AT GRADE DISPOSAL SYSTEM DESIGN GUIDELINES

Because of the nature of their design, all at-grade designs shall be considered alternative systems until adequate monitoring demonstrates that the concept is valid and reliability can be expected to be on par with conventional or modified conventional systems. Upon reaching consensus on the appropriate design parameters, it is anticipated that at-grade designs can be plan checked in-house, eliminating the time and expense involved in outside reviews. Systems which incorporate other design features, such as engineered fills, etc., shall continue to be referred to an outside consultant for review until such time that sufficient experience and an agreed upon set of design standards is developed for these components.

SITE CRITERIA:

The "site" is all that area intended to function as the disposal bed site, 100% replacement area, and all area within fifty feet downslope of either or both of these areas. The following criteria apply to the "site" as described above.

Slope - Not to exceed 20%.

Soil Depth - Minimum 24" soil depth required.

Depth to Ground Water - Minimum 24" to highest anticipated ground water level. If there is any question about the presence of ground water, monitoring shall be required in compliance with Amador County Ground Water Monitoring Guidelines.

Perc Testing - Required for every design; minimum of three tests at 18" and three at 24".

Perc Rate - 60 mpi or faster at 18 inches.
- 90 mpi or faster at 24 inches.

Contour - Convex or flat (simple) OK. No designs on concave slopes.

DESIGN CRITERIA:

Application Rate - not to exceed 0.6 GPD/SF. Basal area for the purpose of determining application rate shall be considered as the length of the distribution lateral(s) multiplies by the length extending downslope from the lateral(s) to the downslope toe of the aggregate bed.

Bed Configuration - Maximize available length of contour (i.e. long, narrow beds preferred). All designs to be justified by Darcy's analysis of the disposal bed site and minimum of fifty feed downslope of the disposal bed. Disposal beds shall be constructed so as to provide a minimum of six vertical inches of aggregated below distribution lateral(s). Effective bed width (distance from lateral(s) to downslope aggregate toe) shall not exceed eight feet.

Distribution Laterals - Pressure dose required with cleanout risders accessible from surface. Cleanout risers shall be fitted with water tight, threaded caps which may be periodically removed for flushing. A sub-grade finish with valves and access risers to accommodate flushing is an acceptable alternative.

Orifices - Minimum 1/8 inch diameter orifices shall be spaced as close together as is feasible. The use of orifice shields is encouraged.

Bed Stacking - Permitted only when absolutely necessary. Must be justified by Darcy's.

Soil Cover - A minimum of 12 inches of soil cover over a siltation barrier of non-woven geotextile fabric is required. The mounded cover shall extend a minimum of five feet upslope and sideslope from the bed and a minimum of fifteen feet downslope from the toe of the aggregate bed. The downslope toe must at no time exceed a 3:1 slope to meet the native grade. All disturbed areas must be seeded, fertilized, and mulched to encourage the growth of an erosion control cover crop.

Ground Water Monitoring Wells - Minimum of one well upslope and two wells downslope of the disposal bed(s). Monitoring wells shall be a minimum of 4 inches diameter with non-cemented caps.

Inspection Pipes - Minimum of 2 inspection pipes per bed located at downslope toe of aggregate bed. Inspection pipes shall be so constructed so as not to be easily removed from the disposal bed, shall be 4 inches in diameter, and shall be fitted with non-cemented caps.

CONSTRUCTION CRITERIA:

At-grade disposal beds must not be constructed at times when soil moisture is excessive. Both designer and the Environmental Health Department must agree that the site is ready before construction may begin.

The site must be field staked by the builder and approved by the designer and this department before any construction begins. This is a good time to meet and coordinate flow of the project to ensure that all necessary inspections are called for. At this time materials such as drain rock, geofabric, etc. can be inspected and approved.

The builder then removes any excessive vegetation from the initial disposal bed site and then lays down a 4 to 6 inch thickness of medium concrete sand. A pass is then made on contour ripping this sand into the native soil to a depth of 12 inches. No wheeled equipment should then travel over any area so prepared before placement of protective materials such as drain rock, etc. to protect the prepared soil from compaction. All areas to be overlain by aggregate disposal beds shall be so prepared. All areas to be overlain by the soil cover shall be ripped on contour to minimize any interface between native soil and the cover.

The builder then lays on the drain rock to the depth, width, and length called for by the design. The disposal laterals are drilled and dry-assembled on the disposal bed(s), orifices pointing up. Joints are not cemented until after the pump test is complete.

The pump is run with all end caps removed to flush any debris from the laterals. Caps are then replaced and the pump test is witnessed by the designer and the Environmental Health Department.

Piping is rotated, if necessary, and cemented in place, any necessary orifice shields are installed. Drain rock is added if necessary per design specs. Geofabric applied and soil cover is put in place. All inspection pipes, ground water monitoring wells, and erosion control measures are constructed. A final grading inspection may then be performed by the designer and the Environmental Health Department.