

SECTION 02772

PONDS & SUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clear pond site and dispose of debris and unsuitable material.
- B. Materials for dike.

1.02 REFERENCES

- A. AASHTO M 145: Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures of Highway Construction Purposes.

1.03 SUBMITTALS

- B. Laboratory analysis report of fill to be used in dikes in accordance with the sections referenced in this section and AASHTO M 145.

1.04 PERFORMANCE REQUIREMENTS

- A. Protection: Do not contaminate embankment materials with debris or unsuitable material. Protect existing improvements, trees, structures or other items from damage during construction.
- B. Dust Control: Thoroughly moisten all surfaces to prevent dust being a nuisance to the public, neighborhood, and concurrent performance of separate work on site.
- C. Testing: 1 density test for each 100 square yard lift of backfill compacted in the Work.

1.05 JOB CONDITIONS

- A. Do not interrupt surface drainage systems at site without City Engineer's approval.
- B. Correct any damage caused by runoff or erosion during construction.

PART 2 PRODUCTS

2.01 BACKFILL SOILS

- A. Native Fill: In accordance with Section 02205.
- B. Common Fill: In accordance with Section 02205.
- C. Select Fill: In accordance with Section 02206.
- D. Impermeable Embankment: A-6 (CL) or A-4 (CL) material as defined in AASHTO M 145 with a plasticity index of at least 10, and a coefficient of permeability of less than 7×10^{-6} cm/sec.
- E. Obtain City Engineer's approval of the material to be supplied prior to beginning construction.

2.02 GEOTEXTILE MATERIALS

- A. Nonbiodegradable sheet material that is inert to soil chemicals, resistant to molds, mildew, acids and alkalies, and within a pH range of 3 to 12.
- B. Sumps and Drain Fields: Geotextiles used as a separation layer between angular stone and fill or between stone and sump manhole/perforated pipe to prevent fines intrusion shall be AASHTO M288 Class 2 Non-Woven material (i.e. Mirafi 180 N, Contech C-70NW, etc.)

PART 3 EXECUTION

3.01 DETENTION AND RETENTION PONDS & SUMPS

- A. Ponds shall be designed as attractive and usable spaces; i.e. depths 5 feet or less where feasible, appropriate landscaping, and elements that eliminate standing water and low flow impacts as required by the City Engineer.
- B. Freeboard: 2 foot on dikes, 1 foot on excavations.
- C. Slopes: 5:1 maximum side slopes on two or more sides, 4:1 maximum slopes on remaining sides, minimum 1% bottom slope.
- D. Landscaping: Grass or other suitable landscaping materials should be used and irrigation systems installed. Developers will be required to escrow funds to landscape ponds when located on private lots for future reimbursement to the owner who completes the landscaping.
- E. Easements: Provide minimum 20-foot easements for pipelines and access to maintain ponds. When located on private property, provide an easement over the pond area and 10 feet beyond the pond top of slope perimeter. Pond easements shown on subdivision plats shall be labeled with dimensions to facilitate relocation.
- F. Detention ponds shall be designed for a minimum of a 25 year, maximum storm during a 24 hour period, a release rate of 0.1 cfs per acre, and provisions for an emergency overflow that will avoid flood damage to surrounding properties.
- G. Retention ponds will be allowed if no suitable discharge point exists for conveying storm water away from the site. These ponds shall be designed for a minimum of a 100 year, maximum storm during a 24 hour period with appropriate features for maintaining water quality and percolating water into the ground. Percolation test results shall be provided and ponds shall be designed with sumps to completely drain within a 72 hour period unless otherwise approved by the City Engineer.
- H. Pond inlets and outlets shall have trash racks or grates installed. A storm water pretreatment device, approved by the City, shall be installed upstream of the pond or sump inlets. When required, developments shall install a "Stormceptor" or approved equal pollutant removal device per City policy. When "Stormceptor" units are not required, a "Snout" or approved equal oil separator device shall be installed.
- I. Soil infiltration rates shall be verified by a certified percolation test at or near the location(s) which require storm water infiltration into the ground. A safety factor of two (2) shall be added to the final stabilized percolation rate used in the calculations to size storm water facilities.

3.02 EXCAVATION AND PREPARATION

- A. In accordance with Section 02225.
- B. Remove and stockpile all topsoil material for later placement on the outer dike surfaces.
- C. Level areas where dikes are to be constructed. Unless indicated otherwise scarify the top 12" of the base material and compact to a minimum Standard Proctor of 92 percent in accordance with Section 02250.

3.03 EMBANKMENT CONSTRUCTION

- A. Compact backfills to an average Standard Proctor density of 96 percent in accordance with Section 02250 with no single density reading less than 92 percent.
- B. Place embankment materials in lifts consistent with the compaction equipment used.
- C. Do not construct embankment with frozen or unapproved material.
- D. Top of bank shall not be less than 10' wide with a 2% slope toward pond.
- E. Overflow shall be provided by safety weir or a 5 fps max overflow outlet.

3.04 TOLERANCES

- A. Dike Surface: Plus or minus 1" from true line and grade.
- B. Dike Width: Plus or minus 6" from true line and grade.

3.05 FINISHING

- A. After pond and slopes have been constructed to the lines and grades indicated, spread topsoil 6" deep on pond surfaces and grade to uniform slope.
- B. Pond shall be landscaped and irrigated as approved by the City Engineer.
- C. Dispose of excess or unsuitable materials and level all affected areas.
- D. Leave site free of excess fill material and debris.

END OF SECTION