

Section 01570

DIVERTING FLOW

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Installation of erosion and sediment control diversion dikes, interceptor dikes, diversion swales, interceptor swales, down spout extenders, pipe slope drains, paved flumes and level spreaders used during construction and prior to final development of site.

1.02 UNIT PRICES

- A. Measure and pay for diversion dikes by linear feet of completed and accepted diversion dikes.
- B. Measure and pay for interceptor dikes by linear feet of completed and accepted interceptor dikes.
- C. Measure and pay for diversion swales by linear feet of completed and accepted diversion swales.
- D. Measure and pay for interceptor swales by linear feet of completed and accepted interceptor swales.
- E. Measure and pay for down spout extenders by linear feet of completed and accepted down spout extender parallel to pipe laid from end of roof downspout to end of stabilized outlet.
- F. Measure and pay for pipe slope drains by linear feet of completed and accepted pipe slope drains parallel to pipe laid from end of entrance section to end of outlet.
- G. Measure and pay for paved flumes by linear feet parallel with slope of completed and accepted paved flume.
- H. Measure and pay for level spreaders by linear feet of completed and accepted level spreaders.

1.03 REFERENCE STANDARDS

- A. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- B. Storm Water Quality Management Guidance Manual prepared by City of Tomball and Montgomery County.

1.04 SUBMITTALS

- A. Manufacturers catalog sheets and other pertinent information on pipe, flexible tubing, connecting band, grommet materials and connections of type proposed.
- B. Sieve analysis of aggregates conforming to requirements.
- C. Concrete mix design.

PART 2 PRODUCTS

2.01 CONCRETE

- A. Use bituminous concrete, Portland cement concrete, or comparable non-erodible material.

PART 3 EXECUTION

3.01 PREPARATION AND INSTALLATION

- A. Provide erosion and sediment control systems at locations shown on Drawings. Construct in accordance with requirements shown on Drawings and of type indicated as specified in this Section.
- B. No clearing, grubbing or rough cutting permitted until erosion and sediment control systems are in place, other than site work specifically directed by City Engineer to allow soil testing and surveying.
- C. Maintain existing erosion and sediment control systems located within project site until acceptance of Project or until directed by City Engineer to remove and discard existing system.
- D. Regularly inspect and repair or replace damaged components of erosion and sediment control systems as specified in this Section. Unless otherwise directed, maintain erosion and sediment control systems until project area stabilization is accepted by City. Remove erosion and sediment control systems promptly when directed by City Engineer. Discard removed materials off site.
- E. Remove and dispose sediment deposits at designated spoil site for Project. If a project spoil site is not designated on Drawings, dispose of sediment off site at location not in or adjacent to stream or flood plain. Assume responsibility for off-site disposal. Spread sediment evenly throughout site, compacted and stabilized. Prevent sediment from flushing into a stream or drainage way. If sediment has been contaminated, dispose of in accordance with existing federal, state, and local rules and regulations.
- F. Unless otherwise indicated, compact embankments, excavations, and trenches by mechanically blading, tamping, and rolling soil in maximum of 8-inch layers. Compaction

density shall be at a minimum of 90 percent Standard Proctor ASTM D698-78 density. Make at least one test per 500 cubic yards of embankment.

- G. Prohibit equipment and vehicles from maneuvering on areas outside of dedicated rights-of-way and easements for construction. Immediately repair damage caused by construction traffic to erosion and sediment control.
- H. Employ protective measures to avoid damage to existing trees to be retained on project site. Conduct construction operations under this Contract in conformance with erosion control practices described in Drawings and this Specification.

3.02 DIKE AND SWALE CONSTRUCTION METHODS

- A. Provide dikes and swales at locations specified on Drawings.
- B. Unless otherwise indicated, maintain minimum dike height of 18 inches, measured from existing or graded ground at up slope toe to top of dike.
- C. Dike and Swale Stabilization: When indicated on Drawings, place stone stabilization in layer minimum of 3 inches in thickness and embedded into soil (6 inches if truck crossing is expected). Extend stone lining across bottom and up both sides of channel minimum height of 8 inches vertically, above bottom. Stone lining on dike side shall extend up the up slope side of dike a minimum height of 8 inches, measured vertically from interface of existing or graded ground and up slope toe of dike, as shown on Drawings. Coarse aggregate may be used in place of stone.
- D. Divert flow from dikes and swales to sediment basins, stabilized outlets, or sediment trapping devices of types and at locations shown on Drawings. Show grade for dikes and swales on Drawings, or, if not specified, provide positive drainage with maximum grade of 1 percent to outlet or basin.
- E. Clear, grub and strip area under dike of vegetation and root material. Remove and dispose of trees, brush, stumps, roots, woody vegetation, oversized stones and rocks, obstructions, organic, and other objectionable material from compacted soil used as fill material for dikes, including soil obtained from swale construction. Dike side slopes shall be 2:1 or flatter. Compact embankments by mechanically blading, tamping, and rolling soil in maximum lifts of 8-inch layers. Use compaction density at minimum of 90 percent Standard Proctor ASTM D-698-78 density. Make at least one test per 500 cubic yards of embankment.
- F. Carry out excavation for swale construction in such manner that erosion and water pollution be minimal. Minimum depth and bottom width shall be 1 foot and 4 feet, respectively, with swale bottom constructed to level. Excavation slopes shall be 2:1 or flatter. Clear, grub and strip excavation area of vegetation and root material.

- G. Inspect dike and swale after each rainfall, daily during periods of prolonged rainfall, and at minimum once a week. Maintain dikes and swales at required depth, grade, and cross section as specified on Drawings. Remove projections or other irregularities, which will impede normal flow.

3.03 DOWN SPOUT EXTENDER CONSTRUCTION METHODS

- A. Install down spout extenders for building roof drains at locations specified on Drawings.
- B. Down spout extender shall have slope of approximately 1 percent. Use pipe diameter of 4 inches or as indicated on Drawings.
- C. Construct down spout of plastic pipe, flexible tubing or similar material.
- D. Inspect down spout extenders after each rain, daily during period of prolonged rainfall, and at minimum once a week. Repair damaged down spout extenders. Redress and replace stone, sod or other stabilizing material at outlet as needed.

3.04 PIPE SLOPE DRAIN CONSTRUCTION METHODS

- A. Install Slope Drains at locations specified on Drawings.
- B. Tamp soil around and under entrance section to top of embankment in lifts appropriately sized for method of compaction utilized.
- C. Construct sub grade to required elevations. Remove and replace soft sections and unsuitable material. Compact sub grade thoroughly and shape to smooth, uniform surface.
- D. Use fill material for embankment free of roots, woody vegetation, oversized stones or rocks, or organic or other objectionable matters. Clear, grub and strip area under embankment of vegetation and root material.
- E. Inlet pipe shall have slope of 1 percent or greater. Use pipe diameter as indicated on Drawings.
- F. Top of embankment over inlet pipe and those carrying water to pipe shall be at least 1 foot higher at all points than top of inlet pipe.
- G. Unless otherwise specified, pipe shall be corrugated galvanized metal pipe with watertight connection bands.
- H. Pipe shall be secured with hold-down grommets spaced 10 feet on centers.
- I. Depth of riprap apron shall be equal to pipe diameter with 2:1 side slopes and placed in minimum 12-inch thick layers.

- J. Inspect slope drains after each rain, daily during period of prolonged rainfall, and at minimum once a week. Repair damaged slope drain sections. Redress and replace stone at outlet as needed to replenish depleted stone. Remove sediment from riprap apron when sediment has accumulated to one-half pipe diameter or one foot, whichever is less, for pipe slope drain.

3.05 PAVED FLUME CONSTRUCTION METHODS

- A. Install Slope Drains at locations specified on Drawings.
- B. Tamp soil around and under entrance section to top of embankment in lifts appropriately sized for method of compaction utilized.
- C. Construct sub grade to required elevations. Remove and replace soft sections and unsuitable material. Compact sub grade thoroughly and shaped to smooth, uniform surface.
- D. Use fill material for embankment free of roots, woody vegetation, oversized stones or rocks, or organic or other objectionable matters. Clear, grub and strip area under embankment of vegetation and root material.
- E. Paved flumes to be utilized on temporary basis during construction may be constructed without reinforcing steel. Construct permanent paved flumes in accordance with applicable agency requirements. Slope shall be as indicated on Drawings.
- F. Inspect paved flumes after each rain, daily during period of prolonged rainfall, and at minimum once a week. Repair damaged sections. Redress and replace stone at outlet as needed to replenish depleted stone.
- G. Remove sediment from riprap apron when sediment has accumulated to depth of one foot.

3.06 LEVEL SPREADER CONSTRUCTION METHODS

- A. Install level spreaders at locations specified on Drawings.
- B. Construct level spreader on undisturbed soil and not on fill. Ensure that spreader lip is level for uniform spreading of storm runoff.
- C. Carry out excavation for level spreader construction in such a manner that erosion and water pollution is minimal. Clear, grub and strip excavation area of vegetation and root material.
- D. Inspect level spreaders after each rainfall, daily during periods of prolonged rainfall, and at minimum once a week. Maintain at required depth, grade, and cross section as specified on Drawings. Remove sediment deposits as well as projections or other irregularities, which will impede normal flow.

END OF SECTION