## ITEM 713

## REINFORCED FILTER FABRIC BARRIER

713.1 Description. This work shall consist of furnishing, installing, and removing temporary erosion protection and sediment control reinforced filter fabric barrier in accordance with these specifications and construction drawings, and as directed by the Engineer. The reinforced filter fabric barrier consists of geotextile fabric supported by a net reinforced fence stretched across and attached to supporting posts or frame and entrenched. This work shall be performed during construction operations and prior to final stabilization to control erosion and sedimentation.

713.2 Materials. Geotextile fabric (filter fabric) shall consist of long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins in a woven fabric. The geotextile fabric shall meet the following specifications:

**Geotextile Fabric Properties: The geotextile fabric used shall equal or exceed the stated property values listed in Table 1 below:**

Table 1

| Silt fence Geotextile Fabric Properties | | | **Requirements Unsupported Silt Fence** | |
|---|---|---|---|---|
| | Units | Supported Silt Fence | Geotextile Elongation ≥50% | Geotextile Elongation <50% |
| Grab Strength | | | | |
| Machine Direction | lbs | 90 | 123 | 123 |
| X-Machine Direction | lbs | 90 | 100 | 100 |
| Permittivity | sec-1 | 0.05 | 0.05 | 0.05 |
| Apparent Opening Size (Maximum average roll value) | Mm/sieve | 0.6/30 | 0.6/30 | 0.6/30 |
| Ultraviolet Stability (Retained Tensile Strength) | % | 70 after 500 hrs exposure | 70 after 500 hrs exposure | 70 after 500 hrs exposure |
| NOTES:<br>1. Table 1 adapted from AASHTO M 288 Geotextile Specification for Highway Applications Table 6. Temporary Silt Fence Property Requirements.<br>2. All numeric values in Table 1 except Apparent Opening Size (AOS) represent minimum average roll values (MARV). Values for AOS represent maximum average roll values. | | | | |

Geotextile fabric shall contain stabilizers and/or inhibitors to make the fabric resistant to deterioration resulting from exposure to sunlight or heat. Geotextile

fabric shall be resistant to commonly encountered soil chemicals, mildew, rot, and insects. Geotextile fabric shall be free of defects or flaws that affect its physical and/or filtering properties. Geotextile fabric shall provide an expected useable life comparable to the anticipated construction period.

Fence posts shall be either steel or hardwood, essentially straight, with a minimum length of 4 feet. Hardwood posts shall be 2-inch x 2-inch minimum, or equivalent. Metal posts shall be either studded T or U steel type with a minimum weight of 1.28 lbs. per linear foot. Fin anchors shall be used to resist post movement as directed by the Engineer.

Net reinforced fence shall be 2 inch by 4 inch welded wire fabric mesh. The mesh support height shall be the equivalent height, or greater, of the geotextile fabric to be attached. Plastic grid mesh or other support mesh may be substituted for welded wire mesh as approved by the Engineer.

Attachment of net reinforced fence and geotextile fabric shall be with wire ties, staples, or shoat rings. Wire ties shall be 14 gage minimum, staples shall be no. 9 wire minimum with a ½ inch minimum crown length, and shoat rings shall be galvanized, or as approved by the engineer.

A prefabricated unit with geotextile fabric, posts, and wire mesh meeting the minimum specifications in this item may be used in lieu of a constructed filter fabric barrier.

713.3 Construction Methods. No clearing and grubbing or rough cutting, other than as specifically directed by the Engineer to allow for soil testing, surveying and installation of erosion protection and sediment control measures, shall be permitted until sediment control and erosion protection systems are in-place.

Reinforced filter fabric barriers shall be installed at the locations shown on the construction drawings and in accordance with the drawing attached to this specification or as directed by the Engineer. Reinforced filter fabric barriers shall be constructed in accordance with an approved schedule that clearly describes the timing during the construction process that the various erosion control measures will be implemented. Filter fabric barriers shall be installed so as surface runoff will percolate through the system and allow sediment to be retained and accumulated.

Posts shall be driven to a minimum depth of 1 foot into the ground. Posts shall be a minimum of 18” above the ground. Posts shall be placed with a maximum spacing of 6 feet and be installed on a slight angle toward the anticipated runoff.

Trenches shall be dug along the uphill side of the fence to anchor at least 8 inches of the filter fabric to prevent underflow. The trench shall be a 6-inch x 6-inch square, or a 4 inch deep V-trench.

Net reinforced fence shall be attached to the posts. Attachment shall be at the top and midsection. Additional ties or staples shall be added to secure the net reinforced fence to the posts as directed by the Engineer.

Geotextile fabric shall be placed against the side of the trench with approximately 2 inches across the bottom in the upstream direction. Using wire ties or shoat rings, the geotextile fabric shall be attached to the net reinforced fence. The fabric shall be attached at the top and midsection. The horizontal spacing of the attachment shall be every 24 inches, or less. Additional ties, shoat rings, or staples shall be added to secure fabric to the net reinforced fence or posts as directed by the Engineer.

Geotextile fabric shall be provided in continuous rolls and cut to the length of the barrier, so as to minimize joints. When joints of two sections of fabric are necessary, the fabric shall be spliced together only at a support post. The fabric shall be overlapped a minimum of 6 inches at a post, folded, and secured at six or more places. Splices in concentrated flow areas will not be permitted.

Geotextile fabric shall be attached at the end posts at a minimum of four locations. Geotextile fabric shall be entrenched and attached to the posts so as a minimum of 18 inches of the fabric is above the ground. The trench then shall be backfilled and hand tamped as approved by the Engineer.

Contractor shall inspect the reinforced filter fabric barriers at least once every week or as directed by the Engineer. The Contractor shall remove irregularities which will impede normal flow. Erosion protection and sediment control systems shall be maintained by the Contractor until final stabilization. Damage caused to erosion protection and sediment control systems shall be repaired immediately.

The Contractor is responsible for removal and proper disposal of sediment and debris from the filter fabric barrier system and as directed by the Engineer. Sediment and debris shall not be allowed to flush into the storm sewer system, waterways, and jurisdictional wetlands, or onto adjacent properties. Sediment deposits shall be removed before they reach one-third of the height of the filter fabric barrier.

Uncontaminated sediment can be placed at the project spoil site or, if properly handled, spread out to supplement fill requirements. The Engineer will designate how the sediment deposits are to be handled. Uncontaminated sediment shall not be placed in waterways or jurisdictional wetlands, unless as approved by the engineer. If sediment has been contaminated, then it shall be disposed of in accordance with the applicable federal, state, and local regulations. Offsite disposal shall be the responsibility of the Contractor.

After final stabilization and at the direction of the Engineer, the Contractor, when required, shall be responsible for removing all erosion protection and sediment control systems that are not permanent, from the project.

713.4 Quality Assurance. The Contractor is responsible for the control of the quality of materials incorporated into the construction and the quality of completed construction. The City of Deer Park will have the option to engage materials engineering services to provide quality assurance testing and inspection to assist the City Engineer in determining the acceptability of materials and completed construction. Quality assurance services provided by the City do not relieve the Contractor of his responsibility for quality control. The Materials Engineer shall not have control of the means, methods, techniques, sequences or procedures of construction selected by the Contractor.

713.5 Measurement and Payment. When paid for separately as a pay item, measurement and payment for reinforced filter fabric barrier shall be by the linear foot, complete and in-place, measurement being made along the centerline of the top of the barrier.

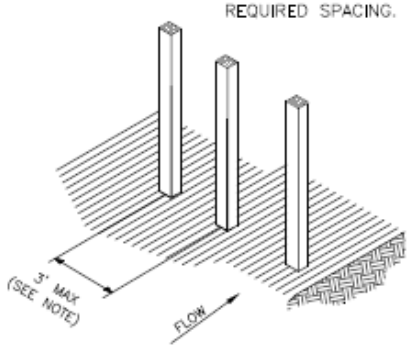
Payment for reinforced filter fabric barrier shall include and be full compensation for all labor, equipment, materials, supervision and all incidental expenses for the construction of this item, complete and in-place, where 60% of the total unit cost shall be for furnishing and placing all materials. Thus, 40% of the total unit cost shall be for the removal and disposal of erosion protection and sediment control systems: reinforced filter fabric barrier, after final stabilization, at the end of the project.

If no separate Bid Item is provided on the Proposal for "Reinforced Filter Fabric Barrier", then it is considered a subsidiary item for construction of the Project and there will be no separate measurement or payment.

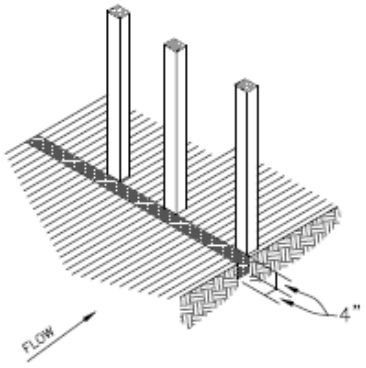
Note: This specification requires a drawing.

END OF ITEM 713

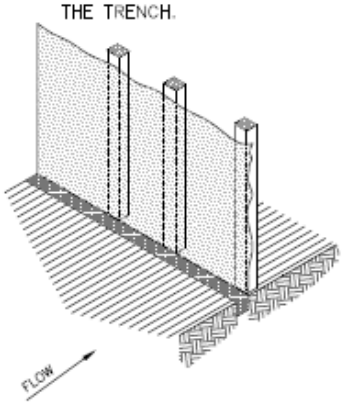
1. SET POST AT REQUIRED SPACING.



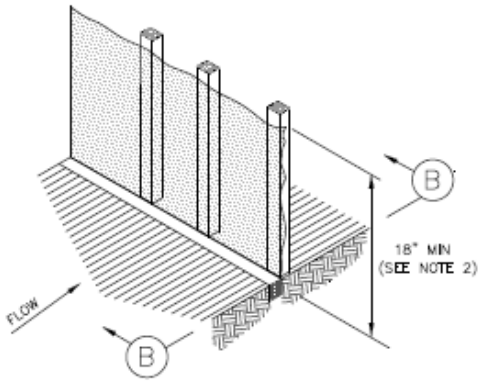

2. EXCAVATE A 4"X4" TRENCH UPSLOPE ALONG THE LINE OF STAKES.



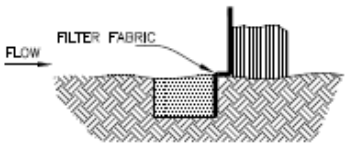

3. ATTACH FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.




4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

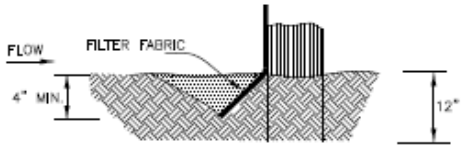



EXTENSION OF FABRIC INTO TRENCH




SECTION B

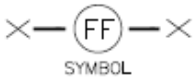
ALTERNATE V-TRENCH EXTENSION OF FABRIC INTO TRENCH




SECTION ALTERNATE B

## CONSTRUCTION NOTES

1. 2-INCH BY 2-INCH WOODEN STAKES TO BE SET AT MAX SPACING OF 3 FEET AND EMBEDDED A MIN. OF 8 INCHES. IF PRE-ASSEMBLED FENCE WITH SUPPORT NETTING IS USED, SPACING OF POST MAY BE INCREASED TO 8 FEET MAX.
2. ATTACH FILTER FABRIC TO WOODEN STAKES. FILTER FABRIC FENCE SHALL HAVE A MIN HEIGHT OF 18 INCHES AND MAX. HEIGHT OF 36 INCHES ABOVE NATURAL GROUND.
3. WHEN TWO SECTIONS OF A FILTER CLOTH ADJOIN EACH OTHER THEY SHOULD BE OVERLAPPED 6 INCHES AT THE POSTS AND FOLDED.




SYMBOL

# FILTER FABRIC FENCE