

# EROSION PREVENTION & SEDIMENT CONTROL NARRATIVE

## 1.1 PROJECT DESCRIPTION

This project involves Bridges 3N and 3S, Interstate 91, over Broad Brook and Broad Brook Road in the town of Guilford. Work to be performed on both bridges includes: new approach slabs, new superstructure, new wingwalls, replacement of pier capbeams, and abutment modifications. Bridge 3N will be widened to create a longer acceleration lane from the Welcome Center. In addition to the bridge construction, a new u-turn will be built at NB 14+00. Traffic will be detoured onto the adjoining bridge with the use of crossovers creating 2 way traffic.

Total disturbed area, excluding waste, borrow, and contractors' off-site staging areas equals 6.76 acres.

Disturbed Area Breakdown: New U-Turn - 0.14 Acre  
Areas Around & Under Bridges - 2.10 Acres  
Bridge 3N Lane Widening - 1.55 Acres  
Median Crossovers - 2.97 Acres (Phase A - 1.94 AC,  
Phase B - 1.90 AC, with some shared areas)

## 1.2 SITE INVENTORY

### 1.2.1 OFF SITE DRAINAGE CHARACTERISTICS (UP AND DOWN GRADIENT)

The property surrounding the project site consists of well established vegetation, moderate to steeply sloping, mixed softwood and hardwood trees with well defined drainage. Due to the nature of the surrounding terrain, runoff water entering the project site will be primarily limited to that which is conveyed through the I-91 median, and ditches along Broad Brook Rd.

### 1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER

Broad Brook is the only river located in the project area. It outlets into The Connecticut River, approximately 2 miles to the east of the project area. There are no other waterways or bodies of water within the project area. Much of the runoff water will exit the project area via drop inlets (some new, some existing), located in the median and in the roadway shoulders.

### 1.2.3 TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES

The existing topography of the project site is rolling and wooded. This project does not encroach upon any buildings or privately held properties. The banks of Broad Brook are stone lined on both sides of the river. Stone fill extends approximately 80' to the east of BR 3N, and 80' to the west of BR 3S. Broad Brook Road parallels Broad Brook, and is the only other road located within the project area. No utilities will be affected by this project.

### 1.2.4 VEGETATION

A mix of hardwood trees, softwood trees, and various sizes of shrubs exist within the project boundaries, and just beyond the project limits. As many as possible will be spared during construction. The median is made up mostly of coarse grass. Impacts to the median will be substantial where the crossovers are constructed. Scattered brush and small trees exist between the stone fill on either side of Broad Brook Road underneath the bridge. Site disturbance in this area will be limited to that which is affected by construction equipment accessing the bridge piers. Following construction, vegetation will be reestablished using standard seed and mulch practices.

### 1.2.5 SOILS

The two main types of soil found within the project area are Brayton Silt Loam, and Quonset & Warwick.

Brayton Silt Loam, 2 to 8% slopes, very stony, is a very deep, gently sloping and poorly drained soil in depressions and drainageways in upland areas. Stones cover up to 3% of the surface. Permeability in this Brayton soil is moderate in the subsoil and slow in the substratum, and potential frost action is high. It has a soil erodibility coefficient (K-Value) of 0.20.

Quonset soils in the surveyed area were mapped only in an undifferentiated group with Warwick soils. Quonset soils have a coarser textured subsoil than the somewhat excessively drained Warwick soils. Quonset and Warwick soils are found on stream terraces and other outwash areas. The ratio of Quonset to Warwick changes as the slope changes: At 2 - 8% slopes, the total acreage of the map unit is about 50% Quonset, 30% Warwick, and 20% other soils; At 15 - 25% slopes it is 60% Quonset, 25% Warwick, and 15% other; At 25 - 70% slopes, it is 55% Quonset, 30% Warwick, and 15% other. The K-Value for Quonset & Warwick soil ranges from 0.10 to 0.24.

\*Generally, K-Values indicate the following:  
0.23 & lower - low erodibility  
0.24 to 0.36 - moderate erodibility  
0.37 and higher - high erodibility

### 1.2.6 SENSITIVE RESOURCE AREAS

No 'Threatened & Endangered Species' have been identified within the project limits and there will be no adverse effect to agricultural or archaeological features. Broad Brook is the only identified resource and there are no mapped wetlands within the vicinity of the project.

### 1.2.7 PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

Soil disturbance near Broad Brook will be limited to that which is necessary to place Stone Fill, Type IV on river banks, and to rehabilitate piers 1 & 2 NB, and piers 1 & 2 SB. Cofferdams will be required for Bridge 3N's piers so that they may be lengthened to support the new acceleration lane.

## 1.3 RISK EVALUATION

This project falls under the jurisdiction of construction general permit 3-9020, based on the project impact area of 6.76 acres. The project has been determined to be low risk, and as such the Low Risk Site Handbook must be on site and complied with at all times. Any modifications to the project shall result in a re-evaluation of the risk, and that the contractor is responsible for re-filing should the risk change.

## 1.4 EROSION PREVENTION & SEDIMENT CONTROL

The erosion control plans are meant as a guideline for preventing erosion and controlling sediment transport. The work outlined in this narrative consists of applying measures throughout the life of the project minimizing sediment transport to the receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls.

Preventing initial soil erosion is much more effective than treating eroded sediment. Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial EPSC measure that should be established wherever possible.

All measures shall be regularly maintained and shall be checked for sediment build-up. Sediment shall be disposed of at an approved site where it will not be subject to erosion. Refer to the low risk site handbook and appropriate detail sheets for each practice required on the project to include, but not limited to, the following:

### 1.4.1 MARK SITE BOUNDARIES

Project demarcation fencing, denoted -PDF- on the plans, is used to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

### 1.4.2 LIMIT DISTURBANCE AREA

Employ temporary stabilization practices in incremental stages (phasing) as construction proceeds. Additional measures will be needed due to the phasing of the project and as directed by the engineer.

### 1.4.3 STABILIZE CONSTRUCTION ENTRANCE

Stabilized construction entrances shall be used where necessary.

### 1.4.4 INSTALL SILT FENCE

Prior to any upslope work, silt fence shall be installed, as shown on the plans or as necessary.

### 1.4.5 DIVERT UPLAND RUNOFF

Not applicable.

### 1.4.6 SLOW DOWN CHANNELIZED RUNOFF

Check dams shall be used as necessary.

### 1.4.7 CONSTRUCT PERMANENT EPSC CONTROLS

Type II & Type IV stone for slope lining and channel protection.  
Seeding and mulching.  
Drainage inlets and piping.

Stream bank vegetation will be introduced in the grubbing material that is to be placed over the stream bank stone fill.

### 1.4.8 STABILIZE EXPOSED SOILS

Seeding and mulching.  
Temporary & permanent erosion matting.

Tracking of all exposed slopes, combined with temporary mulching, will be utilized on a regular basis. Slopes shall be stabilized within 48 hours of forecasted rain. Seeding, mulching and biodegradable erosion control matting (or an equivalent) shall be used to stabilize all slopes steeper than 1:3. These slopes shall be stabilized within 48 hours of reaching intermittent phases of construction.

### 1.4.9 WINTER STABILIZATION

Various measures specific to winter (see low risk handbook).

### 1.4.10 STABILIZE SOIL AT FINAL GRADE

Seeding and mulching.  
Temporary & permanent erosion matting.

Seeding, mulching and biodegradable erosion control matting (or an equivalent) shall be used to stabilize all slopes steeper than 1:3. These slopes shall be stabilized within 48 hours of reaching final grade.

### 1.4.11 DE-WATERING ACTIVITIES

Sediment basins for pier work shall be used as necessary. See sediment settling basin sizing criteria chart on this sheet.

### 1.4.12 INSPECT YOUR SITE

Inspect site based on permit authorization or special provision requirements.

GRADING PLAN & CONSTRUCTION TIME TABLE APPEARS ON SHEET 90A OF 114.

SIZING REQUIREMENT FOR SEDIMENT SETTLING BASIN

PUMP FLOW RATE	REQUIRED SURFACE AREA	LENGTH WIDTH = 2:1					
		Q (gpm)	Q (m <sup>3</sup> /s)	(ft <sup>2</sup> )	(m <sup>2</sup> )		
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

## EPSC NARRATIVE

PROJECT NAME:	GUILFORD		
PROJECT NUMBER:	IM 091-1(33)		
FILE NAME:	95a176/STR/sa176nar.dgn	PLOT DATE:	04/29/08
PROJECT LEADER:	FARNSWORTH	DRAWN BY:	WEEBER
DESIGNED BY:	STR6	CHECKED BY:	FARNSWORTH
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