DESCRIPTION & PURPOSE: Inlet protection provides a temporary barrier to prevent sediment from entering storm drainage systems from exposed soils during construction. Before leaving the site, runoff must pass through a sediment filtration measure to protect waterways. Special conditions require different types of protection.

CONSTRUCTION GUIDELINES: • Take appropriate measures to prevent standing water problems.
• See Table 2 for list of barrier types.

LOCATION: • On drainage areas of 1 acre or less
• Where storm drain inlets will be made operational prior to stabilization of a disturbed drainage area
• All storm drain inlets downslope of and within 500 feet of a disturbed construction area
• Anywhere a drainage system needs protection

MAINTENANCE: • Inspect inlets for sediment build up regularly and especially after any storm. Remove sediment, spread over the surrounding area and stabilize.
• Do not allow sediment to enter storm drain.
• Filter fabric systems: Inspect regularly, especially after large storms. Replace clogged fabric. Remove sediment reaching one-half the height of fencing. Remove sediment filling one-half the depth of sump.
• Stone filter systems: Remove clogged gravel, use as fill, and replace with fresh stone.

Refer to the BMP Maintenance Checklist on pages 53 and 54.
### TABLE 2. STORM DRAIN INLET PROTECTION

<table>
<thead>
<tr>
<th>TYPE OF PROTECTION</th>
<th>SURFACE: P=PAVED E=EARTHEN</th>
<th>EMERGENCY OVERFLOW</th>
<th>SPECIAL CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DROP INLET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavated</td>
<td>E</td>
<td>Yes</td>
<td>For heavy flows. Easy to maintain.</td>
</tr>
<tr>
<td>Filter Fabric</td>
<td>E</td>
<td>No</td>
<td>For flat areas. Not for runoff from street or fill areas.</td>
</tr>
<tr>
<td>Block and gravel</td>
<td>P &amp; E</td>
<td>Yes</td>
<td>For heavy concentrated flows. Will not pond.</td>
</tr>
<tr>
<td>Gravel and wire</td>
<td></td>
<td>No</td>
<td>For heavy concentrated flows. Will pond. Traffic okay.</td>
</tr>
<tr>
<td>Sod</td>
<td>E</td>
<td>No</td>
<td>Only during permanent seeding.</td>
</tr>
<tr>
<td>Catch basin</td>
<td>P or E</td>
<td>Yes</td>
<td>Frequent maintenance required.</td>
</tr>
<tr>
<td>Combination:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation with silts fence; or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block and gravel</td>
<td>E</td>
<td>Depends on combination</td>
<td>Provides additional protection.</td>
</tr>
</tbody>
</table>

| CURB INLET                         |                             |                    |                                         |
| Gravel curb                        |                             | No                 | Ponding will occur with heavy flow.     |
| Curb inlet with wooden weir        | P                           | Small capacity overflow | For sturdy, compact installation.       |
| Block and gravel                   | P                           | Yes                | Sturdy, but limited filtration.         |

| CULVERT INLET                      |                             |                    |                                         |
| Silt fence                         |                             |                    | 3 month expected life.                  |
| Culvert inlet sediment trap        |                             |                    | 18 month expected life.                 |

Refer to Kitsap County Stormwater Management Ordinance and Design Manual for detailed information, construction and illustrations of each type of inlet protection. (See BEYOND THESE BMPs on page 51.)

**Figure 4a. Gravel and Wire Type**

**Figure 4b. Block and Gravel Type**
DESCRIPTION & PURPOSE:
A ridge of compacted soil (dike) or channel (swale) on a slope slows and
directs stormwater runoff from entering work areas and/or keeps sediment
from leaving the site. May be temporary or permanent. Before leaving the
site, runoff must pass through a sediment trap or other sediment filtration
measure as well.

CONSTRUCTION GUIDELINES:
- Construct dike to be minimum of 2 feet wide at top, 1 ½ feet minimum
  in height.
- Excavate swale to be 1 foot deep, and a minimum of 2 feet wide and level
  at bottom.
- Stabilize dike/swale soils with vegetation, nets and blankets, or other
  protection during construction.

LOCATION:
- Upslope of a construction site to redirect runoff
- Horizontally across a disturbed slope to reduce velocity and amount of
  runoff
- Downslope to collect and direct runoff to a sediment trap or pond

ESTIMATED LIFE:
N/A

DO’S & DON'TS:
- Prevent erosion at outlet. A sediment trap or other
  filtration measure may be needed to prevent sediment from
  leaving site.
- Minimize construction traffic over temporary dike to help
  maintain it’s effectiveness.
- Use culverts for channel crossing during construction to keep
  flows unhindered.
MAINTENANCE:

- Inspect dike and swale once a week and after every rainfall; check outlets. Remove any sediment build up immediately, spread over surrounding area and stabilize.
- Repair any damage before the end of each working day.
- Remove temporary dike/swale, add fill, and stabilize to blend with natural ground surface when dike/swale is no longer needed.

Refer to the BMP Maintenance Checklist on pages 53 and 54.

FIGURE 5. Interceptor Dike and Swale
CHECK DAMS

DESCRIPTION & PURPOSE: A small rock dam constructed across a path of water slows concentrated flows and filters sediment. (Before leaving the site, runoff must pass through a sediment trap or other sediment filtration measure as well.)

CONSTRUCTION GUIDELINES:
• Construct dam of rock or pea-gravel-filled sandbags.
• Construct the toe of the upstream dam to be at the same elevation as the top of the downstream dam.
• Line area under rock or sandbag check dam with filter fabric.
• Use either mechanical means or install by hand to ensure proper height and coverage of channel (do not just dump rocks to form dam).
• Construct maximum height to be 2 feet at the center of the dam.
• Construct so that the center of dam is at least 9 inches lower than the edges at natural ground level.
• Install a sump immediately upstream of each dam.

LOCATION:
• Non-vegetated channels, temporary or permanent, where lining is not feasible and runoff velocity is high
• In small open channels draining 10 acres or less

ESTIMATED LIFE: 6 months to 1 year

DO’S & DON’TS:
☞ Do not place check dams in streams unless approved by Washington Department of Fish and Wildlife.
☞ Remove dam from grass-lined channel when turf has matured enough to protect channel, unless the slope of the channel is greater than 4%.
MAINTENANCE:

- Inspect after each runoff-producing rainfall; remove sediment when it reaches one-half the sump depth. Spread excavated material over surrounding area and stabilize.
- Seed and mulch area beneath check dam immediately after dam removal.
- Install rip rap liner in any area of channel where significant erosion occurs between dams.

Refer to the BMP Maintenance Checklist on pages 53 and 54.

FIGURE 6. Check Dam
GRASS-LINED CHANNELS

DESCRIPTION & PURPOSE: A permanently installed turf cover protects channels (natural or man-made) from erosion. This helps reduce sediments from entering waterways and threatening water quality.

CONSTRUCTION GUIDELINES:

- Construct channel to conform to natural topography, with side slopes of 3:1 or flatter (no v-shaped channels).
- Enlarge channel enough to allow for added topsoil and turf thickness.
- Use sod or seed.
- Use mulch or geotextile with seed.
- Provide outlet protection at culvert ends and channel intersections.
- Make sure grass is well established before channel begins to operate.
- Use sediment traps upstream of a channel until site is permanently protected against erosion.

LOCATION:

- At drainage ditches, outlets for diversions, and other low area channels
- Where concentrated runoff needs to be contained to prevent erosion or flooding
- On channel slopes generally less than 5%

ESTIMATED LIFE: Permanent

DO’S & DON’TS:

- Use natural drainage systems to the greatest extent possible. (It’s less costly and more effective to follow paths provided by nature.)
- Do not reshape the landscape to fit the drainage channel.
- Avoid sharp bends or changes in grade. (They become sources of further erosion.)
MAINTENANCE:

- Inspect channel after every rainfall until turf is well established.
- Inspect established grass-lined channel after every heavy rainfall; make repairs needed.
- Inspect channel outlet and road crossings for bank stability and scour holes; make repairs as needed.
- Remove sediment build up, spread excavated material over surrounding area, and stabilize.
- Keep the grass healthy. (If you use fertilizers, pesticides or herbicides, use organic or least toxic alternatives to protect water quality.)

Refer to the BMP Maintenance Checklist on pages 53 and 54.

Figure 6. Grass-Lined Channel
RIP RAP-LINED CHANNELS

DESCRIPTION & PURPOSE: Lining a channel with rip rap (large, loose, angular stones) slows water flow and reduces soil erosion. This protects water quality and preserves fish habitat.

CONSTRUCTION GUIDELINES:
- Consult site designer to determine the size of stones to be used.
- Choose stone that is hard and angular, not subject to disintegration from exposure to water and weather.
- Line channel with geotextile fabric before installing stone to prevent soil movement up through the rip rap, as long as slope is less than 1½ :1 (to avoid fabric slippage).

LOCATION:
- Inside channels where erosion potential is high due to water flow
- Where vegetated stabilized soils in a channel are not adequate to prevent erosion

ESTIMATED LIFE: Permanent

DO’S & DON’TS:
- Install as soon as possible due to high erosion potential.
- Make sure rip rap is in place before channel begins to operate if possible.

MAINTENANCE:
- Inspect for effectiveness after all large storms.
- Repair any eroded areas, add stone as needed.

Refer to the BMP Maintenance Checklist on pages 53 and 54.
Symbol: NONE  Code:: RR

Rip Rap Lined Channel
GRAVEL FILTER BERM

DESCRIPTION & PURPOSE:
A large gravel berm filters sediment out of high volume stormwater travelling down slope. Before leaving the site, runoff must pass through a sediment filtration measure, such as this, to protect waterways.

CONSTRUCTION GUIDELINES:
- Use ¾-inch to 3-inch well-graded washed gravel or washed crushed rock with less than 5% fines passing the #200 sieve.
- Construct berm to be 1 foot high with 3H:1V side slopes.
- Space berms 300 feet apart when a slope is 5% or less.
- Space berms 200 feet apart when a slope is 5% to 10%.
- Space berms 100 feet apart when a slope is greater than 10%. Embed a filter fabric and gravel berm for additional sediment control.

LOCATION:
- Where runoff from sloped construction areas or entrances can transport sediment downstream.
- Where durability and large sediment capacity is required.

ESTIMATED LIFE:
6 Months to 1 Year

MAINTENANCE:
- Inspect immediately after each rainfall and at least daily during prolonged rainfall.
- Remove sediment and replace gravel as needed.

Refer to the BMP Maintenance Checklist on pages 53 and 54.
Figure 7. Gravel Filter Berm

Symbol: NONE
Code: GFB