

**Item No. 643S**  
**Stone Outlet Structure**

**643S.1 Description**

This item shall consist of a temporary crushed stone dike installed in conjunction with and as part of a diversion dike, interceptor dike or perimeter swale. The purpose of this stone outlet structure is to provide a protected outlet for a diversion dike, interceptor dike or perimeter dike, to provide for diffusion of concentrated flow and to allow the area behind the dike to de-water (Environmental Criteria Manual Section 1.4.2.D). This item shall include removal of the "Stone Outlet Structure" and re-vegetation of the area.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text, the inch-pound units are given preference followed by SI units shown within parentheses.

**643S.2 Submittals**

The submittal requirements for this specification item shall include:

- A. Source, manufacturer, characteristics and test data for the filter fabric,
- B. Source, type and gradation of stone,
- C. Re-vegetation program, including:
  - 1. Identification of the type, source, mixture, Pure Live Seed (PLS) and rate of application of the seeding.
  - 2. Type of mulch.
  - 3. Type of tacking agent.
  - 4. Type and rate of application of fertilizer.

**643S.3 Materials**

A. Stone

The stone used in construction of this stone outlet dike shall be crushed stone at least 3 inches (75 mm) in diameter but not over 6 inches (150 mm) in diameter or 1/2 cubic foot (.014 cubic meter) in volume.

B. Seeding

Seeding for re-vegetation shall conform to Standard Specification Item No. 604S, "Seeding for Erosion Control".

C. Fabric Core

1. General:

The filter fabric shall be of non-woven polypropylene, polyethylene or polyamide geotextile with non-raveling edges. The fabric shall be non-biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture or other weather conditions, and permeable to water while retaining sediment. The filter fabric shall be supplied in rolls a minimum of 36 inches (0.9 meter) wide.

2. Physical Requirements:

The fabric shall meet the requirements presented in TABLE 1, when sampled and tested in accordance with the methods indicated herein, on Standard Detail No. 643S-1 and/or on the Drawings.

TABLE 1. Filter Fabric Requirements		
Physical Properties	Method	Requirements
Fabric Weight in ounces per square yard (grams/square meter)	TEX-616-J <sup>1</sup>	4.5 minimum (150 minimum)
Water Flow Rate in gallons/sq. foot/ minute (liters/square meter/minute)	TEX-616-J <sup>1</sup>	40 maximum (1630 maximum)
Equivalent Sieve Opening Size: US Standard (SI Standard sieve size)	CW-02215 <sup>2</sup>	40 minimum (425 μm minimum)
Mullen Burst Strength: lbs. per sq. inch (psi) megaPascal (mPa)	ASTM D-3786 <sup>3</sup>	250 minimum (1.7 minimum)
Ultraviolet Resistance; % Strength Retention	ASTM D-1682 <sup>4</sup>	70 minimum

<sup>1</sup> TxDOT Test Method Tex-616-J, "Testing of Construction Fabrics".

<sup>2</sup> US Army Corps of Engineers Civil Works Construction Guide Specification CW-02215, "Plastic Filter Fabric".

<sup>3</sup> ASTM D-3786, " Test Method for Hydraulic Bursting Strength of Knitting Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method".

<sup>4</sup> ASTM D-1682, " Test Methods for Breaking Load and Elongation of Textile Fabrics ".

**643S.4 Construction Methods**

On the area over which the Stone Outlet Structure is to be placed, all clearing, grubbing and excavation operations shall be completed before placing the Stone Outlet Structure. The Stone Outlet Structure foundation soil shall be compacted to the extent necessary to provide an in place density (TxDOT Test Method Tex-115E) not less than 90 percent of the laboratory density as determined in accordance with TxDOT Test Method Tex-114-E. The stone shall be placed, spread and shaped to the grades indicated on the Drawings and/or Standard Detail No. 643S-1. All disturbed areas shall be graded and compacted to an in place density (TxDOT Test Method Tex-115E) not less than 85 percent of the maximum laboratory density (TxDOT Test Method Tex-114-E) and then seeded in accordance with Standard Specification Item 604S.

The stone outlet structure shall be inspected by the Contractor monthly and after each rainfall event with an accumulation of 1 inch (25 mm) or more. Stone shall be replaced when the structure ceases to function as intended due to silt accumulation among the stone, washout, construction traffic damage, etc. When the silt reaches a depth equal to 1/3 the height of the structure or six inches (150 mm), whichever is less, the Contractor will remove the accumulated silt and dispose of it at a disposal site, that is approved by the Engineer or designated representative, in a manner that will insure that additional siltation will not occur.

When indicated on the Drawings, the Stone Outlet Structure shall be removed when directed by the Engineer or designated representative and the area leveled off and protected by erosion control measures appropriate for the terrain. Stabilization shall consist of complete vegetation cover, sufficiently established to be erosion resistant.

### 643S.5 Measurement

Acceptable work performed as prescribed by this item shall be measured by the cubic foot (cubic meter: 1 cubic meter equals 35.315 cubic feet) of the outlet.

### 643S.6 Payment

The work performed and materials furnished and measured as provided under "Measurement" will be paid for at the unit bid price per lineal foot of "Stone Outlet Structure". The price shall include full compensation for furnishing, hauling and placing all materials, labor, tools, equipment and incidentals necessary to complete the work including inspecting, repairing, replacing and relocating existing fencing, removal of silt and removal and disposal of all materials at the completion of construction and re-vegetation of disturbed areas.

Payment will be made under:

**Pay Item No. 643S:** Stone Outlet Structure Per Cubic Foot.

End

<b><u>SPECIFIC</u></b> CROSS REFERENCE MATERIALS
--

City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Section 1.4.2.D	Stone Outlet Structures

City of Austin Standard Details

<u>Designation</u>	<u>Description</u>
Number 643S-1	Stone Outlet Structure

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 604S	Seeding for Erosion Control

American Society For Testing and Materials (ASTM)

<u>Designation</u>	<u>Description</u>
D-1682	Test Methods for Breaking Load and Elongation of Textile Fabrics
D-3786	Test Method for Hydraulic Bursting Strength of Knitting Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method

Texas Department of Transportation Manual of Testing Procedures

<u>Designation</u>	<u>Description</u>
Tex-114-E	Laboratory Compaction Characteristics and Moisture-Density Relationship of Subgrade & Embankment Soils
Tex-115-E	Field Method For Determination of In-Place Density of Soils and Base Materials
Tex-616-J	Testing of Construction Fabrics

U.S. Army Corps of Engineers

<u>Designation</u>	<u>Description</u>
CW-02215	Civil Works Construction Guide Specification, "Plastic Filter Fabric".

<b><u>RELATED</u></b> CROSS REFERENCE MATERIALS
---

City of Austin Environmental Criteria Manual

<u>Designation</u>	<u>Description</u>
Table 1-1.3	Recommended Design Values For Functional Controls
Table 1-2	Maximum Water Depth At The Barrier

City of Austin Standard Specifications

<u>Designation</u>	<u>Description</u>
Item No. 101S	Preparing Right of Way
Item No. 102S	Clearing and Grubbing
Item No. 111S	Excavation
Item No. 120S	Channel Excavation
Item No. 401S	Structural Excavation and Backfill
Item No. 610S	Preservation of Trees and Other Vegetation