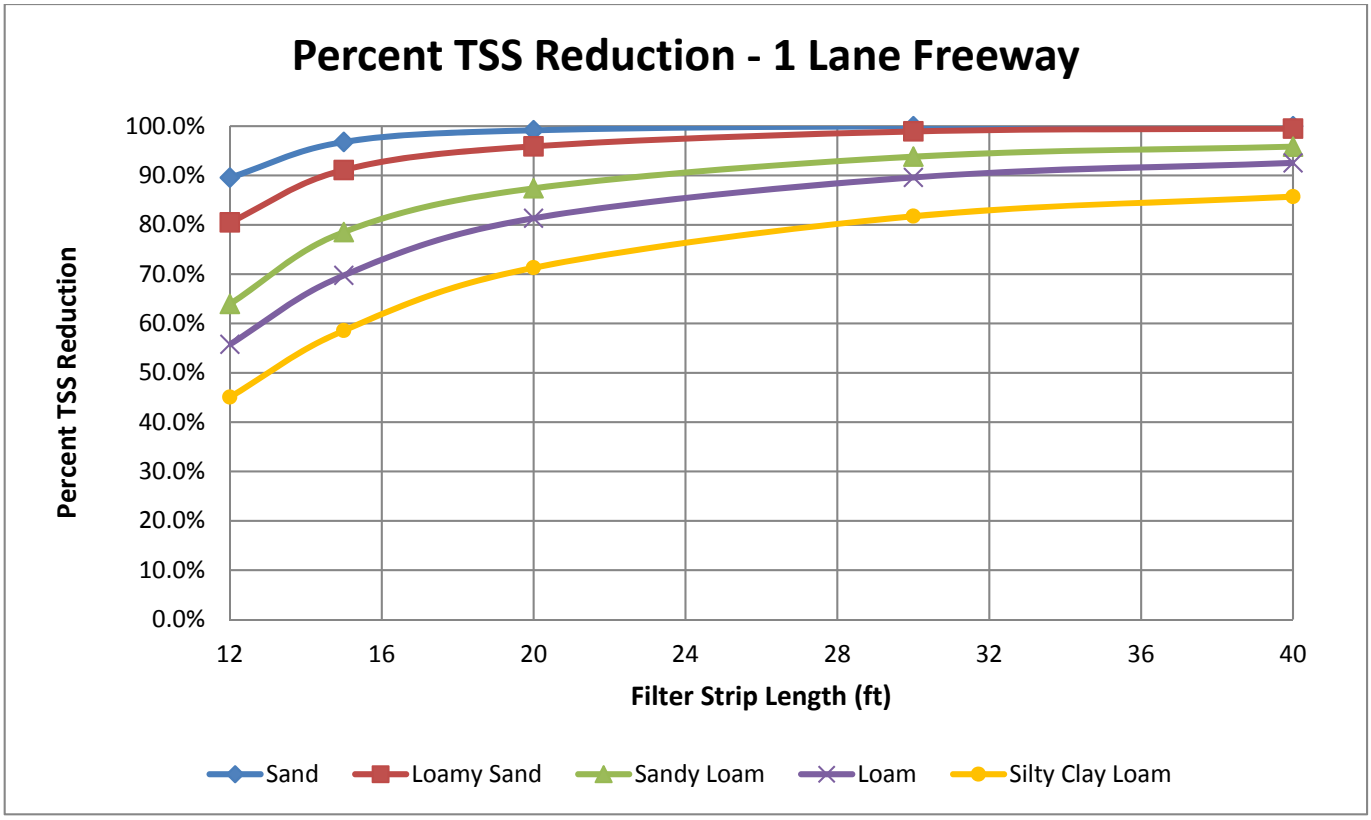
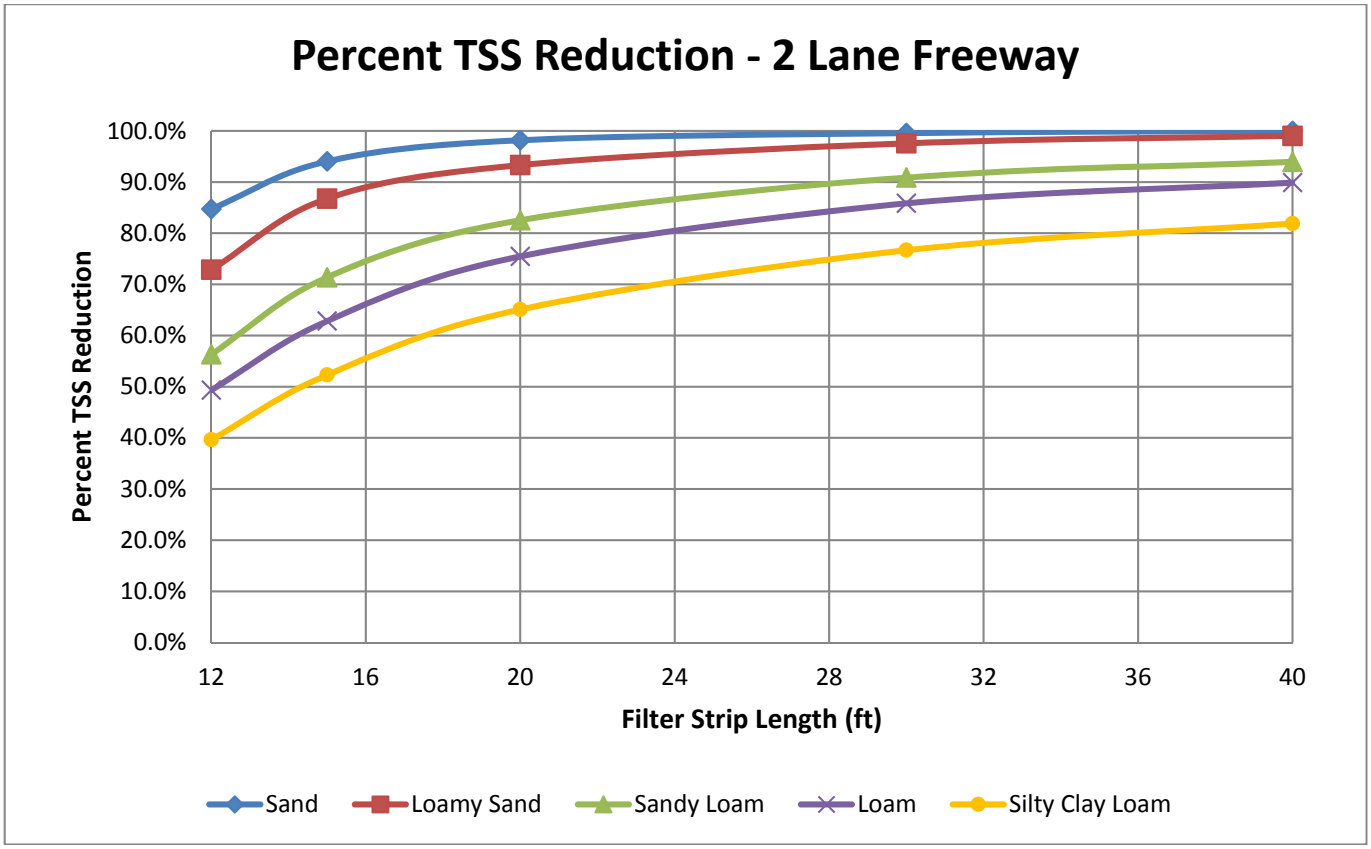

Percent TSS Reduction - 1 Lane Freeway
Percent TSS Reduction
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
12
16
20
24
28
32
36
40
Filter Strip Length (ft)
Sand
Loamy Sand
Sandy Loam
Loam
Silty Clay Loam


Percent TSS Reduction - 2 Lane Freeway
Percent TSS Reduction
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80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
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12
16
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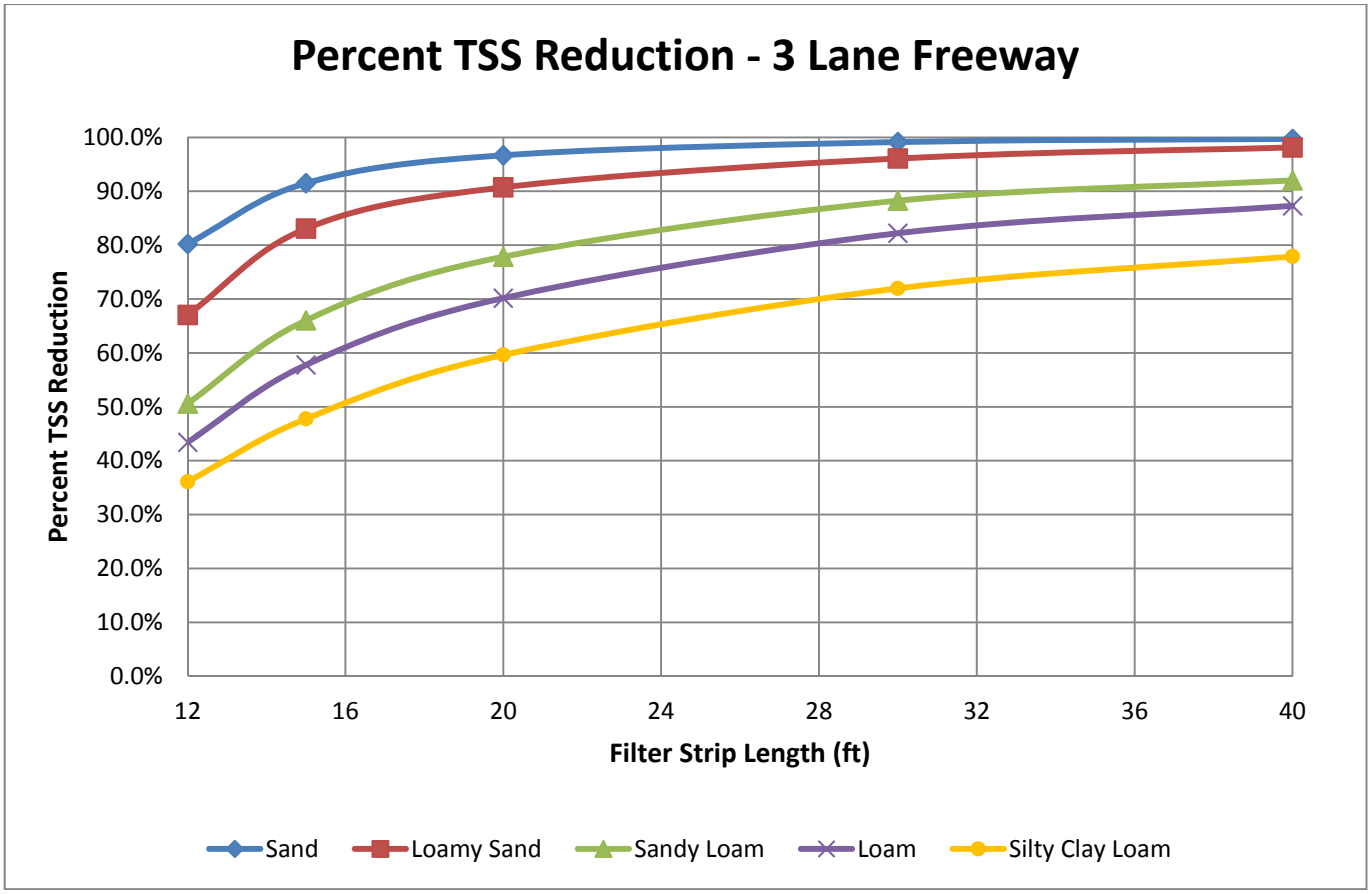
24
28
32
36
40
Filter Strip Length (ft)
Sand
Loamy Sand
Sandy Loam
Loam
Silty Clay Loam


Percent TSS Reduction - 3 Lane Freeway
Percent TSS Reduction
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80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
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12
16
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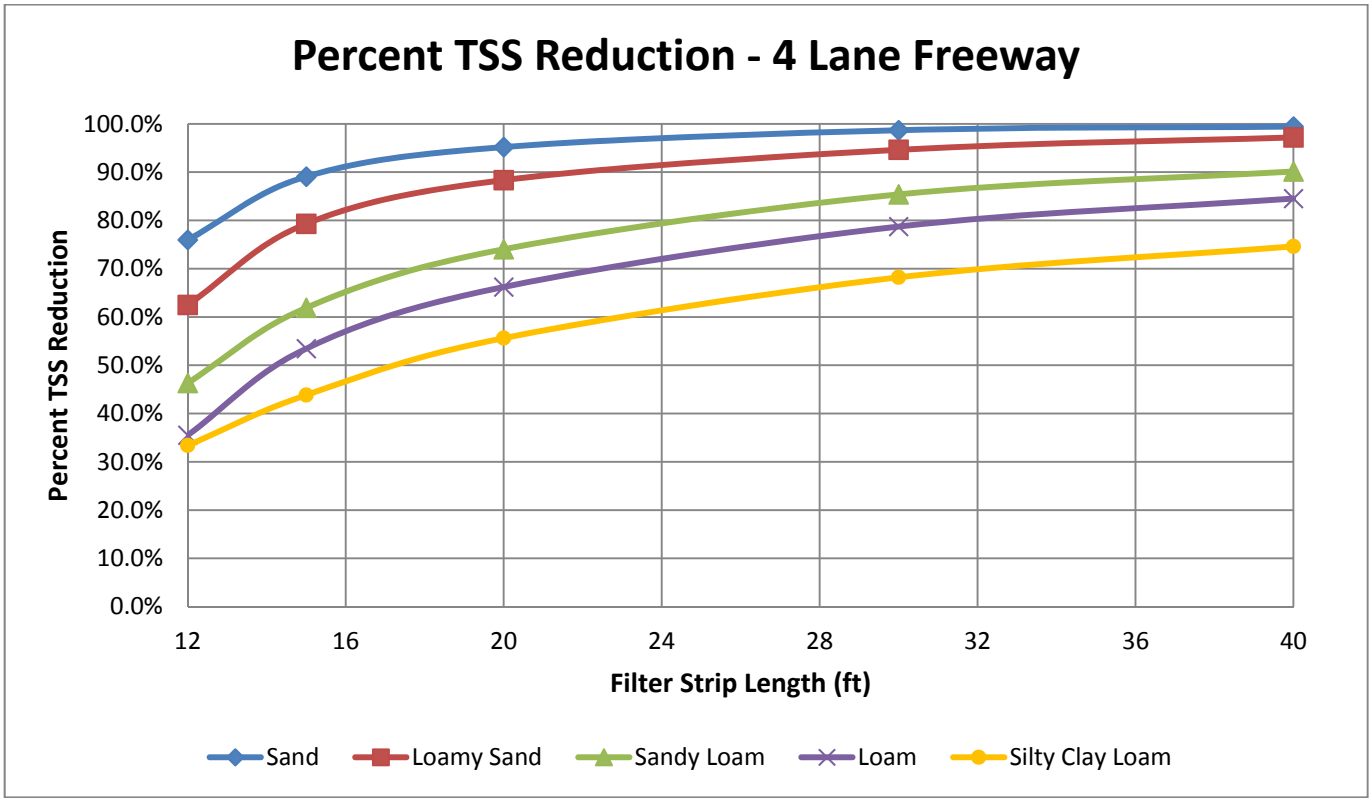
32
36
40
Filter Strip Length (ft)
Sand
Loamy Sand
Sandy Loam
Loam
Silty Clay Loam


Percent TSS Reduction - 4 Lane Freeway
Percent TSS Reduction
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
12
16
20
24
28
32
36
40
Filter Strip Length (ft)
Sand
Loamy Sand
Sandy Loam
Loam
Silty Clay Loam

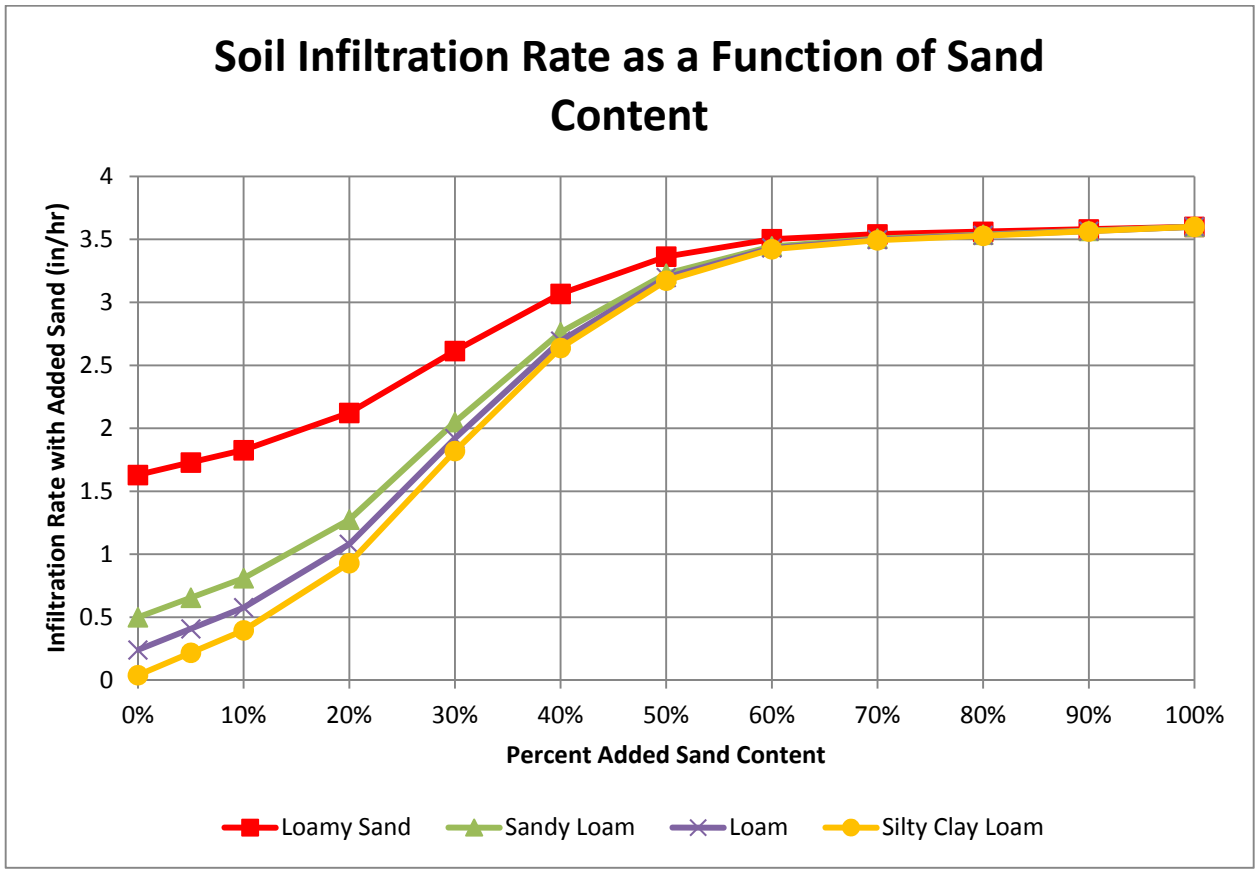
1 **Filter Strip Performance**

2	**Project ID: XXXX-XX-XX**
3	**Title: Example Project**
4	**Designer/Checker:**
5	**DOT Region/Firm Name:**
6	**Date:**

7	**Drainage Area Basin Number**	**1**	**2**	**3**	**Total**
8	**Filter Strip Ending Station Number**	**13+00**	**17+00**	**21+00**	
9	**Filter Strip Starting Station Number**	**11+00**	**13+00**	**17+00**	
10	**Left, Center, or Right**	**R**	**R**	**R**	
11	***Site Assessment***	Cut/Fill Trans.			
12	Filter Strip Width parallel to Highway (ft)	200	400	400	1000.000
13	Average Drainage Area Width (ft)	50	56	66	172.000
14	Average ROW Width (ft)	65	75	85	225.000
15	Number of Treated Freeway Lanes	2	2	3	
16	Filter Strip Length perpendicular to Highway (ft)	0	22	28	
17	Filter Strip Soil Type	Sandy Loam	Sandy Loam	Sandy Loam	
18	Design Chart Number	2	2	3	
19	Percent Reduction of Treated Area	0%	85%	86%	60.8%
21	***Results Summary***				
22	Treated Highway Area (ac)	0.142	0.487	0.652	1.281
23	Drainage Area (ac)	0.230	0.514	0.606	1.350
24	ROW Area (ac)	0.298	0.689	0.781	1.768
25	Percent Reduction per unit ROW Area	0.0%	85.0%	86.0%	60.8%

Enter Line Number and Comment. Add more boxes if necessary

Filter Strip Sand Amendment Analysis

If the designer elects to enhance the embankment soils on slopes 4:1 or flatter to increase the performance of the filter strip, FDM 10-35-10.4.3 suggests that 30% sand, by volume, should be added to the sandy loam, loam or silty clay loam typical soil types to achieve the soil infiltration rate equivalent to loamy sand. This value was developed from the chart illustrated below. The chart describes the soil infiltration rate as sand is added to the soil types described in the filter strip performance charts. These infiltration rates, which are static rates that are assumed to occur when the depth of the water flowing down the filter strip is less than 0.015 feet, which is a reasonable assumption for sheet flow down a highway embankment. For example, a mixture of 30% sand and 70% silty clay will achieve an infiltration rate of about 1.8 inches per hour. This value is close to the 1 63 in/hr static infiltration rate for silty clay with no added sand. This 30% sand amendment volume, as described in Section 10.4.3, was selected from the curve to approximate the infiltration rate for loamy sand, without additional sand, as applied in the design charts.

The chart was developed from a modified soil media table in the WinSLAMM v10.0 program that calculates the infiltration rate of soil mixture combinations. The table was developed from laboratory and field measurements of many soil type combinations.