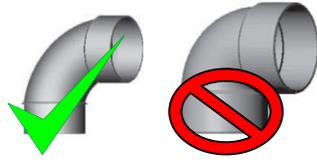


## Piping type, Bedding, and Clean-outs

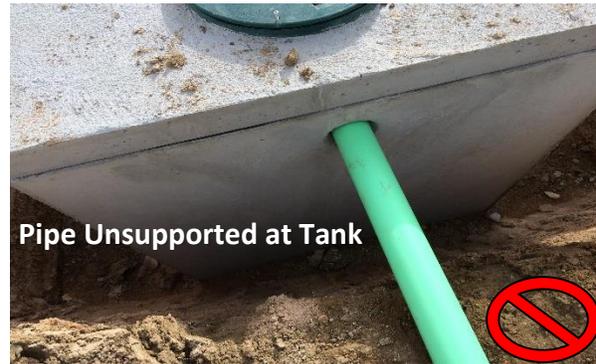
- Piping must be a minimum of SDR 35, no less than 4", buried 12" below grade, with no less than 1/8" per foot (1%) fall for the building sewer to and effluent line from the septic tank. 1/4" per foot (2%) fall is recommended, and SCH 40 pipe (pressure rated) is required in pressure distribution systems and under driveways. Bell ends of gasketed pipe must be installed on the uphill side of the pipe section. Connections to the interior building sewer at the foundation must be made with glued fittings or flexible couplers with shear rings or shear guards. *On left, correctly installed and bedded gasketed pipe, hub and gasket on uphill side (Large arrow points to hub on upstream side of pipe, small arrow indicates direction of slope). On right, a connection to the building sewer made with a flexible coupler with shear ring.*



- Bends in piping are limited to 45 degree or sweeping 90's, two 45 degree fittings are preferred and should be used to turn 90 degrees in the building sewer (house to tank). A cleanout is required within 5 feet of the building, for every 100' of building sewer (line from house to tank), and wherever a bend of greater than 45 degrees is made, unless a cleanout is already located within 40' upstream. *Long sweep 90 and standard 90 left. A properly installed cleanout within 5 feet of the building and upstream of two 45 degree bends on right.*



- Piping must be bedded in material free of rocks or large clods prior to backfilling, use of sand or squeegee is recommended. The tank inlet and outlet must be backfilled and compacted to support the pipe prior to installation. *Photos below show properly bedded piping on the left, unsupported piping at the tank on the right, tank must be backfilled to the inlet/outlet prior to installing piping.*



### Chamber Systems

- When using chamber systems, the inlet pipe must be installed in uppermost knockout in the end cap. End caps and chambers must be installed in the correct direction to eliminate gaps, screw the end cap and first chamber together to prevent movement during backfilling. *Top knockout of chamber shown with arrow below left. On right, pipe installed into endcap of chamber.*



### Trench Style Systems

- When chambers are installed in trenches they must be installed in a single row, not to exceed 100' for gravity systems (150' for pressure dosed systems), with a minimum of 48" of undisturbed soil between rows, and an observation port at the end of each row. A reduction in the total number of chambers is given for trench style systems vs bed systems. *Photo below shows a system using trenches with 48" of undisturbed soil between rows and an observation port at the end of each row. Distribution boxes divide flow evenly from tank to each row.*



### Pressure Dosed Systems

- Pressure dosed systems utilize a dosing tank and pump to deliver wastewater to a soil treatment area. Pressure dosed systems must be designed by an engineer, and be installed by a licensed contractor. Electrical connections must be made outside of the dosing tank, and control panels capable of tracking the pump run time and number of doses must be used. More information on pressure dosed system requirements is available in a separate guidance document.



### Engineer Designed Systems & Final Approval

- If a system requires engineer design, the design engineer must certify in writing that construction and installation of the system are in compliance with the Regulations. Prior to backfilling an engineer designed system, contact the engineer and Larimer County for inspection.