

## **Example of Draft List of Materials, Components, and Equipment For a Conventional Septic Tank and Trench Disposal Works Design**

**ADDITIONAL COPIES CAN BE DOWNLOADED FROM**

[http://ag.arizona.edu/waterquality/onsite/ADEQ\\_Materials/MaterialsListConv12-31-05.pdf](http://ag.arizona.edu/waterquality/onsite/ADEQ_Materials/MaterialsListConv12-31-05.pdf)

A list of materials, components and equipment shall be submitted with the Notice of Intent to Discharge for all Type 4 General Permit on-site wastewater treatment facilities pursuant to A.A.C. R18-9-A309(B)(4).

### **Example of R18-9-A309(B)(4) for Design Information Presented on Page 2**

- 1 ea      1250-gallon septic tank with effluent filter meeting the requirements of Arizona Administrative Code (A.A.C.) R18-9-A314.
- 2 ea      Riser with cover, [brand/model] or equivalent, meeting the requirements of A.A.C. R18-9-A314(1)(d).
- 1.5 yd<sup>3</sup>    Pea gravel or equivalent bedding for septic tank per manufacturer's handling and installation instructions required by R18-9-A314(3)(d)(ii).
- 15 ft      Sewer line pipe, DMV, Schedule 40, ASTM F891, and fittings.
- 50 yd<sup>3</sup>    Aggregate meeting A.A.C. R18-9-101(1).
- 25 feet    Distribution pipe and fittings. \* [5 ft + 10 ft + 10 ft, see page 2]
- 150 feet   Disposal pipe, perforated, and fittings. \*\*
- 1 ea      Distribution box with seals, minimum of 2 outlet holes, [mfr/model] or equivalent.
- 150 feet   Geotextile, 24-inch min, [mfr/product ID] or equivalent.

**Notes: Typical pipe specifications that might be used in disposal field installations:**

See manufacturer's information for plastic pipe, such as at:

[http://www.certainteed.com/NR/rdonlyres/DA3BEEF3-15F8-4D4C-8FCF-F7380D8A1D41/0/ap\\_sdpipes.pdf](http://www.certainteed.com/NR/rdonlyres/DA3BEEF3-15F8-4D4C-8FCF-F7380D8A1D41/0/ap_sdpipes.pdf) and

[http://www.certainteed.com/NR/rdonlyres/F81394FC-338D-415D-B769-7FBFC51E5ACB/0/ap\\_dvw.pdf](http://www.certainteed.com/NR/rdonlyres/F81394FC-338D-415D-B769-7FBFC51E5ACB/0/ap_dvw.pdf) .

**\* Normal solid PVC pipe:**

- a. PVC distribution pipe, 3-inch, ASTM D2729
- b. PVC distribution pipe, 4-inch, ASTM D3034 (IAPMO Listed) or ASTM D2729.

**\*\* Perforated PVC pipe:**

- a. PVC disposal pipe, perforated, 3-inch, ASTM D2729
- b. PVC disposal pipe, perforated, 4-inch, ASTM D2729.

## Design Information for R18-9-A309(B)(4) List Shown on Page 1

### System Design Inputs

1. Proposed system is for a 3-bedroom home.
2. Fixture count in house is 25.
3. Percolation tests per Arizona Administrative Code R18-9-A310(F) show that the soil percolation rate is 25.0 min/in.
4. No surface or subsurface limiting conditions are identified at the site.
5. Inlet to septic tank will be 15 ft from building drain.

### Disposal Trench Design Based on Inputs

1. Design flow is 600 gal/day based on table at R18-9-A314(4)(a)(i). *[450 gal/day for a 3-bedroom house plus another 150 gal/day for fixture count more than 21]*
2. Design liquid capacity of septic tank is 1250 gallons based on same table.
3. SAR is 0.40 gal/day/ft<sup>2</sup>, using the table at R18-9-A312(D)(2) based on the tested percolation rate of 25.0 min/in.
4. Trench is designed to be 2 ft wide, with 4 ft of sidewalls below disposal pipe.
5. Based on selected trench configuration, the trench absorption area is 10 square feet per linear foot of trench. *[(4 ft + 2 ft + 4 ft) x 1 ft/linear ft]*
6. Wastewater loading in trench is 4.0 gal/day per linear foot *[10 ft<sup>2</sup>/linear ft x 0.40 gal/day/ft<sup>2</sup>]*
7. Trench length, therefore, is 150 linear feet. *[600 gal/day ÷ 4 gal/day/linear ft]*
8. Decision is made to construct two parallel 75' trenches served by distribution box. Distribution box is located 5 ft from septic tank and each trench will be constructed after a 10 ft run of pipe from distribution box.
9. Total volume of aggregate in the disposal field is 50.00 cubic yards.
  - a. 44.44 yd<sup>3</sup> beneath disposal pipe  
*[4 ft x 2 ft x 150 ft ÷ 27 ft<sup>3</sup>/yd<sup>3</sup> = 44.44 yd<sup>3</sup>]*
  - b. 5.56 yd<sup>3</sup> around and above disposal pipe  
*[(4 in of pipe height + 2 in above pipe = 0.5 ft) x 2 ft x 150 ft ÷ 27 ft<sup>3</sup>/yd<sup>3</sup> = 5.56 yd<sup>3</sup>]*
10. Total volume of pea gravel bedding below septic tank is 1.5 yd<sup>3</sup> based on typical manufacturer's specification of 6 in of fill below septic tank, typical dimensions for 1250-gal septic tank of 10.25 ft x 5.25 ft, and 0.5 ft over dig of hole on each side *[(10.25 ft + 0.5 ft + 0.5 ft) x (5.25 ft + 0.5 ft + 0.5 ft) x 0.5 ft ÷ 27 ft<sup>3</sup>/yd<sup>3</sup> = 1.30 yd<sup>3</sup>, say 1.5 yd<sup>3</sup>]*