

Appendix B
Stormwater Quality Best Management Practice
Design Handbook

Filter Strip Example

AMENDED EARTHQUAKE

PROJECT EXISTENCE
 1 - 100% - 100% DESIGN, PERMITS, AND CONSTRUCTION
 2 - 100% - PRELIMINARY DESIGN AND PERMITS
 3 - 100% - PRELIMINARY DESIGN AND PERMITS
 4 - 100% - PRELIMINARY DESIGN AND PERMITS

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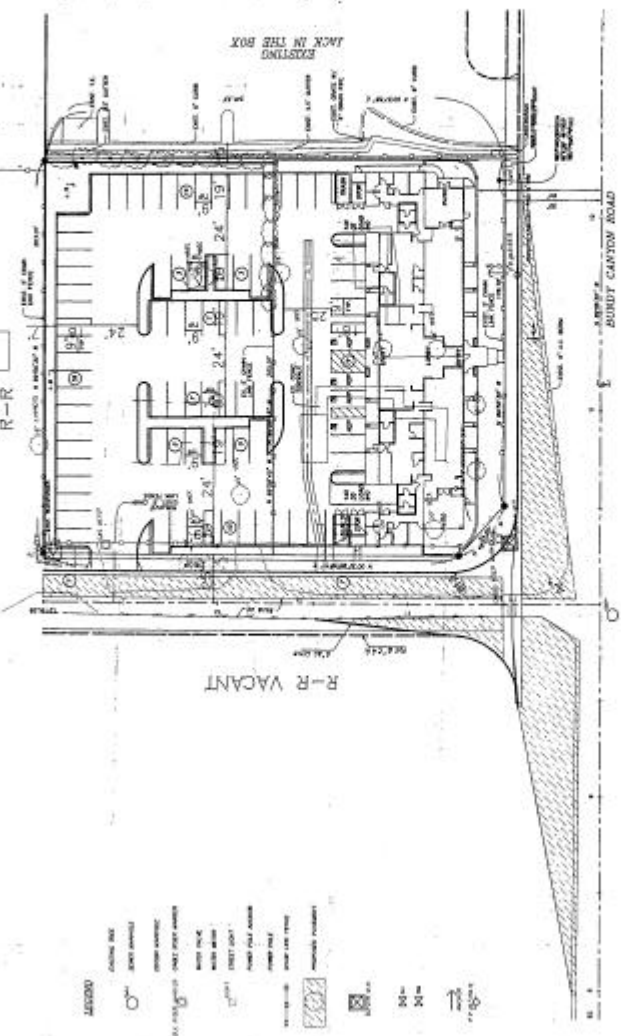
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COUNTY OF RIVERSIDE
 SITE PLAN

NO.	DATE	DESCRIPTION
1	10/1/20	PRELIMINARY DESIGN AND PERMITS
2	10/1/20	PRELIMINARY DESIGN AND PERMITS
3	10/1/20	PRELIMINARY DESIGN AND PERMITS
4	10/1/20	PRELIMINARY DESIGN AND PERMITS

- LEGEND**
- EXISTING WALL
 - EXISTING WINDOW
 - EXISTING DOOR
 - EXISTING FLOOR
 - EXISTING CEILING
 - EXISTING ROOF
 - EXISTING FOUNDATION
 - EXISTING UTILITY
 - EXISTING LANDSCAPE
 - EXISTING SITEWORK
 - EXISTING CONCRETE
 - EXISTING METAL
 - EXISTING WOOD
 - EXISTING GLASS
 - EXISTING BRICK
 - EXISTING STONE
 - EXISTING PLASTER
 - EXISTING PAINT
 - EXISTING FINISH
 - EXISTING MATERIAL
 - EXISTING COLOR
 - EXISTING TEXTURE
 - EXISTING PATTERN
 - EXISTING MARKING
 - EXISTING SIGNAGE
 - EXISTING LIGHTING
 - EXISTING MECHANICAL
 - EXISTING ELECTRICAL
 - EXISTING TELEPHONE
 - EXISTING CABLE
 - EXISTING SATELLITE
 - EXISTING ANTENNA
 - EXISTING EQUIPMENT
 - EXISTING STRUCTURE
 - EXISTING OBJECT
 - EXISTING FEATURE
 - EXISTING ELEMENT
 - EXISTING PART
 - EXISTING COMPONENT
 - EXISTING SUBSYSTEM
 - EXISTING SYSTEM
 - EXISTING INFRASTRUCTURE
 - EXISTING FACILITY
 - EXISTING INSTALLATION
 - EXISTING OPERATION
 - EXISTING PROCEDURE
 - EXISTING PRACTICE
 - EXISTING STANDARD
 - EXISTING SPECIFICATION
 - EXISTING REQUIREMENT
 - EXISTING CONDITION
 - EXISTING STATE
 - EXISTING POSITION
 - EXISTING LOCATION
 - EXISTING AREA
 - EXISTING ZONE
 - EXISTING DISTRICT
 - EXISTING REGION
 - EXISTING COUNTRY
 - EXISTING WORLD

Table 4. Runoff Coefficients for an Intensity = 0.2 ⁱⁿ/_{hr} for Urban Soil Types*

Impervious %	A Soil RI =32	B Soil RI =56	C Soil RI =69	D Soil RI =75
0 (Natural)	0.06	0.15	0.24	0.31
5	0.10	0.18	0.28	0.35
10	0.15	0.23	0.33	0.40
15	0.19	0.27	0.37	0.44
20 (1-Acre)	0.24	0.29	0.38	0.41
25	0.27	0.35	0.43	0.49
30	0.32	0.38	0.46	0.51
35	0.35	0.41	0.47	0.51
40 (1/2-Acre)	0.40	0.45	0.50	0.53
45	0.44	0.48	0.52	0.55
50 (1/4-Acre)	0.49	0.53	0.55	0.59
55	0.53	0.57	0.58	0.62
60	0.57	0.61	0.62	0.66
65 (Condominiums)	0.61	0.65	0.65	0.77
70	0.65	0.69	0.70	0.76
75 (Mobilehomes)	0.69	0.71	0.73	0.75
80 (Apartments)	0.74	0.75	0.77	0.78
85	0.77	0.78	0.79	0.81
90 (Commercial)	0.82	0.83	0.83	0.84
95	0.86	0.86	0.87	0.88
100	0.90	0.90	0.90	0.90

*Complete District's standards can be found in the Riverside County Flood Control Hydrology Manual

Design Procedure Form for Design Flow

Uniform Intensity Design Flow

Designer: **Benjie Cho**Company: **Riverside County Flood Control and Water Conservation District**Date: **5/24/04**Project: **BMP Example**

Location: _____

<p>1. Determine Impervious Percentage</p> <p>a. Determine total tributary area</p> <p>b. Determine Impervious %</p>	<p>$A_{total} = \underline{\quad 1.27 \quad} \text{ acres} \quad (1)$</p> <p>$i = \underline{\quad 90 \quad} \% \quad (2)$</p>
<p>2. Determine Runoff Coefficient Values Use Table 2 and impervious % found in step 1</p> <p>a. A Soil Runoff Coefficient</p> <p>b. B Soil Runoff Coefficient</p> <p>c. C Soil Runoff Coefficient</p> <p>d. D Soil Runoff Coefficient</p>	<p>$C_a = \underline{\quad .82 \quad} \quad (3)$</p> <p>$C_b = \underline{\quad .83 \quad} \quad (4)$</p> <p>$C_c = \underline{\quad \quad \quad} \quad (5)$</p> <p>$C_d = \underline{\quad \quad \quad} \quad (6)$</p>
<p>3. Determine the Area decimal fraction of each soil type in tributary area</p> <p>a. Area of A Soil / (1) =</p> <p>b. Area of B Soil / (1) =</p> <p>c. Area of C Soil / (1) =</p> <p>d. Area of D Soil / (1) =</p>	<p>$A_a = \underline{\quad 0.5 \quad} \quad (7)$</p> <p>$A_b = \underline{\quad 0.5 \quad} \quad (8)$</p> <p>$A_c = \underline{\quad \quad \quad} \quad (9)$</p> <p>$A_d = \underline{\quad \quad \quad} \quad (10)$</p>
<p>4. Determine Runoff Coefficient</p> <p>a. $C = (3) \times (7) + (4) \times (8) + (5) \times (9) + (6) \times (10) =$</p>	<p>$C = \underline{\quad .83 \quad} \quad (11)$</p>
<p>5. Determine BMP Design flow</p> <p>a. $Q_{BMP} = C \times I \times A = (11) \times 0.2 \times (1)$</p>	<p>$Q_{BMP} = \underline{\quad 0.21 \quad} \frac{\text{ft}^3}{\text{s}} \quad (12)$</p>

Datasheet

Site Conditions:

$A_{\text{total}} = 1.27$ acres (from worksheet 2)
 $Q_{\text{BMP}} = 0.21$ cfs (from worksheet 2)

Design Assumptions:

1. Design Flow

$Q_{\text{BMP}} = 0.211$ cfs

2. Minimum Width

Calculate minimum width of the grass strip filter (W_m) normal to flow direction:

$$W_m = (Q_{\text{BMP}})/0.005 \text{ cfs/ft (minimum)} = 42.2 \text{ ft}$$

3. Minimum Length

Length of the grass strip filter (L_m) in the direction of flow shall not be less than 15 feet.

$$L_m = 15 \text{ feet (minimum)}$$

4. Slope Requirement

Slope = 4%

5. Flow Distribution

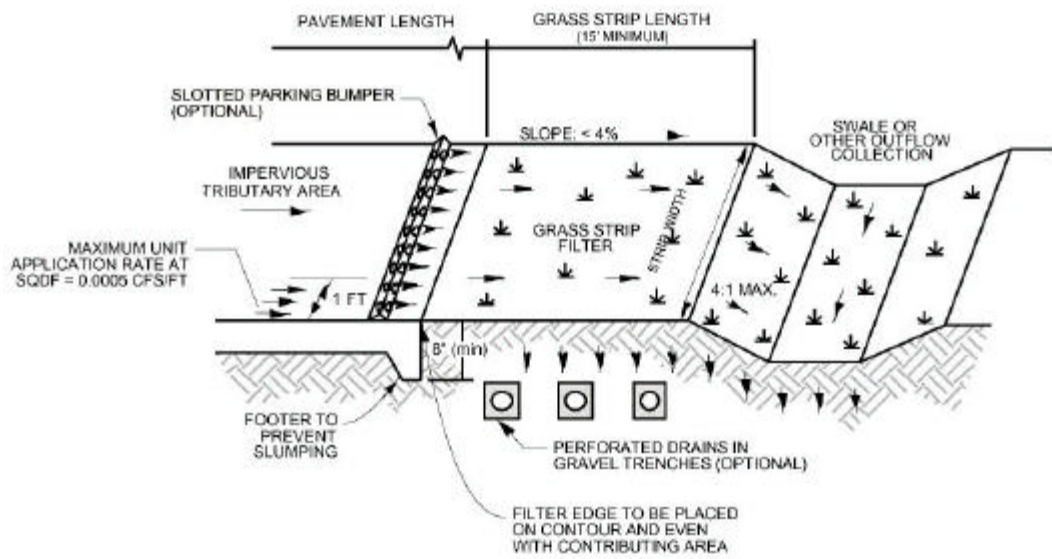
Level spreader of similar concept.

6. Vegetation

3" Grass

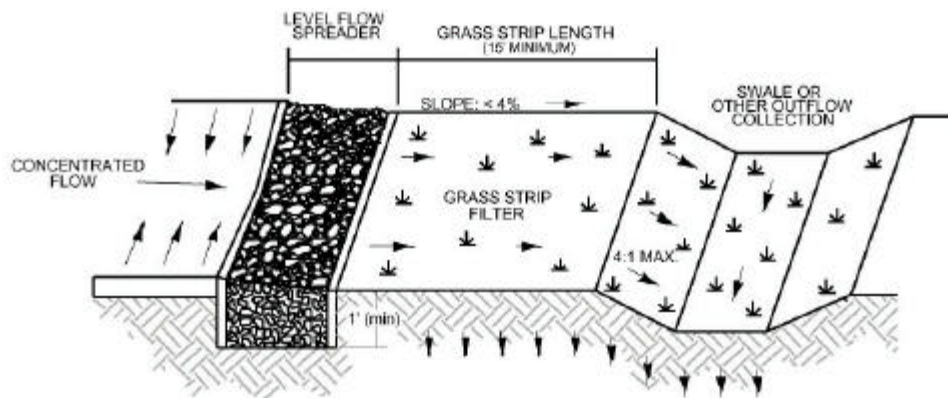
7. Outflow Collection

Street gutter



SHEET FLOW CONTROL

NOT TO SCALE



CONCENTRATED FLOW CONTROL

NOT TO SCALE

Figure 12: Grass Filter Strip

Source: *Ventura County Guidance Manual*

Design Procedure Form for Filter Strip	
Designer: <u>Benjie Cho</u> Company: <u>Riverside County Flood Control</u> Date: <u>5/20/04</u> Project: <u>BMP Example</u> Location: <u>Township 6 South & Range 4 West Section 22</u>	
1. Determine Design Flow (Use Worksheet 2)	$Q_{BMP} = \underline{\underline{.211}}$ cfs
2. Design Width $W_m = (Q_{BMP})/0.005$ cfs/ft	$W_m = \underline{\underline{42.2}}$ ft
3. Design Length (15 ft minimum)	$L_m = \underline{\underline{15}}$ ft
4. Design Slope (4 % maximum)	$S_D = \underline{\underline{4}}$ %
5. Flow Distribution (check type used or describe "other")	<input type="checkbox"/> slotted curbing <input type="checkbox"/> Modular Block Porous Pavement <input checked="" type="checkbox"/> Level Spreader <input type="checkbox"/> other _____
6. Vegetation (describe)	<u>3" grass</u> _____ _____
5. Outflow Collection (check type used or describe "other")	<input type="checkbox"/> Grass Swale <input checked="" type="checkbox"/> Street Gutter <input type="checkbox"/> Storm Drain <input type="checkbox"/> Underdrain <input type="checkbox"/> Other _____
Notes: _____ _____ _____ _____ _____	