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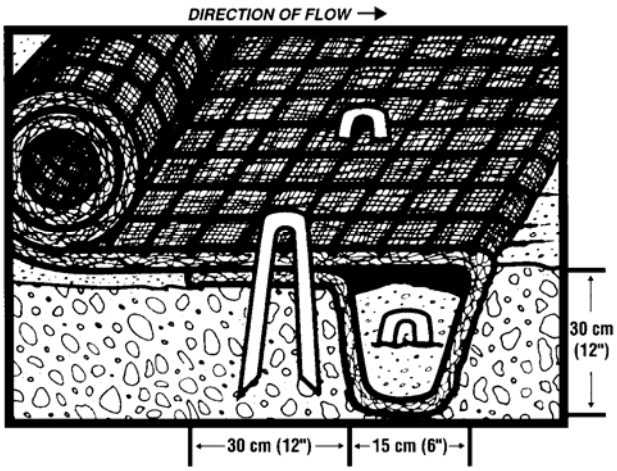
Soil Protection Blankets and Matting

Soil protection blankets and matting material are used as an aid to control erosion in critical areas such as slopes and channels and to assist in the establishment of protective vegetation. Material selection is based on site conditions (slope or channel condition and soil type). See the LCRA Water Quality Management Technical Manual.

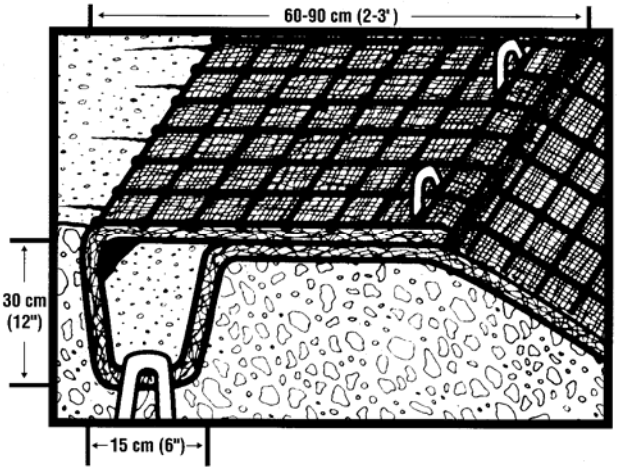
Install blankets per the manufacturer's recommendations. Proper installation of blankets and matting is necessary for these materials to function as intended. Proper anchoring of the material and preparation of the soil are two of the most important aspects of installation.

Notes:

1. Remove clods and rocks more than 1.5 inches in diameter and any foreign material that will prevent contact of the protective mat with the soil surface.
2. Fertilize and seed in accordance with seeding or other type of planting plan.
3. Dig anchor trenches 6 inches wide and 12 inches in depth.
4. Use enough mat to allow a minimum of 2 inch turnover at bottom of trench for stapling, while maintaining the top edge flush with the soil surface.
5. Make sure matting is uniformly in contact with the soil.
6. Secure lap joints and staple (flush with the ground).
7. Inspect blankets and matting weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage. Apply new material if necessary to restore function.
8. Temporary irrigation should be provided. Significant rainfall (on-site rainfall of 0.5 inch or greater per week) may allow watering to be postponed until the next scheduled irrigation.



Initial Anchor Trench for Blankets and Mats



Terminal Anchor Trench for Blankets and Mats

For more information, see the LCRA Water Quality Management Technical Manual
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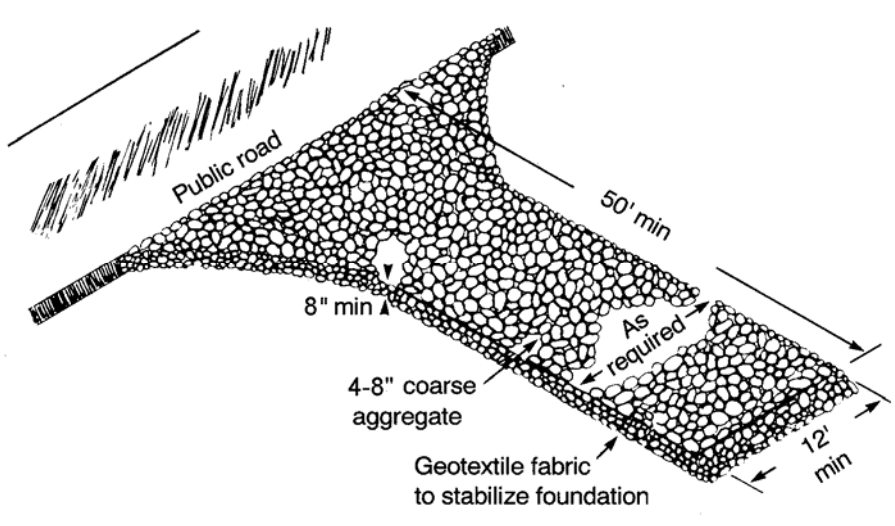
Temporary Construction Entrance/Exit

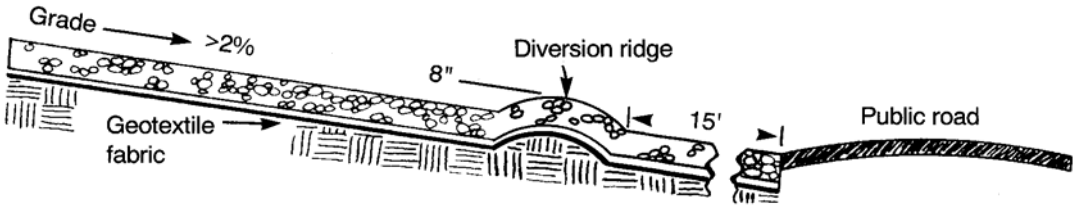
The purpose of a temporary construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off of roads.

Notes:

1. Use 4 to 8 inch washed stone and place with a minimum thickness of 8 inches.
2. Use geotextile fabric with an approximate weight of 4 oz/yd2 as needed to improve stability.
3. The minimum width of the entrance/exit should be 12 feet or the full width of exit roadway, whichever is greater.
4. The construction entrance should be at least 50 feet long.
5. Divert all surface runoff and drainage from the stone pad to a sediment trap or basin if necessary.
6. Inspect entrance/exit and after each rain event (of 0.5 inch or more). Repair any damage by adding stone and/or cleaning any measures used to trap sediment.
7. Promptly remove all sediment spilled, dropped, washed or tracked onto public rights-of-way. Dispose of sediment in a manner that will not cause additional siltation.
8. When construction is complete, properly dispose of any sediment buildup and restore the prior location of the entrance/exit.



Schematic of Temporary Construction Entrance/Exit



Cross-section of a Construction Entrance/Exit

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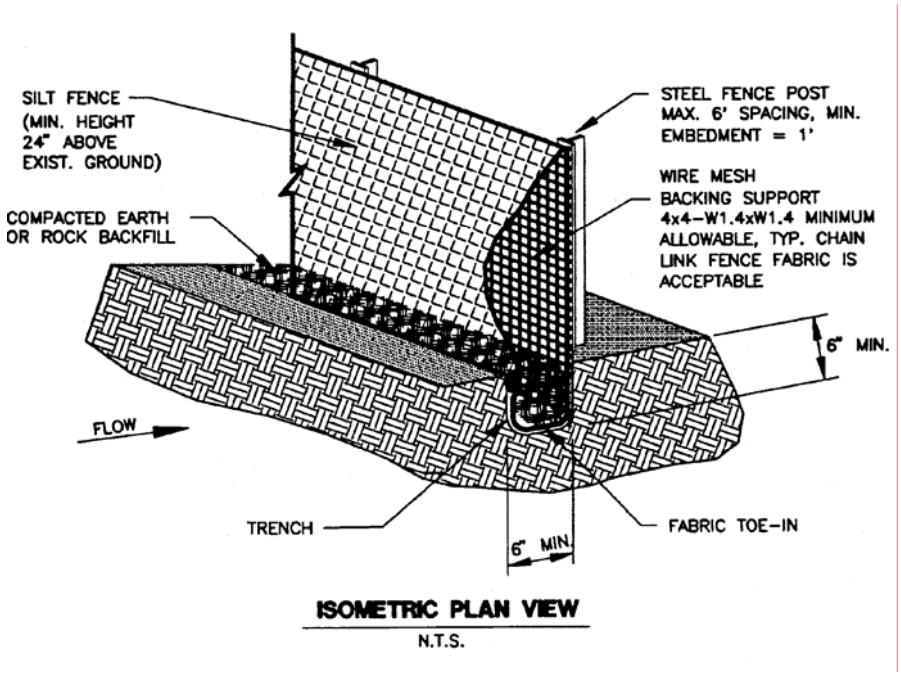
Silt Fence

The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent (maximum contributing drainage area of 2 acres).

Notes:

1. Use polypropylene, polyethylene or polyamide woven or nonwoven fabric (36 inches wide, weighing 4 oz/yd) and 2" x 4", 12 gauge minimum woven wire backing.
2. Use steel fence posts, at least 4 feet long, embedded 1-foot deep and spaced not more than 8 feet on center.
3. Toe in the silt fence so that the down-slope face of the trench is flat and perpendicular to the line of flow (6" x 6" trench). Where fence cannot be trenched in (e.g., pavement or rock outcrop), weight fabric flap with 3 inches of pea gravel on uphill side to prevent flow from seeping under fence.
4. Use J-hooks as needed when silt fences cross contour lines to create catchment areas and slow flow velocity. Use J-hooks at downhill fence ends to prevent runoff from escaping around sides. Refer to the J-hook placement detail found below.
5. Inspect silt fences weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage. Replace any torn fabric and repair any sections crushed or collapsed in the course of construction activity.
6. Remove sediment when buildup reaches 6 inches. Dispose of sediment in a manner that will not cause additional siltation.
7. When construction is complete, properly dispose of any sediment buildup and restore the prior location of the silt fence. The fence materials should be disposed of in an approved landfill or reused if in serviceable condition.



Schematic of a Silt Fence Installation

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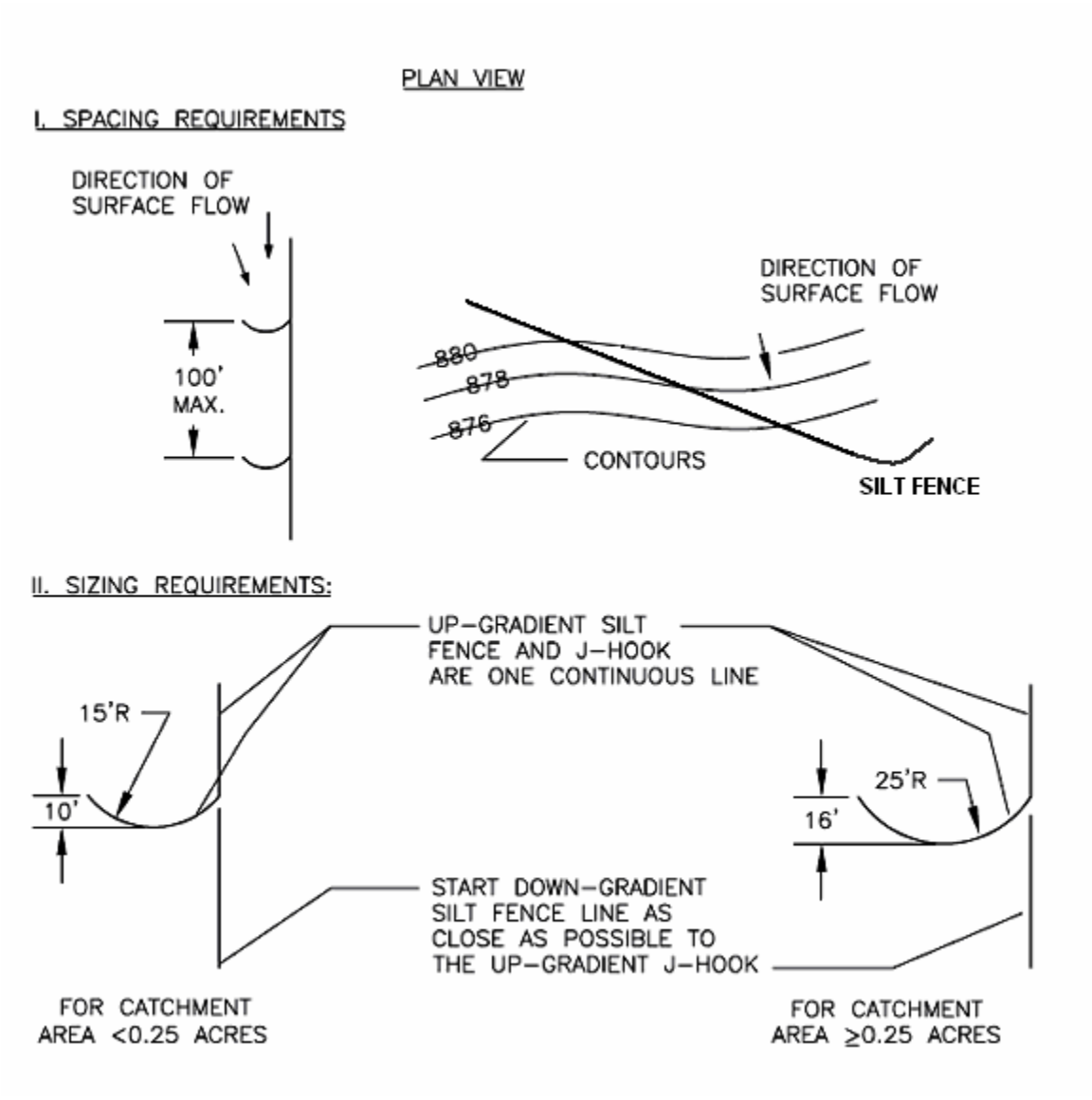
Recommended Silt Fence Spacing on Sloping Sites

	Soil Type		
Slope angle	Silty	Clays	Sandy
Very steep (1:1)	50 ft.	75 ft.	100 ft.
Steep (2:1)	75 ft.	100 ft.	125 ft.
Moderate (4:1)	100 ft.	125 ft.	150 ft.
Slight (10:1)	125 ft.	150 ft.	200 ft.



J-hook Placement Details

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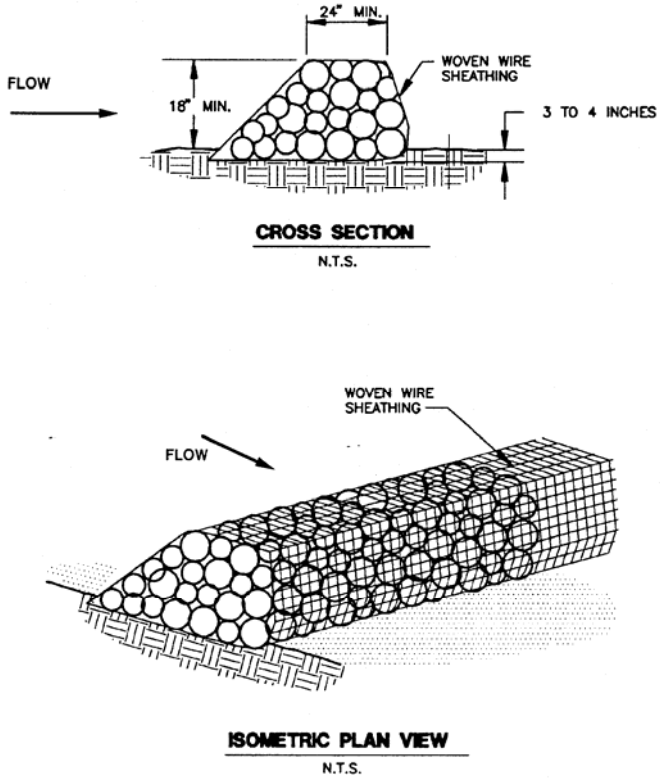
Rock Berms

The purpose of a rock berm is to serve as a check dam in areas of concentrated flow, to intercept sediment-laden runoff, detain the sediment and release the water in sheet flow.

Notes:

1. Use clean, open graded 3- to 5-inch diameter rock.
2. Use a woven wire sheathing (maximum opening of 1 inch and a minimum wire diameter of 20 gauge galvanized), and secure with shoat rings.
3. The height should be at least 18" and the top width of at least 2 feet.
4. Install berm along a constant contour and perpendicular to the flow path to prevent runoff from escaping around the sides.
5. Inspect weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage.
6. Remove sediment when buildup reaches 6 inches. Dispose of sediment in a manner that will not cause additional siltation.
7. When construction is complete, properly dispose of any sediment buildup. The rock berm should be removed when the site has been revegetated, but may be left in place as a permanent BMP in certain cases (e.g. when used as a check dam in a constructed ditch or swale).



Schematic Diagram of a Rock Berm

Rock Berm Spacing on Channels

Ditch slope	Spacing
30%	10 ft.
20%	15 ft.
15%	20 ft.
10%	35 ft.
5%	55 ft.
3%	100 ft.
2%	150 ft.
1%	300 ft.
0.50%	600 ft.

(applies for rock berms, high service rock berms, brush berms, and fiber rolls)

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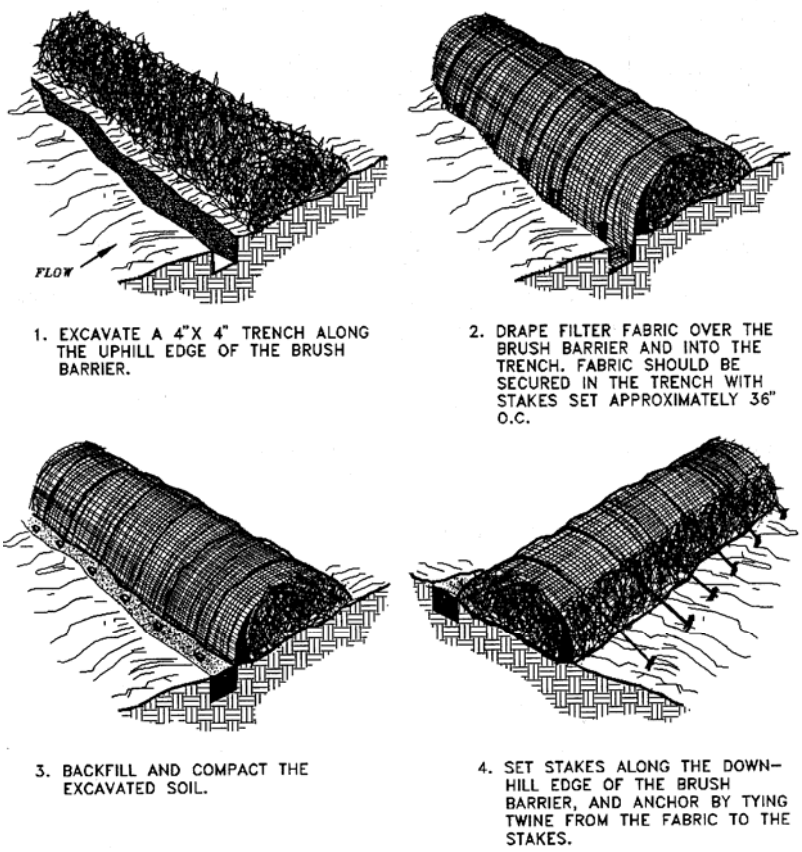
Brush Berms

The purpose of a brush berm is to intercept and detain water-borne sediment from unprotected areas of a limited extent (maximum contributing drainage area of 2 acres).

Notes:

1. Use woody brush and branches, like juniper (cedar) less than 2 inches in diameter.
2. Hand place brush limbs following a constant contour with the vegetated part of the limb in close contact with the ground, overlapping with the previous branch to provide a shingle effect.
3. Construct the berm in lifts with each layer extending the entire length of the berm until the next layer is started.
4. Secure brush with ¼ inch polypropylene or nylon rope anchored with 3/8-inch diameter, 18-inch long rebar stakes.
5. The height of the brush berm should be a minimum of 24" after the securing ropes have been tightened.
6. Filter fabric may be required in higher velocity applications or in sensitive areas.
7. Inspect weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage. Periodically tighten the anchoring ropes.
8. Remove sediment when buildup reaches 6 inches. Dispose of sediment in a manner that will not cause additional siltation.
9. When construction is complete, properly dispose of any sediment buildup and restore the prior location of the brush berm. Properly dispose of removed materials.



Schematic Diagram of a Brush Berm

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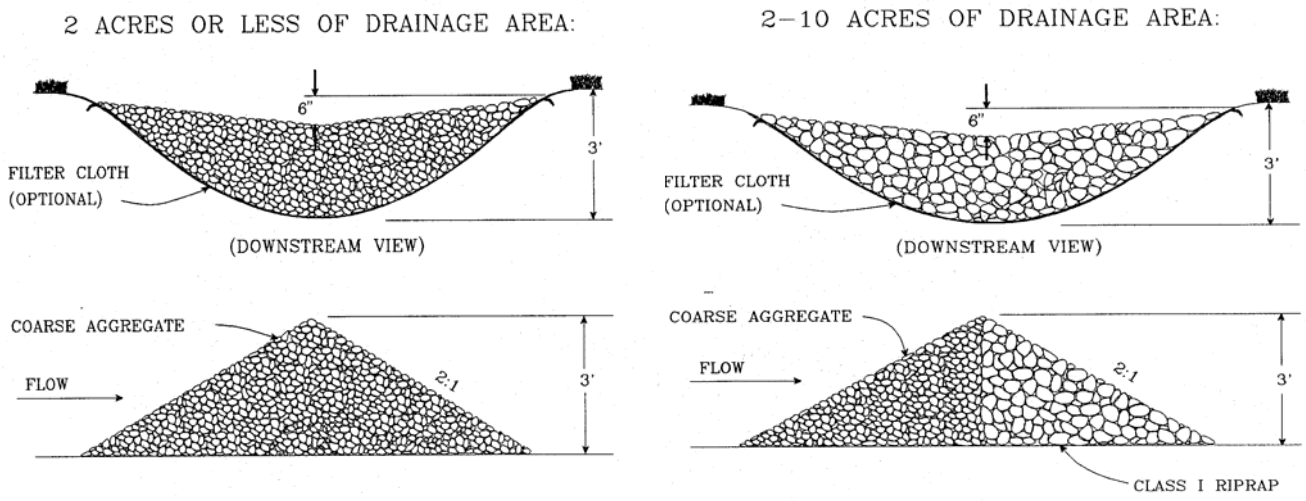
Check Dams

Check dams are small barriers consisting of rock or earthen berms placed across a drainage swale or ditch. They reduce the velocity of small concentrated flows, provide a limited barrier for sediment and help disperse concentrated flows, reducing potential erosion.

Notes:

1. Use clean, coarse aggregate for smaller drainage areas; add open graded 3- to 5-inch diameter rock riprap for a more stable structure for larger drainage areas or steeper channels.
2. The dam height should be between 18 and 36 inches and should be keyed into the soil 6 inches.
3. The center of the check dam should be at least 6 inches lower than the outer edges to prevent scour at the ends of the dam.
4. The maximum spacing between the dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
5. Inspect weekly and after each rain event (of 0.5 inch or more) to locate and repair any damage.
6. Remove the sediment when it reaches one half of the original height of the check dam. Dispose of sediment in a manner that will not cause additional siltation.
7. When construction is complete, properly dispose of any sediment buildup and restore the prior location of the check dam.
8. Check dams should be removed when the site has been revegetated, but may be left in place as a permanent BMP where appropriate.



Schematic Diagrams of Rock Check Dams

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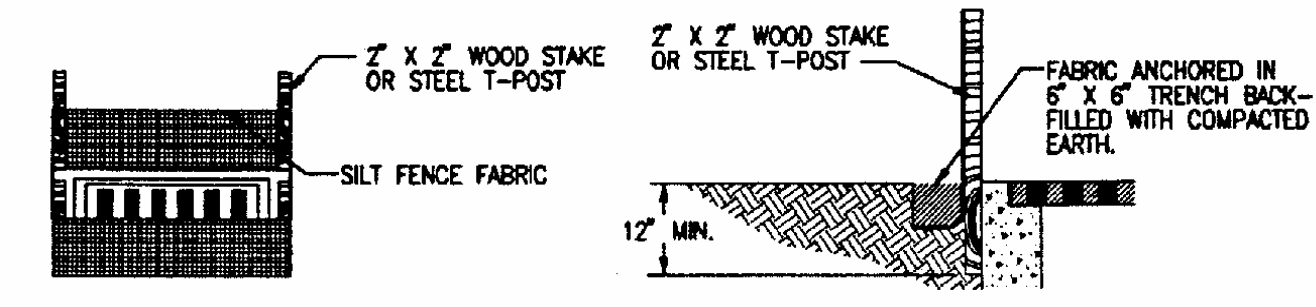
Drop Inlet Protection

In developments for which drainage is to be conveyed by underground storm sewers (i.e., streets with curbs and gutters), all inlets that may receive storm runoff from disturbed areas should be protected. Care should be taken when choosing a specific type of inlet protection, so that excessive ponding in an area of high construction activity does not become so inconvenient that it is removed or bypassed. In such situations, a structure with an adequate overflow mechanism should be utilized.

It should also be noted that inlet protection devices are designed to be installed on construction sites and caution should be used when installed on streets and roads open to the public. When used on public streets these devices will cause ponding of runoff, which can cause flooding and can present a traffic hazard.

Notes:

1. Use a nonwoven filter fence with a minimum weight of 4.0 oz/yd^2.
2. Use 2" x 4" pressure treated wood stakes or galvanized steel, tubular in cross-section or standard fence "T" posts.
3. Wire mesh should be standard hardware cloth or comparable wire mesh with an opening size not to exceed 1/2 inch.
4. If the drop inlet is above the finished grade, the grate may be completely covered with filter fabric. The fabric should be securely attached to the entire perimeter of the inlet using 1"x 2" wood strips and appropriate fasteners.
5. Inspect frequently and replace the filter cloth and other materials when clogged with sediment. Dispose of sediment in a manner that will not cause additional siltation.
6. When construction is complete, properly dispose of any sediment buildup. The filter fabric materials should be disposed of in an approved landfill. Serviceable components may be salvaged for reuse.



Silt Fence Drop Inlet Protection

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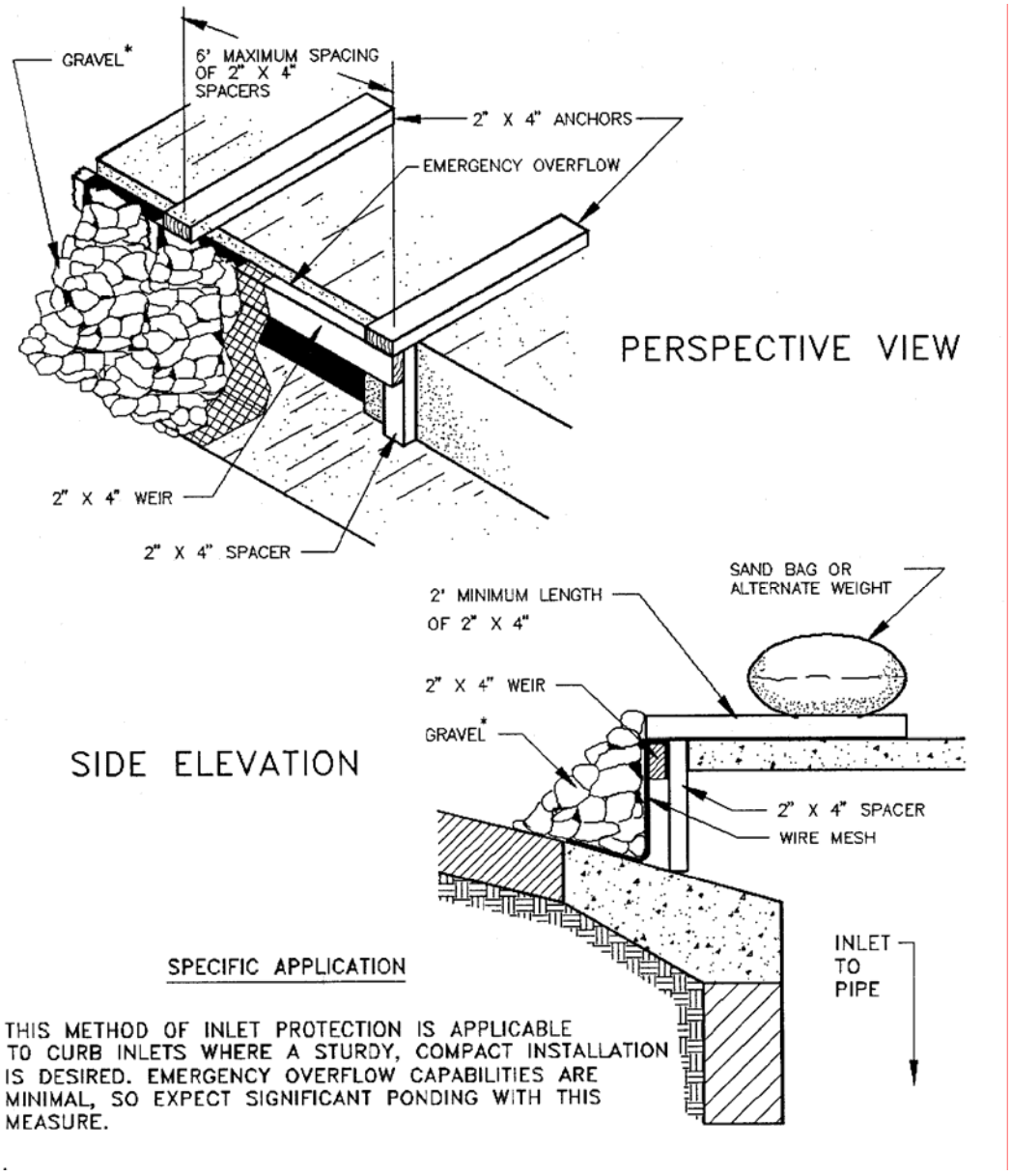
Curb Inlet Protection

In developments for which drainage is to be conveyed by underground storm sewers (i.e., streets with curbs and gutters), all inlets that may receive storm runoff from disturbed areas should be protected. Care should be taken when choosing a specific type of inlet protection, so that excessive ponding in an area of high construction activity does not become so inconvenient that it is removed or bypassed. In such situations, a structure with an adequate overflow mechanism should be utilized.

It should also be noted that inlet protection devices are designed to be installed on construction sites and caution should be used when installed on streets and roads open to the public. When used on public streets these devices will cause ponding of runoff, which can cause flooding and can present a traffic hazard.

Notes:

1. Attach a continuous piece of wire mesh (30-inch minimum width x inlet throat length plus 4 feet) to the 2-inch x 4-inch wooden weir (with a total length of throat length plus 2 feet). Wood should be "construction grade" lumber.
2. Place a piece of nonwoven filter fence with a minimum weight of 4.0 oz/yd^2 of the same dimensions as the wire mesh over the wire mesh and securely attach to the 2-inch x 4-inch weir.
3. Securely nail the 2-inch x 4-inch weir to the 9-inch long vertical spacers which are to be located between the weir and inlet face at a maximum 6-foot spacing.
4. Place the assembly against the inlet throat and nail 2-foot (minimum) lengths of 2-inch x 4-inch board to the top of the weir at spacer locations. These 2-inch x 4-inch anchors should extend across the inlet tops and be held in place by sandbags or alternate weight.
5. The assembly should be placed so that the end spacers are a minimum 1 foot beyond both ends of the throat opening.
6. Form the wire mesh and filter cloth to the concrete gutter and against the face of curb on both sides of the inlet. Place coarse aggregate or sandbags over the wire mesh and filter fabric in such a manner as to prevent water from entering the inlet under or around the filter cloth.
7. The sand bag material should be polypropylene, polyethylene, polyamide or cotton burlap woven fabric, minimum unit weight 4 oz/yd2, length of 24 to 30 inches, width of 16 to 18 inches and thickness of 6 to 8 inches. Sandbags should be filled with coarse grade sand, free from deleterious material. The filled bag should have an approximate weight of 40 pounds and stapled or tied with nylon or poly cord.
8. Assure that storm flow does not bypass inlet by installing temporary earth or asphalt dikes directing flow into inlet.
9. Inspect frequently and replace the filter cloth and other materials when clogged with sediment. Dispose of sediment in a manner that will not cause additional siltation. Replace any torn fabric and repair any sections crushed or collapsed in the course of construction activity.
10. When construction is complete, properly dispose of any sediment buildup. The filter fabric materials should be disposed of in an approved landfill. Serviceable components may be salvaged for reuse.



*sandbags may be used instead of loose gravel

Wooden Weir Curb Inlet Protection

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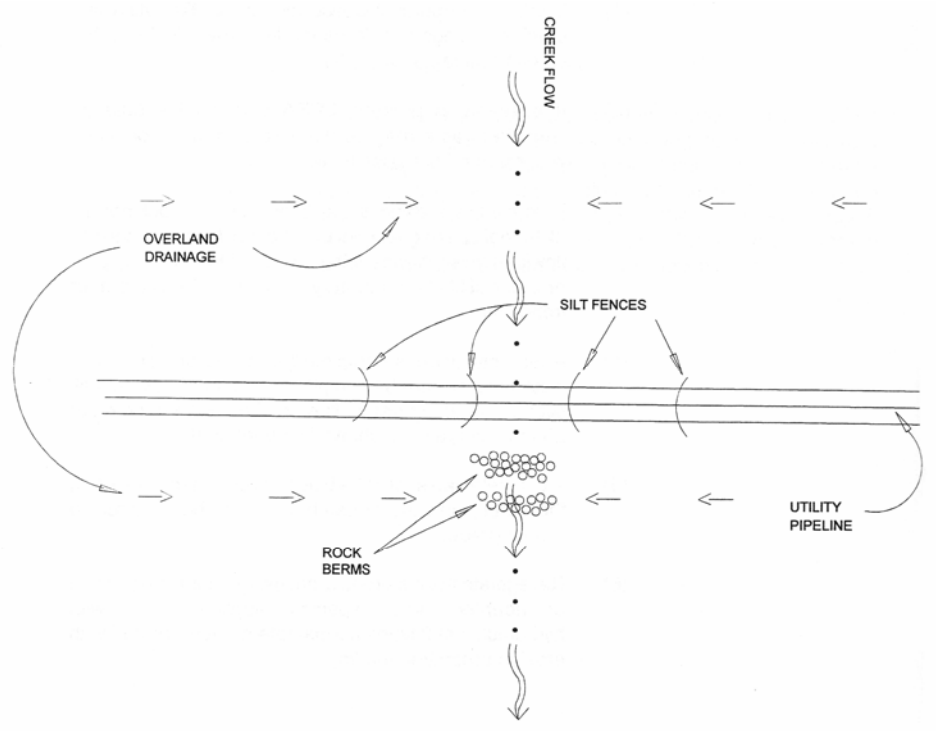
Creek Crossings

Creek crossings represent particularly important areas to employ effective erosion and sedimentation control. Underground utility construction and road construction across creeks requires special measures, as detailed below. **Refer to the Silt Fence and Rock Berm Handouts for details of these items.**

Notes:

1. Creek crossings should be made perpendicular to the creek flowline.
2. Schedule work when a time period of dry weather sufficient to complete the work is forecast.
3. Dewater or divert flow prior to commencing work within creek channels. Contact LCRA for inspection of dewatering/diversion system prior to commencing work.
4. Before any trenching or excavation, install two high service rock berms (rock berm with silt fence in the middle) at 100-ft spacing across the channel (perpendicular to the flowline) downstream of the proposed trench. These berms should be located between 100 and 300 feet downstream of the proposed trench. Lay pipe or other utility line and bury as soon as possible after trenching.
5. After installation is complete (or at the end of work day, if installation cannot be completed by end of day), install silt fencing along trench line on either side of creek at 25-ft intervals.
6. Excavated materials should be hauled out of the channel or used in backfill of open trench. No loose excavated material should be left in the channel at the end of a work day.
7. Remove all loose excavated material to a secure location outside the creek channel and suspend further construction in the creek area if rainfall threatens.
8. A concrete cap should be placed over buried pipe within the creek, and the streambed should be restored to proper grade.
9. Revegetate the disturbed area using appropriate native or adapted grass species incorporated with erosion blankets/matting.



Utility Crossing or Excavation within Creek

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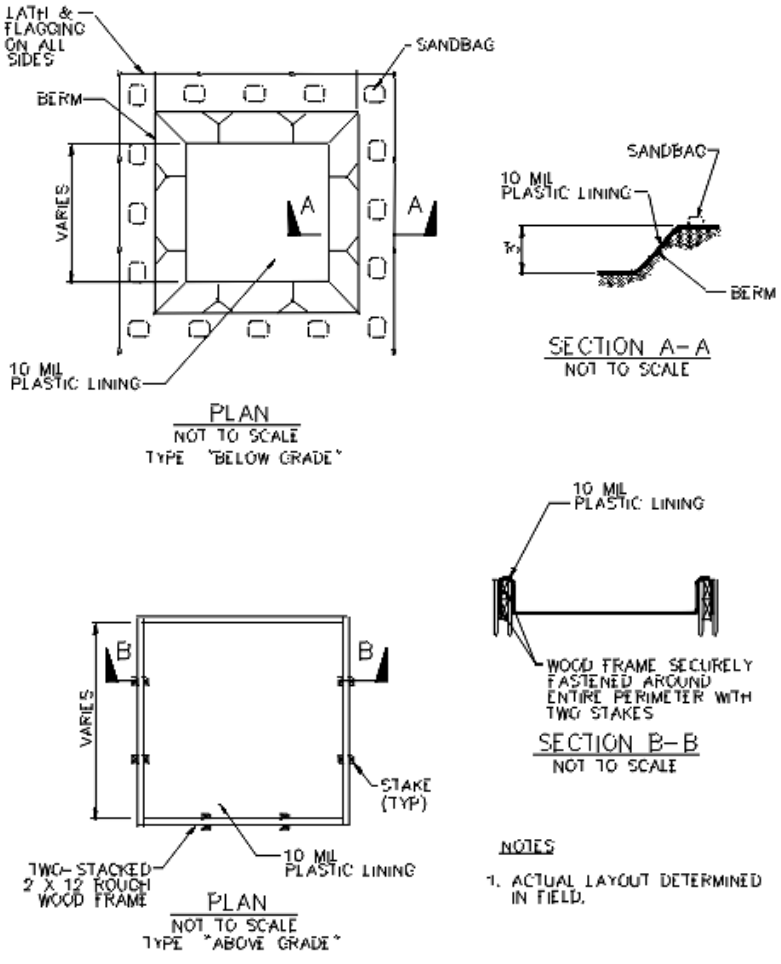
Concrete Washout Areas

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

Notes:

1. Avoid mixing excess amounts of fresh concrete.
2. Perform washout of concrete trucks in designated areas only.
3. Construct washout area using 10 mil plastic lining and anchor the lining with sandbags or rocks.
4. Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. **Do not allow runoff from this area - construct a temporary pit or bermed area large enough to contain both liquid and solid waste.**
5. Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly, along with the lining.
6. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled, repaired, and revegetated or otherwise stabilized.



Schematics of Concrete Washout Areas

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