

BMP 38.00. Vegetation Buffer

DESIGN CONSIDERATIONS

Objectives

A Vegetation Buffer is intended to reduce the quantity of suspended soil sediments in construction-related stormwater runoff by using living strips of vegetation suitable to reducing run-off velocities. The application for this type of control can include, but is not limited to the following:

- Type I – Perimeter Control - Provides a Vegetation Buffer as a perimeter control between the on-site construction related activities and the project boundaries.
- Type II – Natural Buffer - Provides a Vegetation Buffer between the construction related activities and sensitive areas such as waters of the U.S. and riparian areas (as required by the Alaska Construction General Permit [CGP]).

Description

Vegetation Buffers can be strips of existing vegetation or can be areas that are graded and planted with grass or other types of vegetation. They are intended to be used adjacent to where construction activities will occur and are primarily designed to treat sheet flow. Vegetation Buffers should not be used in areas with concentrated flows. Larger areas must be used to accommodate the larger run-off volume. These strips function by reducing the velocity of run-off to allow the suspended sediments and other pollutants to settle and partially infiltrate into the underlying soils.

Other Names

Vegetated Sediment Filtration Areas, Buffer Strips, Vegetated Strips

Applicability

Vegetation Buffer strips can be used at numerous locations over a project but are best suited if installed at locations where the soil is well drained and where the water table and bedrock are well below the surface. Vegetation Buffers may also be effectively used on the top and bottom of slopes. They can be used either temporarily or as permanent installations.

Selection Considerations

During the design phase of a project any area specified to be a natural Vegetation Buffer area should be identified. The type of vegetation, soil conditions, and the estimated volume of stormwater run-off should be considered when selecting a natural Vegetation Buffer.

Vegetation Buffer areas that are installed (or planted) should be located directly adjacent to where construction activities will occur. These areas should be graded and planted to establish a healthy vigorous stand of vegetation prior to any construction occurring. Other erosion and sediment control measures should be installed to help protect and stabilize the Vegetation Buffer while the planted vegetation becomes established.

When retaining existing vegetation as a Vegetative Buffer, minimize the disturbed areas by locating temporary roadways to avoid stands of vegetation and following the existing contours to reduce cutting and filling. To avoid disturbing the root-zone of existing trees, the edge of the tree canopy or drip-line should be noted when locating these temporary roadways.

Vegetated Buffers must be on land controlled by the project. If in wetlands, they must be recognized in the wetland permit.

Design

The designer should consider the type of Vegetation Buffer (Type I or II) and the slope of the proposed Vegetation Buffer area, the soil type and infiltration rate, the water table level, the type of proposed or existing vegetation, the estimated stormwater flow in the area, and the protection of sensitive areas. There may be site specific constraints that dictate alternate widths for a Vegetation Buffer or require the use of a different perimeter control measure.

Vegetation Buffer areas should be fully established with vegetation prior to construction occurring. A fully established Vegetation Buffer should be composed of species that are capable of growing a sod forming mass that covers 90 percent of the selected area. New Vegetation Buffers with planted vegetation should be composed of more than just one species and be hardy to the area. The

combination of species should be capable of creating a perennial stand of vegetation and be able to withstand frequent inundation from run-off. See BMP-53 Permanent Seeding.

All Vegetation Buffer areas with either naturally-occurring or planted stands of vegetation should be delineated prior to and throughout construction to prevent damage to the vegetation and its roots. All Vegetation Buffer areas should be inspected for impacts from soil deposited by construction related activities, damage from channelized run-off, excess accumulation of sediment, and disturbance or damage from construction activities. It may be necessary to employ other erosion and sediment control measures upstream to support existing Vegetation Buffer areas. Do not include the acreage of Vegetation Buffers in the acreage of disturbed areas for the purpose of the Notice of Intent (NOI) acreage.

The two types of buffers for Vegetation Buffer landscaping include the following:

Type I Perimeter Control Vegetation Buffers are used to help filter sediments from run-off before it leaves the job site. These can be composed of existing or newly planted vegetation. The length of these buffers should be determined by the steepness of the slope.

Type II Natural Buffer Vegetation Buffers are used when required by the Alaska CGP to protect sensitive areas (such as waters of the U.S. or riparian areas). The minimum width shall be 25 feet unless found to be infeasible. However, in some cases the governing local ordinance may specify an alternate minimum width. In such cases, it is the responsibility of the designer and the contractor to review and adhere to the specific requirements for a Vegetation Buffer in the local ordinance. Local ordinances governing nonpoint source pollution in Alaska can be found here:

<http://www.commerce.state.ak.us/dca/nonpoint/ordinances.cfm?type=Hy>

Relationship to Other Erosion and Sediment Control Measures

Vegetation Buffer areas with existing vegetation may not require other erosion and sediment control measures; however, installing or planting new Vegetation Buffer areas will require other erosion

and sediment control measures during the establishment period of the specified vegetation.

Common Failures or Misuses

Common failures are generally due to faulty application and maintenance. These failures include:

- Damage to the roots or stalks of the vegetation from construction activities.
- Overwhelming the buffer with excessive quantities of stormwater run-off, sediments, channelized run-off, and pollutants.
- Inadequate subsurface soil, vegetation, and size of Vegetation Buffer strip
- Non-observance of delineated Vegetation Buffer areas.
- Designer does not visit site and fails to take site specific conditions into account.

SPECIFICATIONS

Standard Specifications

- 688 – Vegetation Buffer
- 201 – Clearing and Grubbing
- 203 – Excavation and Embankment
- 620 – Topsoil
- 651 – Hydraulic Erosion Control Product
- 652 – Soil Amendments
- 655 – Site Delineation
- 712-2.01 – Water
- 724 – Seed
- 725 – Fertilizer
- 726 – Topsoil
- 751 – Hydraulic Erosion Control Products
- 752 – Tackifier
- 753 – Soil Amendments

Drawing

- BMP-38.00 Vegetation Buffer

VEGETATION BUFFER NOTES:

MATERIAL

SITE DELINEATION MATERIAL: SEE SPECIFICATION SECTION 655 SITE DELINEATION.

INSPECTION

1. INSPECT NATURAL EXISTING VEGETATION BUFFER AREAS TO ENSURE THAT THE SITE DELINEATION TO MARK THE NON-DISTURBANCE AREAS IS IN PLACE.
2. CHECK FOR DAMAGE BY EQUIPMENT AND VEHICLES.
3. INSPECT NEW VEGETATION BUFFER AREAS FOR THE PROGRESS OF GERMINATION AND PLANT GROWTH.
4. ENSURE STORMWATER FLOWING THROUGH THE AREA IS NOT FORMING PONDS, RILLS, OR GULLIES.
5. INSPECT FOR SEDIMENT DEPOSITION THROUGHOUT THE BUFFER.

MAINTENANCE

1. REPLACE OR REPAIR SITE DELINEATION (SUCH AS FENCING, STAKING, OR FLAGGING) AS NECESSARY TO DELINEATE THE VEGETATION BUFFER AREAS.
2. REPAIR ANY DAMAGE BY EQUIPMENT OR VEHICLES.
3. PROVIDE ADDITIONAL SEED, FERTILIZER, AND WATER TO REPAIR SEEDED AREAS DAMAGED BY EROSION OR PONDING OF WATER.
4. IF SEDIMENT IS DEPOSITING IN THE BUFFER, INSTALL IMPROVED EROSION CONTROL MEASURES UPSLOPE OF THE BUFFER.

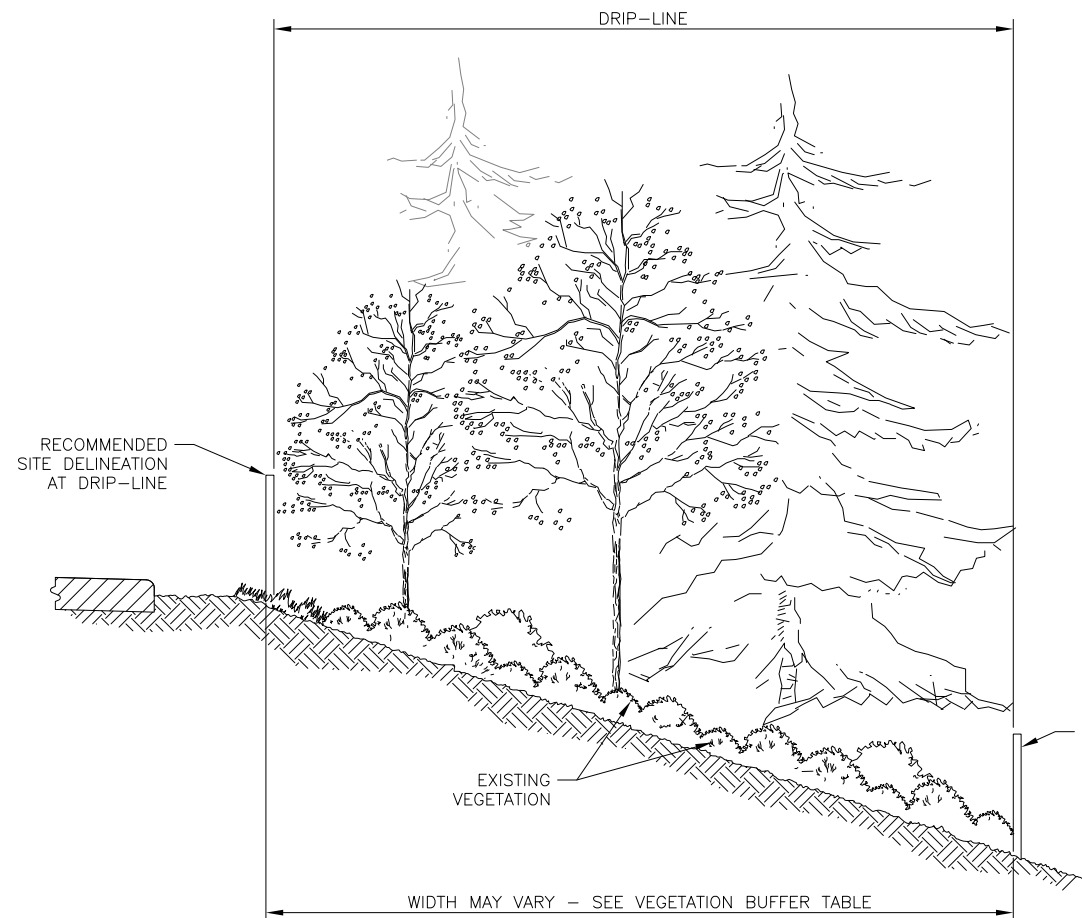
REMOVAL

1. PROVIDE THE NECESSARY PERMANENT STABILIZATION TO AREAS WITH TEMPORARY VEGETATION BUFFER AS REQUIRED BY PLANS.
2. REMOVE SITE DELINEATION MATERIAL AFTER FINAL STABILIZATION OF WORK AREAS. WORK TO REMOVE THE SITE DELINEATION MATERIAL SHALL NOT DAMAGE THE EXISTING VEGETATION OR ANY STABILIZATION MEASURE.

| VEGETATION BUFFER TABLE | |
|-------------------------|---------------------|
| AVERAGE SLOPE | BUFFER WIDTH (MIN.) |
| 0%-2% | 25 FEET |
| 3%-5% | 29-37 FEET |
| 5%-10% | 37-57 FEET |
| 10%-20% | 57-100 FEET |
| 20% MAXIMUM | 100 FEET |

VEGETATION BUFFER TABLE NOTES:

1. THE MINIMUM WIDTH FOR ANY VEGETATION BUFFER IS 25 FEET. FOR EVERY 1% INCREASE OF THE SLOPE ADD 4 FEET TO THE VEGETATION BUFFER WIDTH.
2. INSTALL VEGETATION BUFFERS ENTIRELY WITHIN THE RIGHT-OF-WAY.
3. FOR VEGETATION BUFFERS THAT ARE USED AS PERIMETER CONTROL (TYPE 1):
 - a. THE MINIMUM WIDTH FOR ANY VEGETATION BUFFER IS 25 FEET WHEN BUFFER WIDTHS LISTED IN THE TABLE ABOVE ARE NOT FEASIBLE.
 - b. USE ADDITIONAL BMPS WHEN THE MINIMUM BUFFER WIDTH CANNOT BE ACHIEVED.
4. THE WIDTH OF VEGETATION BUFFERS THAT ARE NATURAL BUFFER AREAS AS REQUIRED BY THE CGP (TYPE II) MUST ALSO COMPLY WITH THE WIDTH REQUIRED BY LOCAL ORDINANCES, IF GREATER THAN 25 FEET.



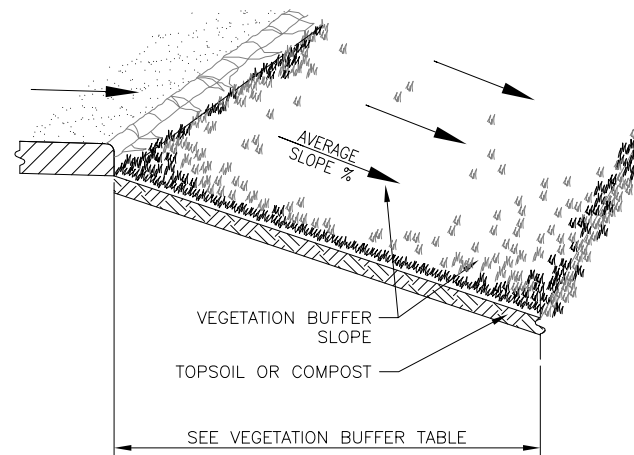
SECTION

EXISTING VEGETATION BUFFER

NOT TO SCALE

EXISTING VEGETATION BUFFER AREA NOTES:

- INSTALLATION**
1. DELINEATE UNDISTURBED NATURAL AREAS OF VEGETATION IDENTIFIED IN THE PLANS WITH METHODS CONSISTENT WITH THE SITE DELINEATION SPECIFICATION PRIOR TO COMMENCEMENT OF CLEARING AND GRUBBING OPERATIONS OR OTHER SOIL DISTURBING ACTIVITIES.
 2. ENSURE ALL OTHER SEDIMENT CONTROL MEASURES USED IN CONJUNCTION WITH THE VEGETATION BUFFER AREAS ARE IN PLACE AND FUNCTIONING PROPERLY.
 3. DO NOT ALLOW CONSTRUCTION MATERIALS, EQUIPMENT, OR PARKING ON THE VEGETATION BUFFER AREAS OR WHERE THE ROOT-ZONE OF THE VEGETATION MAY BE DAMAGED.



PERSPECTIVE

NEW VEGETATION BUFFER

NOT TO SCALE

NEW VEGETATION BUFFER AREA NOTES:

THIS BMP IS NOT APPROPRIATE FOR PROJECTS LASTING LESS THAN 30 DAYS. THIS BMP IS NOT APPROPRIATE FOR ALL CLIMATE ZONES IN ALASKA.

MATERIAL
TOPSOIL OR COMPOST

SEED, FERTILIZER, MULCH

INSTALLATION

1. ENSURE ALL SEDIMENT CONTROL MEASURES IDENTIFIED IN THE SWPPP (SUCH AS SILT FENCE AND DIVERSIONS) ARE IN PLACE TO PROTECT WATERS OF THE U.S. UNTIL THE VEGETATION BUFFER AREA IS ESTABLISHED.
2. ESTABLISH VEGETATION USING SPECIFIED SEED, FERTILIZER, AND MULCH. IF SEED MIX IS NOT SPECIFIED, USE PERMANENT SEED MIX FOR PERMANENT, POST-CONSTRUCTION BUFFERS AND FAST GROWING ANNUAL RYE FOR TEMPORARAY BUFFERS.
3. MAINTAIN VEGETATION AND PROVIDE IRRIGATION AS NECESSARY TO ENSURE VIGOROUS GROWTH AND TO PREVENT DIEBACK.
4. DELINEATE VEGETATION BUFFER AREAS WITH METHODS CONSISTENT WITH THE SITE DELINEATION SPECIFICATION AT THE EDGE OF THE NEW VEGETATION BUFFER.
5. AVOID DAMAGE TO THE VEGETATION BUFFER OR ROOT-ZONE BY NOT ALLOWING CONSTRUCTION MATERIALS, EQUIPMENT OR PARKING ON THEM.

| REVISIONS | | |
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| Date | Description | By |
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State of Alaska DOT&PF
**VEGETATION
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