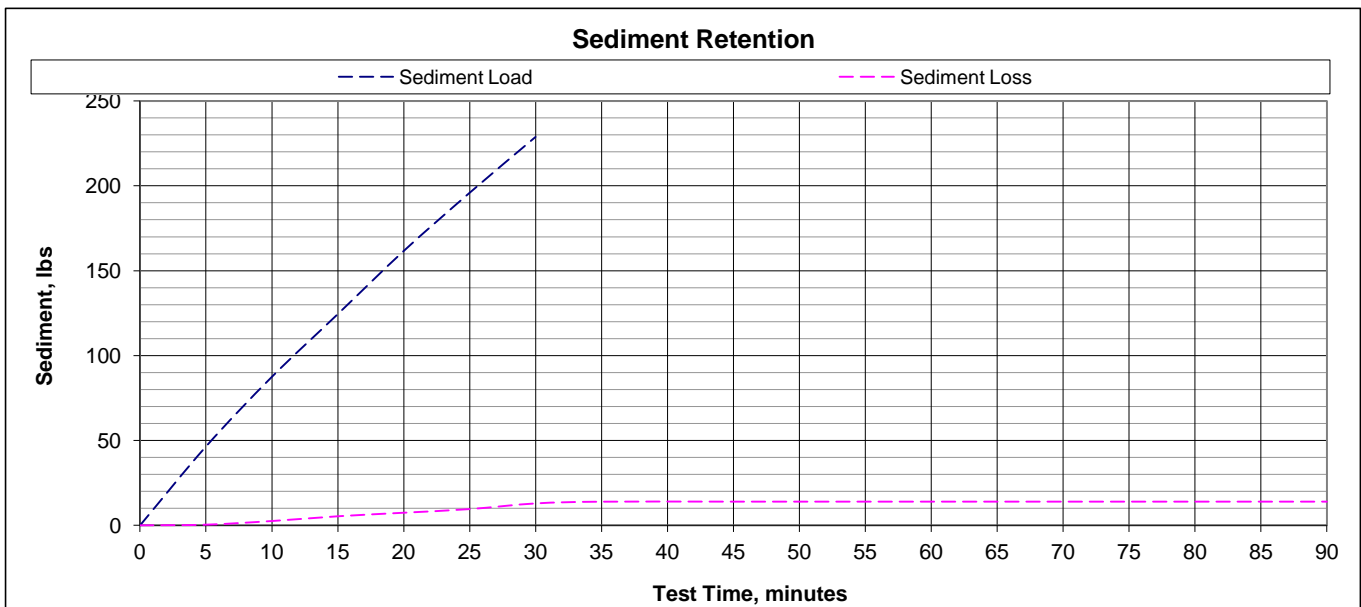
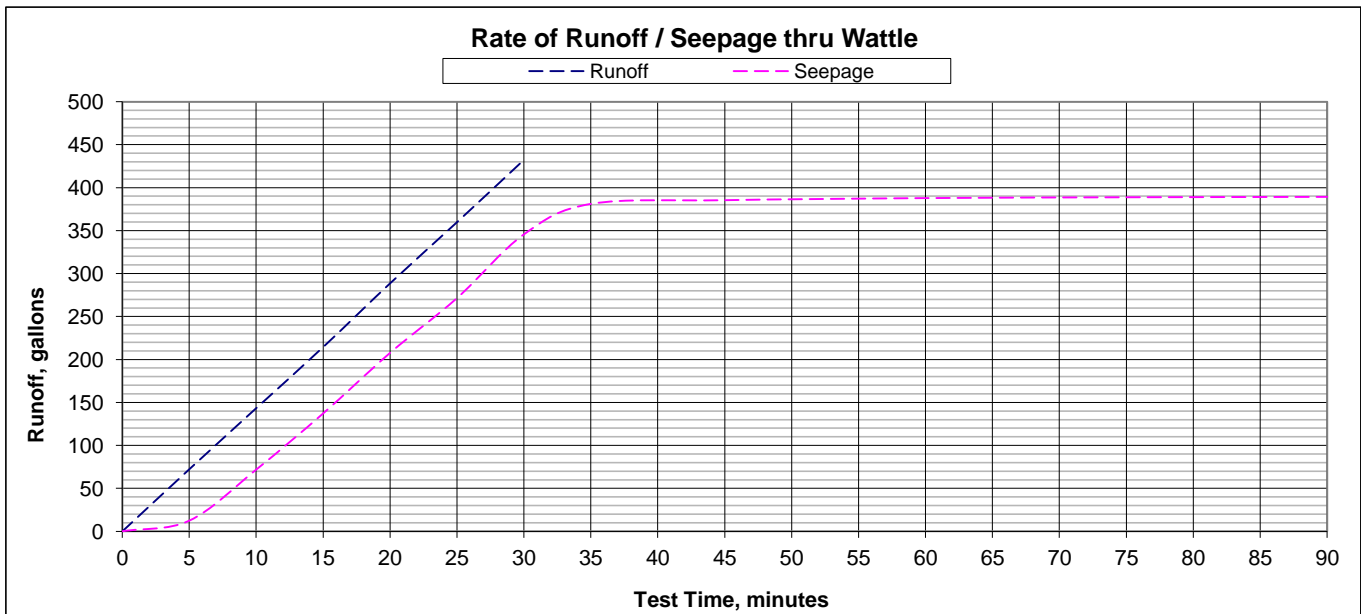


Project: ASTM D 7351
Client / Listing # / Product: SOX Erosion T2 Silt Fence
Test Date: 7/12/2022
Test Setup: Toe-of-Slope Installation: Metal T-Posts @ 6' Spacing
Duration: 90 minutes
Water / Soil / Oil Input: 3605 lbs water 230 lbs soil
Sediment Concentration: Loam @ 6.0%

Soil Retention Effectiveness: 93.9%
Seepage Effectiveness: 90.0%



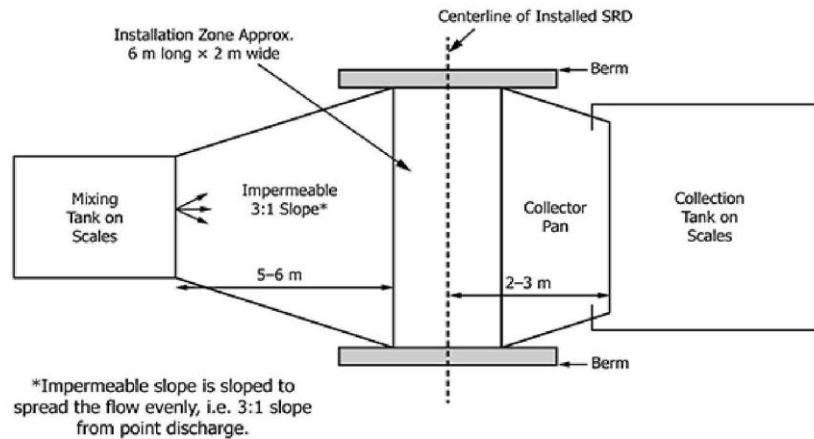
The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose

CJS 7/22/22

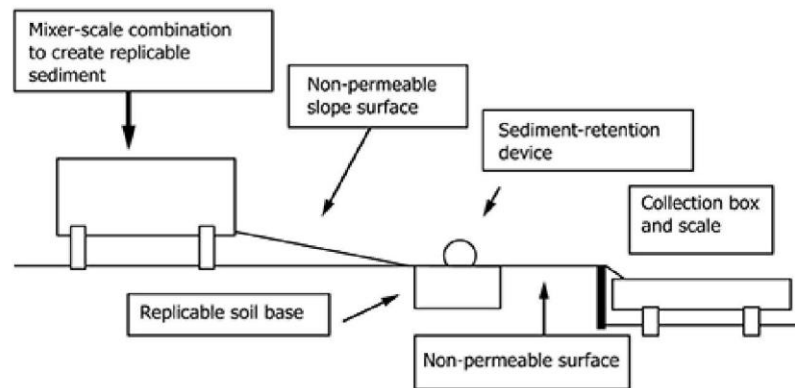
 Quality Review / Date

Testing Overview

The large-scale testing reported herein was performed in general accordance with ASTM D7351. Schematics of the D7351 setup are shown below. For this testing, a simulated toe-of-slope installation 16-ft wide was used. The SRD was installed in the middle of the installation zone according to manufacturer recommendations and exposed to simulated runoff. Sediment-laden water was mixed and discharged onto the 3:1 slope and allowed to run to and seep through the installed SRD. The weight of sediment-laden flow was measured in both the mixing and collection tanks during the test. Additionally, grab samples of the seepage were taken every 5 minutes. The measurement of sediment that passes through the installed SRD is compared to the measured amount in the upstream flow and is used to quantify the effectiveness of the SRD in retaining sediments while allowing continued seepage.



D7351 Schematic (Plan)



D7351 Schematic (Profile)

Test Setup

The test procedure requires an integrated system of equipment to accomplish the full-scale testing of toe-of-slope SRDs. The system used for this testing includes the following components:

- A mixing tank with an internal paddle device mounted on scales capable of holding/weighing 10,000 lb of sediment-laden water.
- An elevated simulated storm drain inlet with a fully contained area for upstream ponding and downstream accessibility for sampling.
- A tank mounted on scales of sufficient volume to collect all runoff passing the SRD.

Concentrated sediment-laden flow is discharged from the mixing tank to an impermeable slope located between the mixing and the SRD installation zone. The installation zone is about 4 feet by the width of the slope and is comprised of prepared soil subgrade to allow full-scale installation of the SRD. The discharged sediment-laden water is allowed to run up to and seep through, over, and/or under (but not around the ends of) an SRD installed along the toe of the slope. The seepage drains into the collection tank.

Test Soil

The test soil used in the test plots had the characteristics shown in Table 2.

Table 2. Test Soil Characteristics

Soil Characteristic	Test Method	Value
% Gravel	ASTM D 422	0
% Sand		65
% Silt		20
% Clay		15
Liquid Limit, %	ASTM D 4318	26
Plasticity Index, %		5
Soil Classification	USDA	Sandy Loam
Soil Classification	ASTM	Silty Clayey Sand (SC-SM)

Preparation of the Installation Zone

The installation zone subgrade soil is placed and compacted. Compaction is verified to be 90% ($\pm 3\%$) of Standard Proctor density and moisture content is verified to be within $\pm 3\%$ of optimum moisture content using ASTM D2937 (drive cylinder method).

Toe-of-Slope SRD Installation

The SRD is installed in the installation zone in accordance with the the manufacturer's installation instructions as shown below.



Typical Test Setup and SRD Installation

Mixing Sediment-Laden Runoff

Sediment-laden runoff was created by combining water and soil in the mixing tank and agitating during the test. 3605 lb of water and 230 lb (dry weight) of test soil were combined to create the sediment-laden runoff of 6% (60000 mg/L). These quantities represent the "default" condition given in the standard which is a hypothetical 30-minute, peak flow from a 24-hour, 4-inch rainfall on a 100-ft long x 20-ft wide bare soil slope. The water and soil quantities were adjusted to reflect a 16-ft wide installation.

Specific Test Procedure

After the SRD is installed, the sediment-laden runoff is discharged evenly for 30 minutes while agitation is maintained. The quantity of released runoff is measured at 5-minute intervals by noting the reduction in weight in the mixing tank, adjusting the valve on the tank outlet to increase/decrease flow to stay as close as possible to the target ($3835 \text{ lb} / 30 \text{ min} = 128 \text{ lb} / \text{min}$). For this testing, the discharge flow is introduced to allow it to flow up to and through the SRD. Retention observations and ponding depths, and associated times, are recorded during the test. As runoff passing the SRD system is collected, the weight and volume in the collection tank is recorded and grab samples are taken at 5 minute intervals. Cutoff time is the earlier of 90 minutes or when there is low-volume ponding and minimal discharge. Grab samples are evaluated in a lab to determine turbidity (using a Hach 2100 AN Turbidimeter) and to determine percent dry solids content. Drying of collected sediments is accomplished in a forced air oven at 110°C for a minimum of 24 hours or until all moisture is driven off. All weighing of sediments is done with laboratory scales accurate to ± 0.01 grams.



16-ft Wide Test Setup / Product Installed



Test Flow Introduced / Initial Ponding



Ponding and Sediment Build-up Behind Product at end of Flow (30 minutes) and at end of Seepage (60 minutes)

APPENDIX - DATA

ASTM 7351 Soil Retention and Water Seepage Effectiveness																									
Client / Product: SOX Erosion T2 Silt Fence												Soil: Loam - 6% Sediment Concentration													
Test Setup: Toe-of-Slope Installation: Metal T-Posts @ 6' Spacing																									
Date: 7/12/2022								Start Time: 3:11 PM				End Time: 4:41 PM													
Sample Number	Test Time, minutes	Oil & Grease, mg/L	Turbidity	Total Weight, g	Dry Weight, g	Bottle Weight, g	Dry Sediment Weight, mg	Total Collected Water Wt., g	Total Collected Volume, l	Sediment Conc., mg/l	% Solids	Reservoir Weight, lb	Assoc. Water Discharge, gal	Cumulative Water Discharge, gal	Coll. Tank Depth, in	plot time	SRD Ponding Height, in	Cumulati ve Soil Loss, lbs	Assoc. Solids Loss, lbs	Soil Retention Effectiveness, %	Water Retention Effectiveness, %				
Upstream														0						0		0			
B0	0	n/a	8746	370.25	172.56	156.82	15740	40.87	0.25	62960	7.37%	3835	72.2	72.2		5.0		46.5	46.5						
B5	5	n/a	9999	383.50	171.78	155.98	15800	55.74	0.25	63200	6.94%	3186	71.1	143.3		10.0		87.5	41.1						
B10	10	n/a	9999	389.03	170.31	156.32	13990	62.40	0.25	55960	6.01%	2552	71.1	214.4		15.0		124.5	37.0						
B15	15	n/a	9999	386.83	169.99	156.81	13180	60.03	0.25	52720	5.73%	1922	74.2	288.6		20.0		161.7	37.2						
B20	20	n/a	9999	371.02	168.87	156.86	12010	45.29	0.25	48040	5.61%	1266	71.2	359.7		25.0		196.0	34.3						
B25	25	n/a	9999	377.76	168.55	156.82	11730	52.39	0.25	46920	5.31%	638	72.5	432.3		30.0		228.9	32.9						
B30	30	-	9999	373.09	167.47	156.62	10850	49.00	0.25	43400	5.01%	0	-	-		-		-	-						
Water in Mixer (lbs): 3605			Soil Added (lbs): 230			Oil Added (g): 0			AVGS: 53314		6.00%		TOTALS: 432.3								228.9				
Downstream																0		0		0					
A0	0	-	2217	367.50	158.52	157.49	1030	51.49	0.25	4120	0.49%	0	12.4	12.4	0.0	5	0.0	0.4	0.4	93.91%	9.99%				
A5	5	n/a	678	352.49	157.23	156.70	530	38.56	0.25	2120	0.27%	104	59.4	71.9	2.0	10	25.0	2.6	2.2						
A10	10	n/a	9999	359.67	157.98	156.77	1210	44.92	0.25	4840	0.60%	602	65.4	137.2	55.0	15	33.0	5.4	2.8						
A15	15	n/a	6389	375.19	158.34	157.41	930	59.44	0.25	3720	0.43%	1150	70.5	207.7	80.0	20	35.0	7.5	2.1						
A20	20	n/a	4201	364.08	157.84	157.25	590	48.99	0.25	2360	0.29%	1740	63.8	271.4	109.0	25	38.0	9.6	2.1						
A25	25	n/a	9470	357.29	156.36	155.31	1050	45.62	0.25	4200	0.52%	2274	74.2	345.6	138.0	30	44.0	12.9	3.3						
A30	30	n/a	9999	372.83	157.14	155.94	1200	59.75	0.25	4800	0.55%	2896	35.4	381.0	168.0	35	45.0	14.0	1.0						
A35	35	n/a	2089	382.66	157.23	156.91	320	68.52	0.25	1280	0.14%	3192	4.3	385.3	184.0	45	31.0	14.0	0.0						
A45	45	n/a	95	373.99	158.92	158.90	20	56.17	0.25	80	0.01%	3228	2.4	387.7	184.0	60	27.0	14.0	0.0						
A60	60	n/a	48	358.87	157.40	157.38	20	44.09	0.25	80	0.01%	3248	1.0	388.6	185.0	75	25.0	14.0	0.0						
A75	75	n/a	47	360.19	156.72	156.70	20	46.77	0.25	80	0.01%	3256	0.5	389.1	186.0	90	24.0	14.0	0.0						
A90	90	n/a	60	352.64	156.80	156.78	20	39.06	0.25	80	0.01%	3260	-	-	-	-	-	-	-						
									2313		0.28%		3260		389.1				14.0						