
Chapter 5
CLEARING, GRADING AND EROSION CONTROL

1. General

- a. Applicability
 - i. The standards contained in this chapter shall be the minimum standards for the protection of earth and soil during any changes being made to the surface of land through clearing, grading, filling, and/or drainage activities in the city.
 - ii. Land alteration activities which are subject to these standards include: clearing (the act of vegetation removal from the land surface, often referred to as land clearing); grubbing (the act of root vegetation removal from beneath the surface of the earth, usually in conjunction with clearing); excavation (the mechanical removal of earth material); filling (deposition of earth material placed by artificial means); grading (excavation of filling or combination thereof) and stockpiling (temporary deposition of earth material placed by artificial means).
- b. Purpose
 - i. The purpose of these standards is to ensure that all construction in the City of Port Townsend is undertaken with facilities and measures as necessary to minimize the clearing of lots and public rights-of-way to prevent the erosion of soils and siltation of water bodies and public/private drainage facilities. The goal of the erosion control practices specified herein is for no sediment to leave the construction site or impact downstream or adjacent properties or the environment in general.

2. Clearing and Grading Permit

- a. A Clearing and Grading Permit is required prior to any land-disturbing activity that involves clearing, grading, filling of 50 cubic yards or more per the UBC unless a written exemption is issued by the public works director in one of the following circumstances:
 - i. Land clearing, grading, filling, sandbagging, diking, ditching, or similar work during or after periods of extreme weather or other emergency conditions that present immediate danger to life or property.
 - ii. Land clearing order by the City Council for abatement of a public nuisance.
 - iii. Removal of dead trees or of diseased or damaged trees which constitute a hazard to life or property.
 - iv. Maintenance work by city crews.
 - v. Cemetery graves.
 - vi. If a building permit is issued, no additional clearing, grading, or filling permit or associated fee will be required; provided that the standards
 - vii. established in this manual and by city ordinance shall be applied to the issuance of said building permit.

NOTE: Exceptions vi through ix do not apply in environmentally sensitive areas.

- b. The Clearing and Grading Permit shall be effective for one year but may, with cause shown, be extended for an additional one year period. The fee for the permit will be per the UBC.
- c. Permittees shall comply with the following conditions, which shall apply to all clearing and grading permits:
 - i. Notify the city twenty-four (24) hours before commencing any land disturbing activity.
 - ii. Notify the city of completion of any control measures within twenty-four (24) hours after their completion.
 - iii. Obtain permission in writing from the city prior to modifying any of the plans.
 - iv. Install all control measures as identified in the approved plans.
 - v. Maintain all road drainage systems, stormwater drainage systems, control measures, and other facilities identified in the plans.
 - vi. Repair siltation or erosion damage to adjoining surfaces and drainage ways resulting from land developing or disturbing activities.
 - vii. Inspect the erosion construction control measures at least once each week during construction after each rain of 0.5 inches or more (over a 24-hour period), and immediately make any needed repairs.
 - viii. Allow the city to enter the site for the purpose of inspecting compliance with the plans or for performing any work necessary to bring the site into compliance with the plans.
 - ix. Keep an up-to-date, approved copy of the plans on the site.
 - x. Ensure that all construction is in accordance with City of Port Townsend standards the most current edition of the State of Washington Standard Specifications for Road, Bridge and Municipal Construction and the DOE Stormwater Management Manual.
- d. Construction within environmentally sensitive areas shall be in compliance with Chapter 19.05 PTMC.
 - i. Flagging or demarcation will be placed at the edge of any wetland, stream or lake buffers prior to the initiation of any land alteration activity on site. Only selective cutting of trees and removal of brush, as determined necessary for construction of the fence by the inspector, will be allowed.
 - ii. All erosion and sedimentation controls shall be constructed and operational prior to initiation of clearing and grubbing operations.
 - iii. Clearing and grading permits will not be issued for projects that are in SEPA review.

3. Erosion/Sedimentation Control Requirements

- a. All clearing and grading and other land alterations require that erosion and sediment control best management practices (“BMPs”) be employed. These BMPs shall be as required by the Stormwater Management Manual (“SWMM”).
- b. For sites not located in a critical drainage area, but larger than one acre, erosion control requirements may also include sedimentation ponds, check dams, filter fabric fence, jute matting or plastic sheeting, and a temporary construction

entrance. Sites in a critical drainage area require the preparation and implementation of a stormwater control plan which includes an erosion and sedimentation control plan and a permanent stormwater quality control plan per the SWMM.

- c. Developments located on steep slopes (15% or greater) shall require the following: gradient terraces, immediate hydroseeding and mulching, phasing of construction so as to minimize the amount of exposed soils at any given time and seasonal limitation restrictions. Depending upon soil and slope conditions, the proximity to a waterway and the size of the site, additional requirements may include flexible down drains, filter fabric fences, jute matting or other approved means to secure seed and mulch in place, temporary level spreaders and stabilized channels to convey off-site runoff through or around site.
- d. Development adjacent to waterways may require: a vegetative buffer between the waterway and the development and seasonal limitation restriction. Any work within the waterway will require a hydraulics permit from the Department of Fisheries and/or Game. The city may make additional requirements.

4. Methods of Control

- a. The types of controls as noted in this section and the related Standard Plans for Erosion and Sedimentation Facilities are a minimum requirement. In certain conditions more extensive facilities may be required. Erosion control facilities shall be periodically inspected and maintained by the developer or contractor to ensure continued intended operation. The contractor shall designate one point of contact for the city for ESC until the work is complete and cover is reestablished.
- b. Check Dams and Berms
 - i. Check dams and/or berms shall be incorporated into erosion control facilities as needed.
 - ii. Straw bales (staked in place) may be used as energy dissipating drop structures, flow direction control structures and/or dams to create ponding.
 - iii. Rock berms can be used for all uses stated for straw bales and may be used as filtering devices.
 - iv. Earth berms may be used to control flow direction and prevent silt laden water from discharging into adjacent properties and /or the public rights-of-way.
- c. Cut-Off Trenches
 - i. Cut-off trenches are recommended to dissipate drainage into the natural on-site vegetation.
- d. Filtering Devices
 - i. Filtering devices, such as filter fabric fences, shall be used to filter runoff prior to discharge from site. Approved filter fabrics are Celanese fiber, polyvinyl chloride woven cloth, reinforced chlorosulfinated polyethylene woven cloth, chlorinated polyethylene woven cloth, such as Mirafi 100X, Typar 3401, Stabilenka 100, or approved equal.
- e. Flexible Down Drains

- i. Flexible down drains may be utilized as temporary structures to protect open slopes and shall be constructed of flared end sections connected by plastic sheet tubing, heavy duty fabric, or non-perforated corrugated plastic pipe.

- f. Gradient Terrace
 - i. A gradient terrace is an earth embankment or ridge designed so that the top of the constructed ridge is no lower at any point than the design elevation of the water surface at the outlet under design flow and is installed so as to intercept surface runoff and convey it to a stable outlet at a non-erosive velocity. Gradient terraces may be useful both as a temporary and/or permanent erosion control measure.

- g. Interceptor Ditches
 - i. Interceptor ditches are constructed to channel water away from unprotected slopes or easily eroded soils, or to convey silt laden water to sedimentation facilities.
 - ii. If the location of the ditch may result in erosion of the ditch itself, stabilization of the ditch may be required. Rip rap, temporary sodding, or a combination of filter fabric and rip rap, are methods of ditch stabilization that may be required to prevent erosion.

- h. Sediment Traps
 - (1) Sediment traps are structures of limited capacity designed to create a temporary siltation pond filter around storm drain inlets or at points where silt laden stormwater is discharged. Periodic maintenance by the contractor or developer is crucial to the proper functioning of sediment traps. Placement of filter fabric under the grate of a catch basin is not an acceptable method of inlet protection.

- i. Interceptor Dikes
 - (1) Interceptor dikes are temporary berms of compacted soil or gravel constructed across disturbed construction areas. Interceptor dikes shall be designed and constructed so as to reduce erosion by intercepting stormwater and diverting it to stabilized outlets such as siltation/sedimentation ponds or areas of well established vegetation.

- j. Temporary Construction Entrance
 - (1) A temporary construction entrance is a rock stabilized temporary entrance pad and shall be constructed at points where traffic will be entering or leaving a construction site from or onto public right-of-way. The pad shall be of sufficient length and width to eliminate transportation of mud and sediment from the construction area onto the public right-of-way by motor vehicles or by runoff, but under no circumstances shall it be less wide than the ingress/egress at the right-of-way or less than 50 feet long. The

stabilized construction entrance shall be a minimum thickness of 8 inches and constructed of material approved by the Public Works Director. The entrance shall be maintained to the satisfaction of the public works inspector. When site conditions are such that the temporary entrance pad fails to perform as required, all vehicles exiting the site shall have their tires and wheels cleaned by sweeping, brushing, or washing prior to entering public right-of-way. All washing shall be done on an area draining to an approved erosion control facility.

i. Temporary Soil Stabilization Measures

- (1) Soil stabilization measures protect soil from the erosive forces of raindrop impact and flowing water. Acceptable measures include establishing vegetation by sodding or seeding, mulching with 2 tons of straw per acre or approved equal, plastic or other impervious covering staked to the ground or anchored with rocks or sandbags, the early application of gravel base on areas to be paved.
- (2) The most appropriate measure should be chosen given the time of the year and the site conditions. Seeding alone is acceptable only on flat areas and slopes less than 15%, and only during the periods from March 1 to May 15 and August 15 to October 1 or as otherwise required or approved. Seeding during the summer months may require watering to establish vegetation. Mulch may need to be held in place by utility mesh or netting.

ii. Temporary Siltation/Sedimentation Ponds

- (1) Temporary siltation\sedimentation ponds detain runoff waters and trap sediment from easily eroded areas thus protecting properties, drainage ways and streams below the installation from damage by excessive sedimentation and debris deposition. The dam or barrier forming the pond shall be located to provide for maximum volume capacity for trapping sediment behind the structure as well as for greatest ease of clean out.
- (2) Temporary siltation\sedimentation ponds are basins created by construction of a barrier or by excavation or by combination of both.
- (3) Interior surfaces of the sedimentation pond shall be stabilized where required to prevent erosion of the pond bottom and \or sides.
- (4) Interior sides of the pond shall be no steeper than 3 feet horizontal to 1 foot vertical.
- (5) Siltation/sedimentation ponds shall provide a minimum of 2 feet of dead storage below the outflow elevation and will be sized to provide a minimum of 1 cubic foot of live storage per 100 square feet of channel area.
- (6) A stabilized access will be provided to the siltation\sedimentation

pond for sediment removal and other maintenance.

5. Seasonal Limitations

- a. Land alteration operations are restricted to seasonal limitations. The restrictions are site specific and are based on, but not limited to, steepness of slopes on site, distance from sediment\erosion sensitive areas, soil type, etc. Contact the city's Public Works Department for site specific seasonal limitations.
- b. In addition, these operations shall be governed by the following seasonal limitations:
 - i. No fill material shall be placed, spread, or rolled while either the fill material or the site surface is frozen or thawing, or during other unfavorable conditions.
 - ii. All land alteration work is subject to stoppage by the Public Works Director or her/his designee due to heavy rain.
 - iii. When land alteration activities are interrupted by heavy rain, operations shall not be resumed until the Public Works Department determines that erosion control facilities are operating satisfactorily.
 - iv. Underground utilities and foundation installation are allowed with seasonal limitations under the following conditions:
 - (1) Every effort is made to close utility trenches by the end of the day.
 - (2) If unavoidable circumstances result in the inability to close a utility trench, all open areas and side spoils are covered with plastic sheeting that is staked in place or anchored by rocks, sand bags, tires, or by approved methods at the end of the day.
 - (3) Discharge from dewatering of utility trenches or foundation areas is directed to the nearest sedimentation pond, or to a specially created sump area, in a non-erosive fashion. Large quantities of silt in the discharge water may result in the dewatering activity being stopped by the City Inspector until the source of the sediment is identified and attempts made to minimize the quantity in the discharge.
 - (4) Utility corridors are re-stabilized by temporary soil stabilization measures immediately following the completion of utility work or if the earth is to be left exposed for 7 days or more on flat ground or for 3 days or more on slopes greater than 15%.
 - (5) Water is prevented from entering foundation work areas from surface runoff by creating small, compacted earth berms around the perimeter of the building site to divert runoff away from the working area.
 - (6) In general, removal of existing vegetation within the buffer zone of any wetland or perennial stream will not be allowed. If allowed, it will be required that approved vegetation is replaced within 30 days of beginning work in stream area.

6. Temporary Erosion/Sediment Control Plans

- a. A temporary erosion/sedimentation plan is required in conformance with the DOE Stormwater Management Manual, including for the following land alteration activities:
 - i. On slopes 15% or greater
 - ii. Where cut and /or fill slopes 15% or greater will be created by the proposed work
 - iii. Where work done may impact on environmentally sensitive areas (stream, wetland, etc.)
- b. The plan shall clearly indicate the construction sequence for establishment of all erosion control work both temporary and permanent and shall be on a separate sheet.
- c. Emergency management plans are to be submitted for all clearing and grading permit applications. To include at a minimum:
 - i. Name, address, and 24 hour telephone number(s) for the person(s) responsible for regular observation and repair or replacement of all erosion and sedimentation control measures.
 - ii. Schedule for regular inspection, maintenance and replacement of erosion and sedimentation control measures.
 - iii. Location and inventory of materials required to be stockpiled on the site for emergency repair of the approved erosion and sedimentation control system.
 - iv. Contingency plans in case of failure of the erosion and sedimentation control system, including how individual erosion control measures would be accessed during undesirable site conditions.
- d. Required Notes on Plans
 - i. The following are the minimum notes required on all Temporary Erosion\Sedimentation Control Plans:
 - (1) The temporary erosion control system shall be installed and inspected by the public works inspector prior to all other construction.
 - (2) Where possible natural vegetation will be maintained for silt control.
 - (3) As construction progresses and seasonal conditions dictate, the erosion control facilities shall be maintained and/or altered as required by the Public Works Director to ensure continuing erosion\sedimentation control.
 - (4) Temporary siltation ponds and all temporary siltation controls shall be maintained in a satisfactory condition until such time that clearing and \or construction is completed, permanent drainage facilities are operational, and the potential for erosion has passed.
 - (5) All disturbed land areas that will be left for 30 days or more during the period of May to October 1 shall be immediately seeded with a mix and by a method approved by the Public Works Department

and maintained until seed germination is assured. In addition to seeding, slopes of 15% or greater will be mulched with 2 tons of straw per acre, or with an approved equal. During the rest of the year, temporary soil stabilization must be applied immediately to disturbed areas that will be left exposed for 7 days or more, and immediately to slopes greater than 15% that will be left exposed for 2 days or more.

- (6) Approval of this plan does not constitute an approval of design, size, or location of pipes, restrictors, or detention facilities, but is an approval of the grading and sedimentation control plan only.
- (7) The public right-of-way shall be kept clean. Tracking of mud and debris from the site will not be allowed. Failure to comply with this condition will result in all work on the site being stopped.

7. Vegetation Restoration

- a. Areas disturbed by construction activity which are not to be covered by permanent impervious surfaces shall be landscaped or reseeded at the earliest possible time, not to exceed 30 days after final grade is reached during the period from May 1 to October 1. During the rest of the year, reseeded or landscaping is required within 7 days of reaching final grade.
- b. If wet weather prohibits reseeded or landscaping during the given period, temporary soil stabilization measures must be used until conditions are suitable for permanent measures.
- c. When the area to be seeded is hard, compacted, or encrusted, the top layer of soil shall be loosened by disking, raking or other acceptable means before seeding.
- d. Specifications for seed, fertilizer and mulch will depend upon the slope, soil conditions, and the planned use of the site.

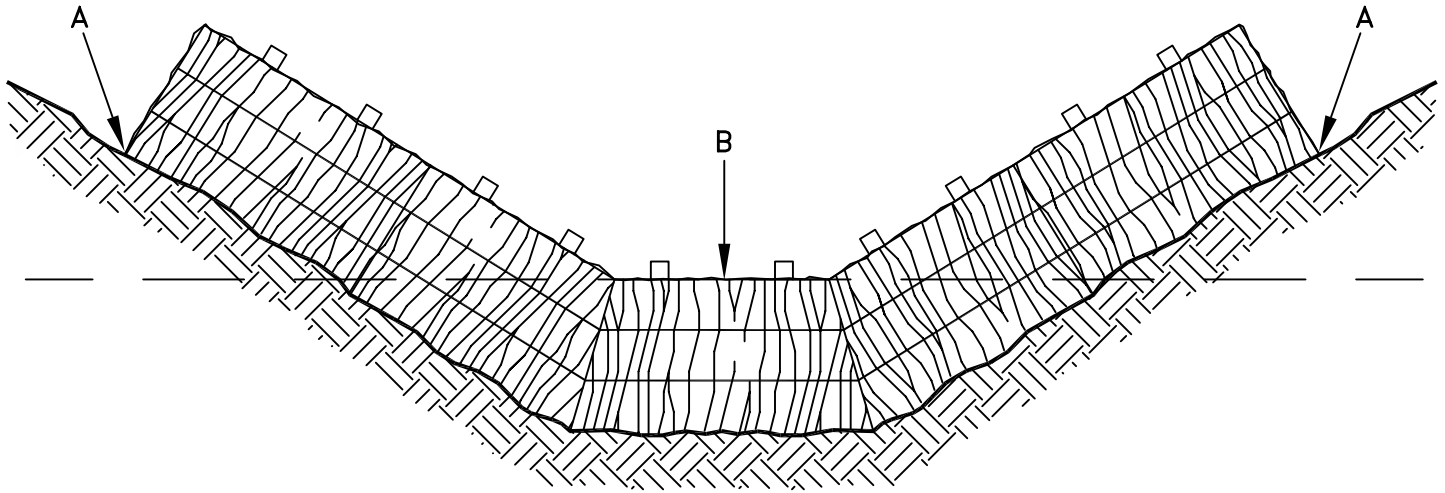
CHAPTER 5 - APPENDIX

<u>Exhibit #</u>	<u>Standard Detail #</u>	<u>Title</u>
1	EC - 1	Erosion Control - Straw Bale Barrier
2	EC - 2	Erosion Control - Sediment Trap
3	EC - 3	Erosion Control - Filter Fabric Inlet Fence
4	EC - 4	Erosion Control - Typical Sediment Basin
5	EC - 5	Erosion Control - Typical Temporary Erosion Control
6	EC - 6	Erosion Control - Construction Entrance
7	EC - 7	Erosion Control - Filter Fabric Fence



City of Port Townsend - Public Works Department

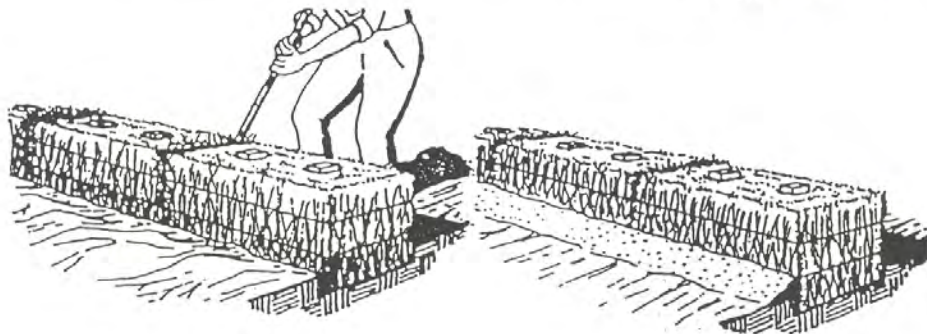
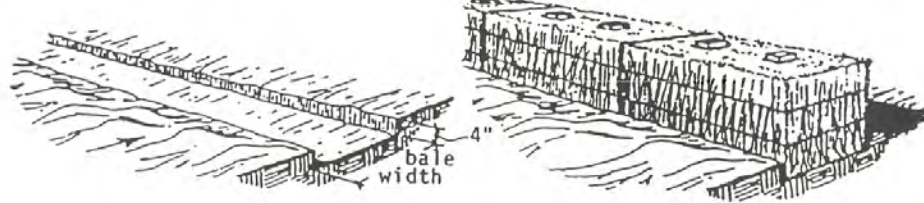
Standard Detail



POINTS A SHALL BE HIGHER THAN POINT B
 PROPER PLACEMENT OF STRAW BALE DAM IN DRAINAGE WAY

1. Excavate the trench.

2. Place and stake straw bales.



3. Wedge loose straw between bales.

4. Backfill and compact the excavated soil.

CONSTRUCTION OF A STRAW BALE BARRIER

Date: April 1997

Approved By:

File: E:\eng_std\standard\erosion

No.	Date	Revision	By	Apvd

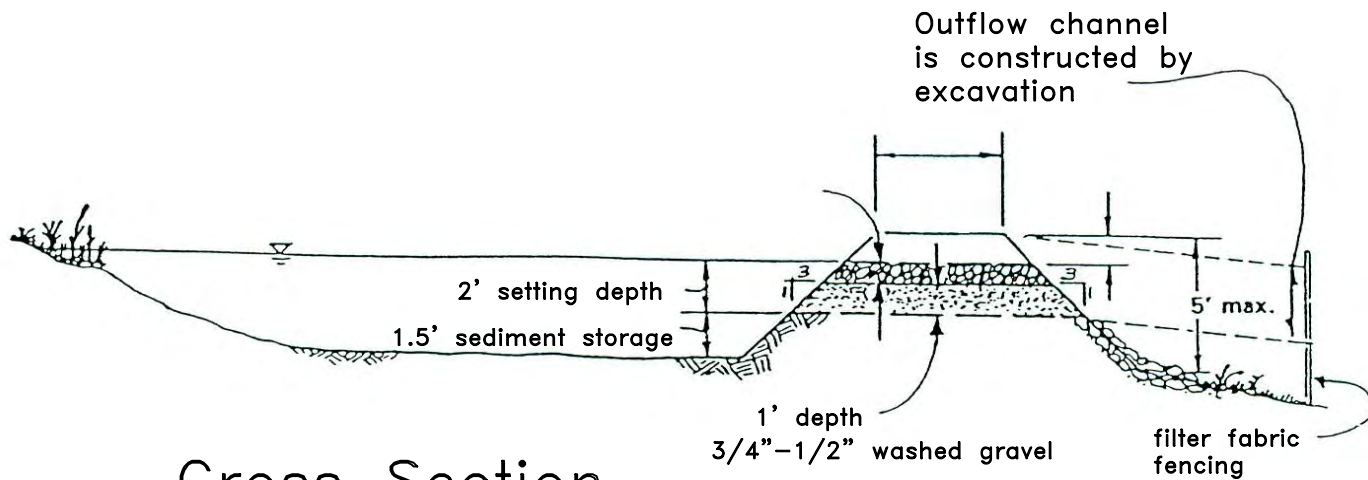
Erosion Control
 Straw Bale Barrier

Detail: EC-1



City of Port Townsend - Public Works Department

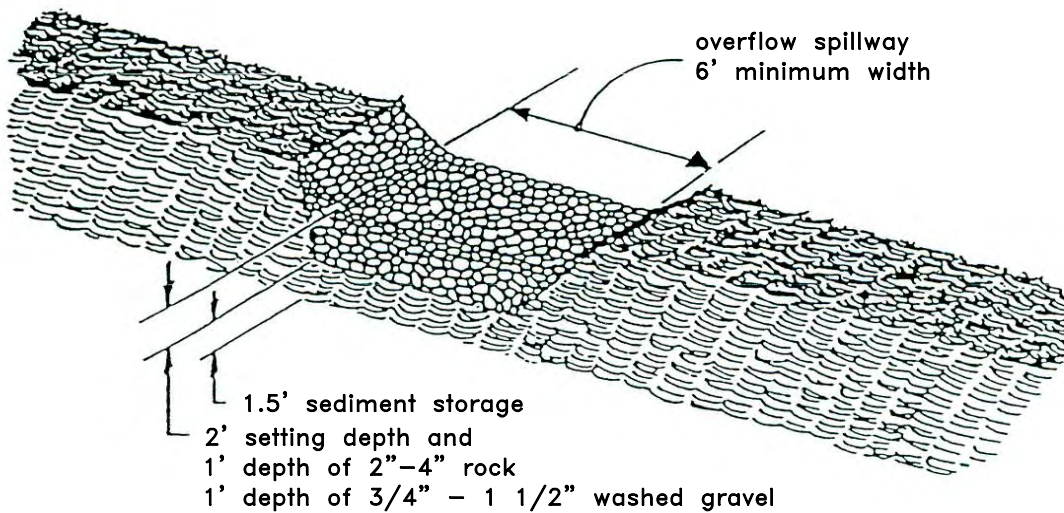
Standard Detail



Cross Section

No Scale

note: may be constructed by excavation or by building a berm



Date: April 1997

No.	Date	Revision	By	Apvd

Approved By:

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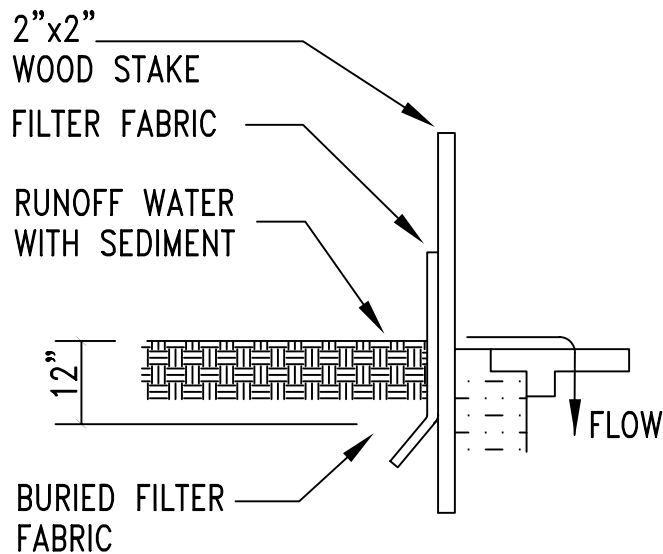
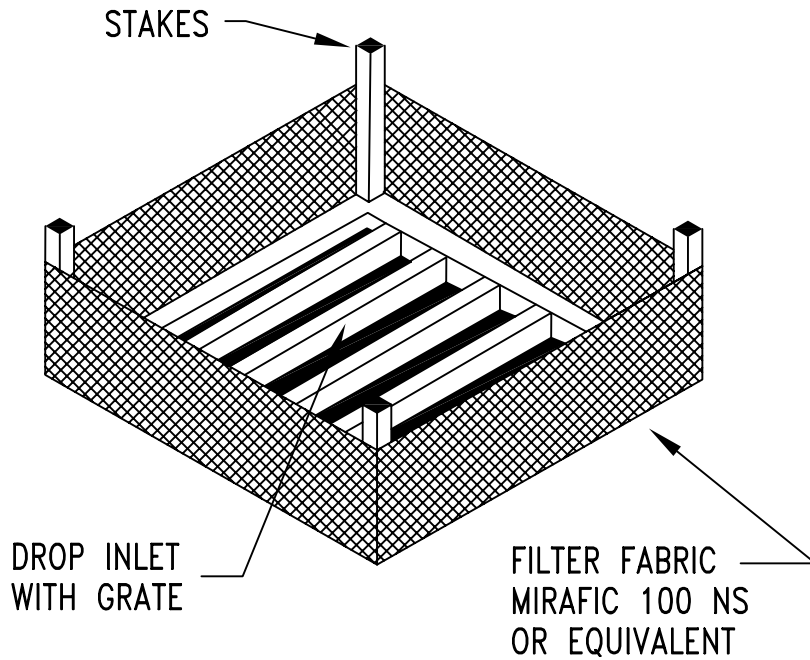
Erosion Control
Sediment Trap

Detail: EC-2



City of Port Townsend - Public Works Department

Standard Detail



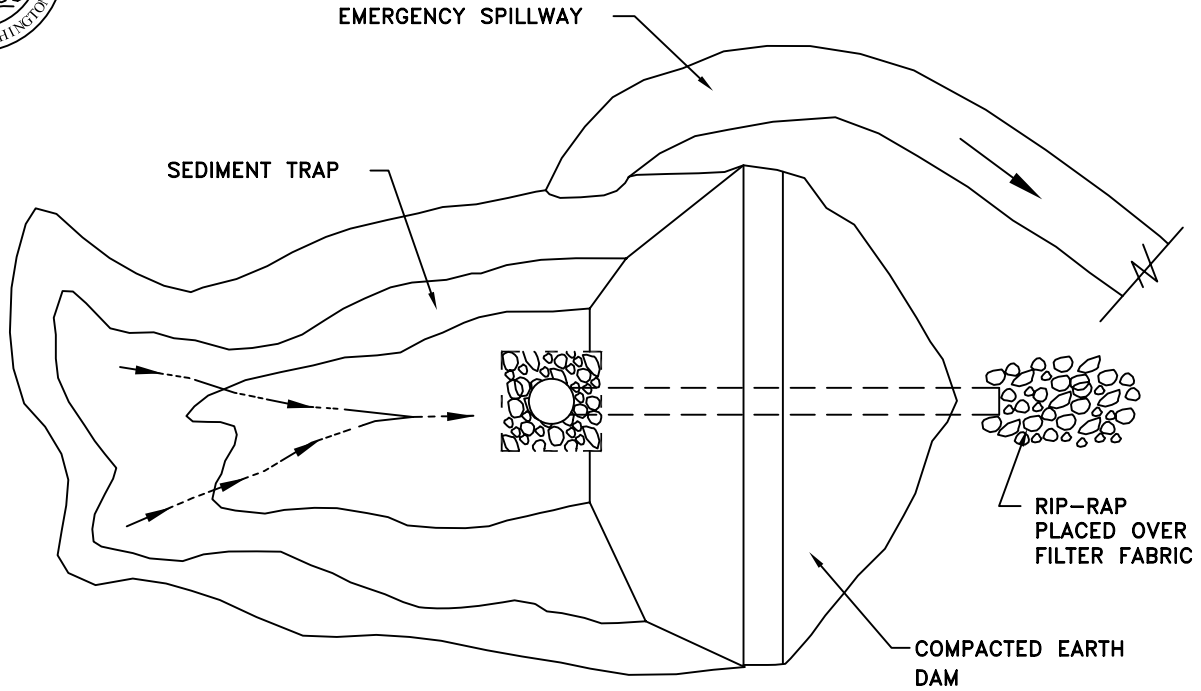
NOTE:
 SAND BAGS MAY BE USED IN PLACE OF FILTER FENCE
 WHEN FILTER FABRIC IS IMPRACTICAL.

Date: April 1997	No.	Date	Revision	By	Apvd	Erosion Control Filter Fabric Inlet Fence
Approved By:						Detail: EC-3
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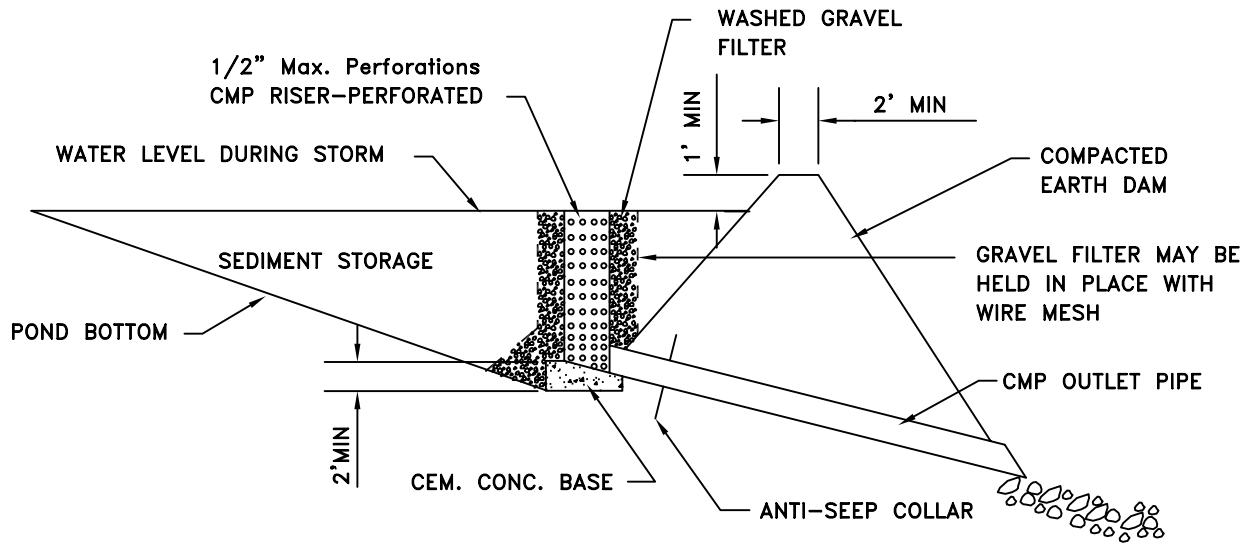


City of Port Townsend - Public Works Department

Standard Detail



PLAN



PROFILE

NOTES:

1. LENGTH OF BASIN MUST BE AT LEAST 3 TIMES THE WIDTH.
2. ALL INLETS AT THE UPSTREAM END OF THE BASIN.

Date: April 1997

Approved By:

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No.	Date	Revision	By	Apvd

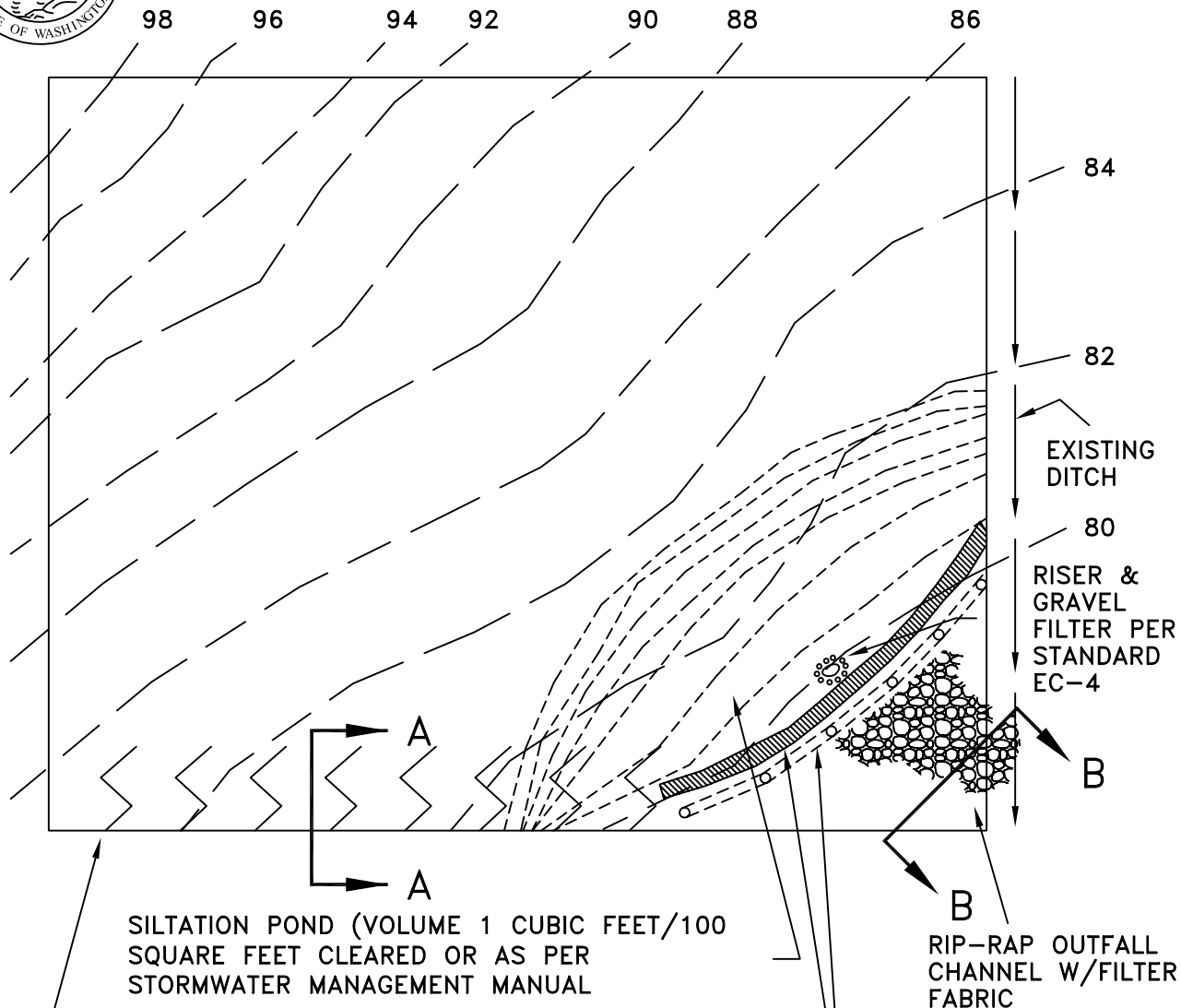
Erosion Control
Typical Sediment Basin

Detail: EC-4



City of Port Townsend - Public Works Department

Standard Detail



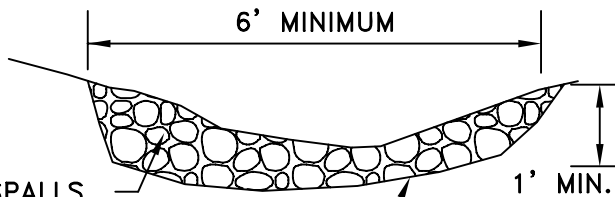
SILTATION POND (VOLUME 1 CUBIC FEET/100 SQUARE FEET CLEARED OR AS PER STORMWATER MANAGEMENT MANUAL)

CONSTRUCT RUNOFF INTERCEPTOR SWALE WITH BERM

CONSTRUCT STRAW BALE DAM AND / OR FILTER FABRIC FENCE (In critical drainage areas) (both are required)



**INTERCEPTOR SWALE
DETAIL SEC. A-A**



RIP-RAP OUTFALL CHANNEL SEC. B-B

4"-6" QUARRY SPALLS

FILTER FABRIC

Date: April 1997

Approved By:

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No.	Date	Revision	By	Apvd

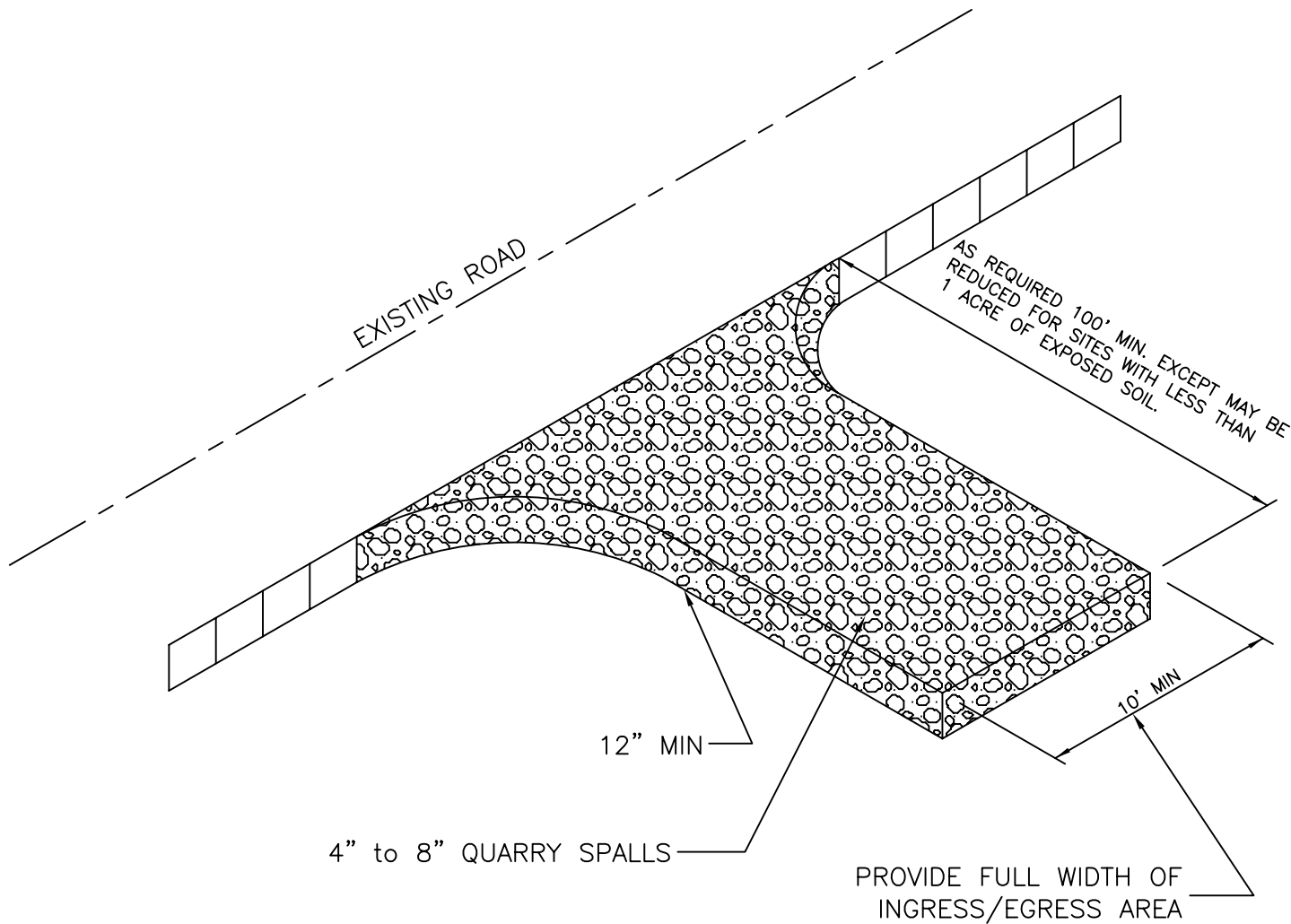
Erosion Control
Typical Temp. Erosion Control

Detail: EC-5



City of Port Townsend - Public Works Department

Standard Detail



Date: April 1997	No.	Date	Revision	By	Apvd	<h3 style="margin: 0;">Erosion Control Construction Entrance</h3> <p style="margin: 10px 0 0 0;">Detail: EC-6</p>
Approved By:						
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City of Port Townsend - Public Works Department

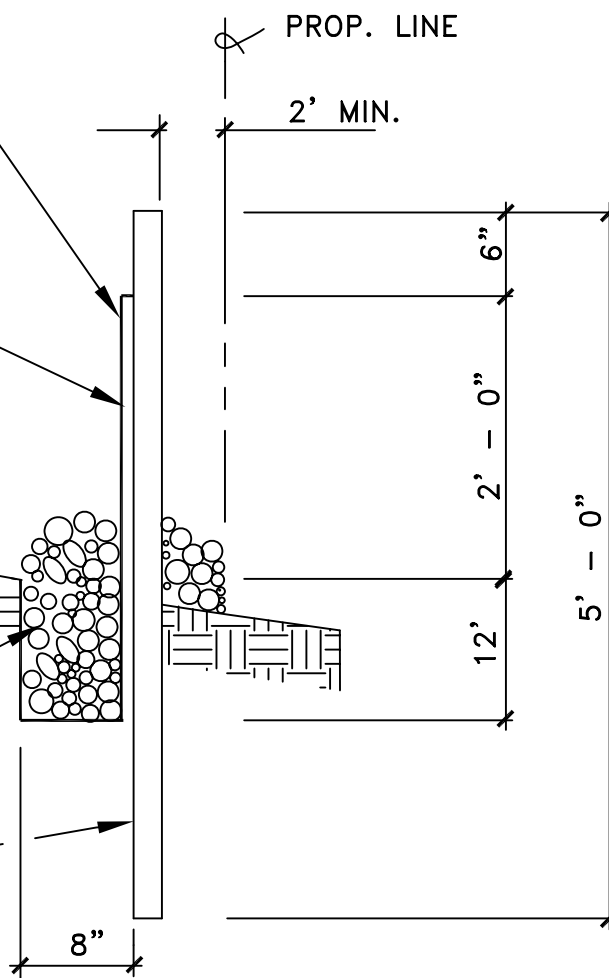
Standard Detail

MIRAFI 100 NS
OR EQUIVALENT
FILTER FABRIC MATERIAL

2" X 2" BY 14 GA. WIRE
FABRIC OR EQUIVALENT

PROVIDE 3/4" - 1 1/2" WASHED
GRAVEL BACKFILL IN TRENCH AND
ON BOTH SIDES OF FILTER FABRIC
FABRIC ON THE SURFACE

2" X 2" WOOD POST
OR STEEL FENCE POST
AT 6 FEET ON CENTER



Date: April 1997

Approved By:

File: E:\eng_std\standard\erosion

No.	Date	Revision	By	Apvd

Erosion Control
Filter Fabric Fence

Detail: EC-7