

## 6.4 Vegetated Buffer Strip



Figure 6-18: Roadside Vegetated Buffer Strip  
Source: [www.cabmphandbooks.com](http://www.cabmphandbooks.com)

### Best Uses

- Roadside shoulders
- Landscape buffer

### Advantages

- Minimal maintenance
- Reliable
- Aesthetic appeal
- Adjustable to suit site

### Limitations

- No large drainage areas
- Thick cover necessary
- Large size requirements
- Minimal detention provided

Vegetated buffer strips (grassed buffer strips, filter strips, and grassed filters) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Vegetated buffer strips function by slowing runoff velocities and allowing sediment and other pollutants to settle and by providing some infiltration into underlying soils. Vegetated buffer strips were originally used as an agricultural treatment practice and have more recently evolved into an urban practice. With proper design and maintenance, vegetated buffer strips can provide relatively high pollutant removal. In addition, the public views them as landscaped amenities and not as stormwater infrastructure.

### Design and Sizing Guidelines

#### TREATMENT DIMENSIONS AND SIZING

- Strip shall be sized as long as the site will reasonably allow. The width in the direction of flow shall be at least:
  - 5 feet where the length of flow across an impervious surface is less than 10-feet in the direction of flow.
  - At least 50 percent of the length of flow across an impervious surface where the length of flow across an impervious surface is between 10 and 30 feet in the direction of flow.
  - At least 15 feet where the length of flow across an impervious surface is between 30 feet and 60 feet in the direction of flow.
- Level spreaders shall be used if the length of flow across an impervious surface is greater than 60 feet in the direction of flow. The level spreader shall distribute flows over a length that will provide equivalent discharge per linear foot of level spreader as if the flow to the vegetated buffer strip was from a surface with 60-foot length in the direction of flow.
- Slopes should not exceed 1-foot Vertical to 4-foot Horizontal (1:4).

- Strip shall be free of gullies or rills.
- Planting soil will be to a minimum depth of at least 6 inches. Native soil may be used as a planting soil if approved by the landscape architect.
- Strip shall be free of gullies or rills.

**VEGETATION**

- Either grass or a diverse selection of other low growing, drought tolerant, native vegetation should be specified. Vegetation whose growing season corresponds to the wet season is preferred. See planting guidance in Appendix A.
- Use integrated pest management (IPM) principles in the landscape design to help avoid or minimize any use of synthetic pesticides and quick-release fertilizer. Check with the local jurisdiction for any local policies regarding the use of pesticides and fertilizers.
- Irrigation shall be provided, as needed, to maintain plant life.
- Trees and vegetation do not block inflow, create traffic or safety issues, or obstruct utilities.

**INLETS**

- Flow may enter the treatment measure (see example drawings in Section 5.13):
  - As overland flow from landscaping (no special requirements)
  - As overland flow from pavement (cutoff wall required)
  - Through a curb opening (minimum 18 inches)
  - Through a curb drain
  - With drop structure through stepped manhole (refer to Figure 5-3 in Chapter 5)
  - Through a bubble-up manhole or storm drain emitter
  - Through roof leader or other conveyance from building roof
- Where flows enter the biotreatment measure, allow a change in elevation of 4 to 6 inches between the paved surface and biotreatment soil elevation, so that vegetation or mulch build-up does not obstruct flow.
- If runoff is piped or channeled to the strip, a level spreader must be installed to create sheet flow.

**SOIL CONSIDERATIONS SPECIFIC TO VEGETATED BUFFER STRIPS**

- Check with municipality for planting soil requirements. Except where other municipal requirements apply, planting soil shall have a minimum percolation rate of 2 inches per hour and a maximum percolation rate of 10 inches/hour. If native soils do not meet this percolation requirement, import soil meeting the Countywide Program's dewatering soil guidelines shall be used in the area of inundation.
- Planting soil will be to a minimum depth of at least 6 inches.
- No underdrain trench is needed where native soils are Hydrologic Soil Group A or B.
- When placed on native hydrologic soil group C and D soils, drainage must be provided to allow gravity drainage of the treatment soils. This may consist of underdrain trenches or other means to assure that the biotreatment soil is able to fully dewater after storm event.
- Provide 3-inch layer of mulch in areas between plantings.

**SOIL CONSIDERATIONS FOR ALL BIOTREATMENT SYSTEMS**

- Underdrain trench shall include a 12-inch thick layer of Caltrans Standard Section 68-1.025 permeable material Class 2, or similar municipality-approved material.

## SAN MATEO COUNTYWIDE WATER POLLUTION PREVENTION PROGRAM

- If there is less than 10 feet separation to the groundwater table, an impermeable fabric shall be placed at the base of the underdrain and the perforated pipe shall be placed on the impermeable fabric.
- The underdrain shall include a perforated pipe with cleanouts and connection to a storm drain or discharge point. Clean-out shall consist of a vertical, rigid, non-perforated PVC pipe, with a minimum diameter of 4 inches and a watertight cap fit flush with the ground.
- There shall be adequate fall from the underdrain to the storm drain or discharge point.
- Beginning December 1, 2011, soils in the area of inundation within the facility shall meet biotreatment soil specifications approved by the Regional Water Board (Appendix K), which supersede other soil specifications. The minimum percolation rate for the biotreatment soil is 5 inches per hour. The long-term desired maximum infiltration rate is 10 inches per hour, although initial infiltration rate may exceed this to allow for tendency of infiltration rate to reduce over time.

### **CONSTRUCTION REQUIREMENTS FOR ALL BIOTREATMENT SYSTEMS**

- When excavating, avoid spreading fines of the soils on bottom and side slopes. Remove any smeared soiled surfaces and provide a natural soil interface into which water may percolate.
- Minimize compaction of existing soils. Protect from construction traffic.
- Protect the area from construction site runoff. Runoff from unstabilized areas shall be diverted away from biotreatment facility.

### **MAINTENANCE CONSIDERATIONS FOR ALL TREATMENT MEASURES**

- A Maintenance Agreement shall be provided.
- Maintenance Agreement shall state the parties' responsibility for maintenance and upkeep.
- Prepare a maintenance plan and submit with Maintenance Agreement. Maintenance plan templates are in Appendix G.

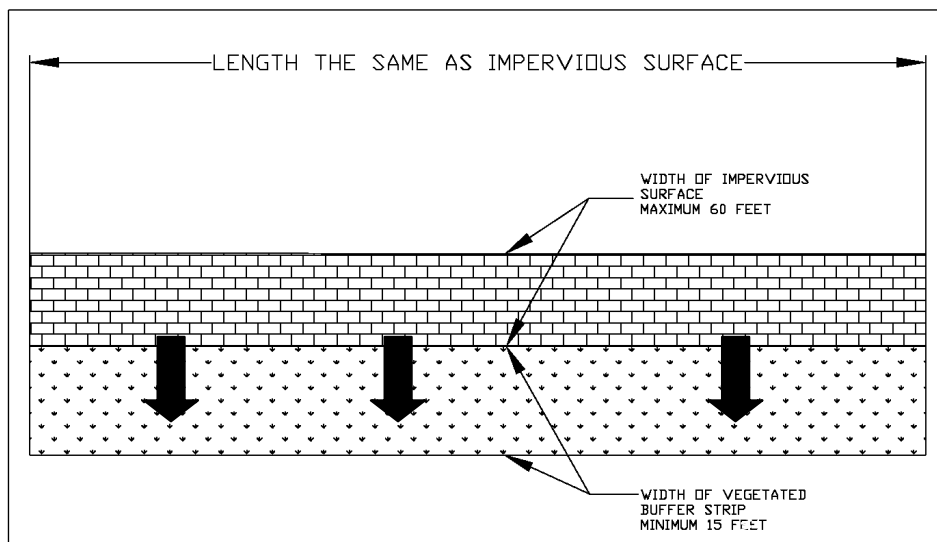


Figure 6-19: Plan View, Vegetated Buffer Strip

**C.3 STORMWATER TECHNICAL GUIDANCE**

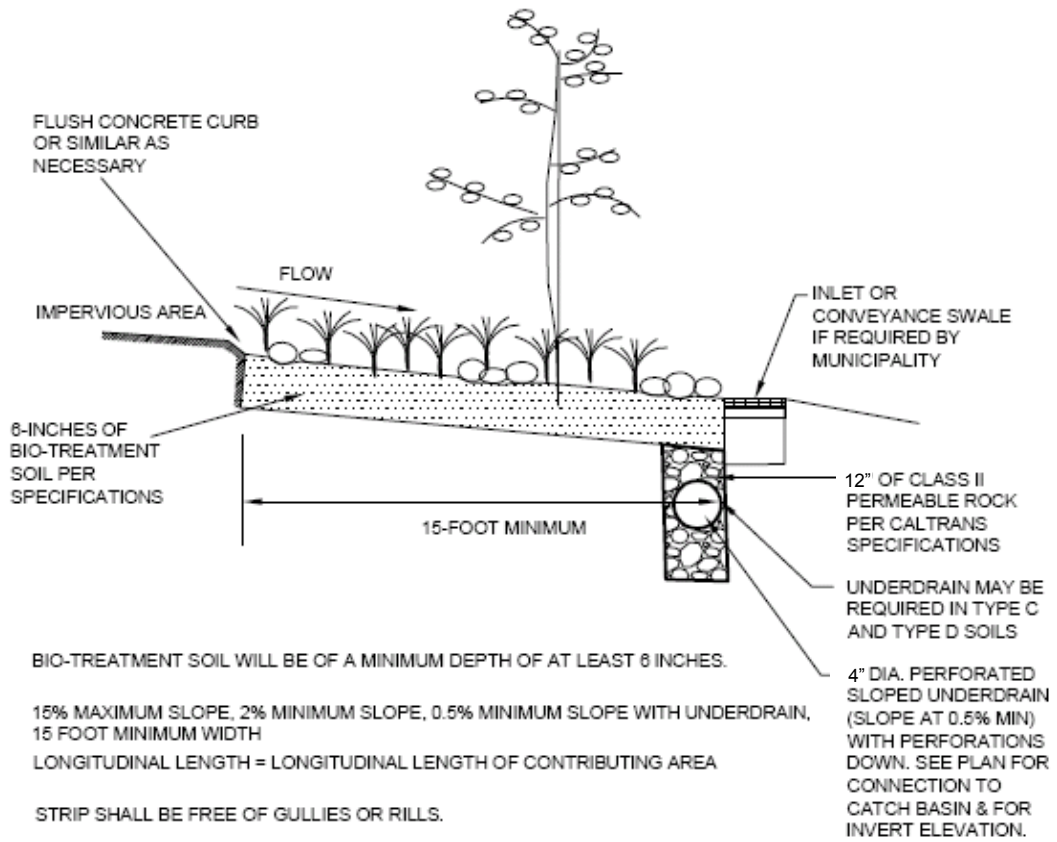


Figure 6-20: Profile View, Vegetated Buffer Strip