

Project: #001 - SMALL TREE-TOPPING
Project: #002 - DOWN WOOD CREATION

End Result: Improve stand structure and species diversity in even-aged monoculture plantations of Douglas-fir. The end result will create snags, promote cavity development and down logs from trees within units to benefit a variety of wildlife species.

Measure of accomplishment: Trees felled and trees topped
 Quantity: 333 for Project #001, 333 for Project #002

Subdivision Numbers	13	20	29	32	33	39	44	46	50	TOTAL
Subdivision Acres	17	21	22	23	6	21	44	6	79	239
Project #1 - number of trees to top	23	29	33	32	8	29	59	8	112	333
Project #2- number of trees to fall	23	29	33	32	8	29	59	8	112	333

- 1) Trees selected for treatment will consist only of plantation trees that are not marked with orange or pink bands, and will be distributed following the criteria described below in the identified subdivisions.
- 2) Chainsaws will be used for all tree-topping and down wood creation. Other methods of tree topping such as blasting or girdling are not permitted. There may be times when the use of chainsaws are restricted, such as during the fire restricted season, or due to daily timing restrictions for wildlife. During these times, handsaws (non-motorized) may be used.
- 3) All trees selected will be live Douglas-fir or hemlock trees. Hemlock will not be cut where this species is less than 50% of the specific treatment area. Trees selected will be sound: shall not have forked or broken tops, crooked boles, large scars, or other detrimental structural characteristics.
- 4) **Distribution shall be clumped or grouped. Groups and clumps shall be at least 100' from a stream or open road and at least 75' uphill and 50' downhill from any other road.**
 - a) Mingle topped trees and down wood (Tree Falling) in large clumps, but combined opening size should not exceed ½ acre; for example 120' wide and 200' long.
 - b) Clump is defined as an area containing 10 or more treated trees that are within 50' of another treated tree of the same clump. Clumped trees should be a combination of felled or topped trees. Total affected area when mingling treatments shall not exceed ½ acre; Minimum size of a clump should be 10 treated trees; such as 5 felled and 5 topped. Distance between clumps with more than 10 treated trees shall be 400-800 feet.
 - c) Group is defined as 2 to 9 treated trees that are within 50' of another treated tree of the same group. Distance between groups shall be 200-400 feet.
 - d) Location of treatment areas should be along secondary ridges and gentler slopes where possible. Locate clumps first around any big leaf maple trees - if present, second around large alder (> 8" dbh) - if present, and third around one or two "dominant" live conifer trees.

Chainsaw topping: general intent is to create snags and live topped trees in equal proportion, but a ten percent tolerance is acceptable; e.g., 40% snags and 60% live topped or vice versa.

- 5) **Chainsaw topping: Snag trees.** Intent is to create a dead tree/snag.
 - a) **Snag trees will have two to four live limbs over five feet in length and the snag will be at least 35' tall.**
 - b) Remove epicormic branches, limbs shorter than 5 feet and any other live limbs below treatment except the 2-4 required.
 - c) The sawed surface will have 4 grooves, each at least 4 inches deep. Grooves will be created in a tic-tac-toe grid formation.
- 6) **Chainsaw topping: Live trees.** The intent is to promote development of a stove-pipe cavity in a live tree. Topping to the specified standards will provide good conditions for fungi that cause heart-rot, and retaining adequate amount of live limbs below topping site should keep the tree alive and allow upper most limbs to grow vertically and eventually provide cover over the developing cavity.
 - a) Live trees will be in the largest size class available.
 - b) Live trees shall retain at least 15 live limbs that are at least five feet in length (intent is to keep these trees alive). Retain all epicormic branches and shorter live limbs.
 - c) Live tree diameter at topping height shall be greater than 6 inches.
 - d) Live trees will have a minimum of 1-foot of bole area above the last whorl of green limbs. This will facilitate rot development above last live whorl of branches. The sawed surface will have 4 grooves, each at least 4 inches deep. Grooves will be created in a tic-tac-toe grid formation.
 - e) Trees meeting these specifications (a, b, c and d) for Live trees will generally be dominant trees with full crowns (30-50% crown ratio).
- 7) **Tree felling**
 - a) At least 70% of felled trees shall be felled side-hill (within fifty degrees of horizontal). Over-lap felled trees where possible.
 - b) Minimum diameter at breast height (dbh) of felled trees will be 10".
- 8) **Marking treated trees**
 - a) **Topping: Contractor will paint topped trees** with a band of orange paint at dbh level and orange tree number above dbh level and wrap orange and white striped flagging around the trees. "Wildlife Tree" signs and numbered tags will be placed at dbh. The numbered tag will be attached with one of the nails used for the "wildlife tree" sign to minimize nail holes. Nails shall not be completely nailed into the tree to allow for continued diameter growth on all live trees.
 - b) **Tree felling:** Contractor will establish an untreated tree as the clump identification tree by wrapping orange and white striped flagging around trees and painting two bands of orange paint around a tree and painting the clump or group number on the tree; e.g., C1 or G1.
- 9) **The Contractor will furnish** paint, flagging, aluminum nails. **Government will furnish** "Wildlife Tree" signs and numbered tags.
- 10) **Contractor will map** location of each clump/group with GPS. GPS location of individual trees is not required. Coordinates are NAD 83, UTM's. Contractor must provide an electronic and written file of coordinates to the Contract Administrator (CA). Electronic transfer can be accomplished by submitting a CD or by sending an email with the attached file. Acceptable electronic methods are listed below and shall include coordinates and corresponding name, number, and clump number for each clump. These methods are:
 - a) **Preferred method:** Provide government with a GPX or GDB file with locations of clumps.
 - b) Contractor submit a CD with spreadsheet containing X column and Y column coordinates, and a column identifying corresponding data.

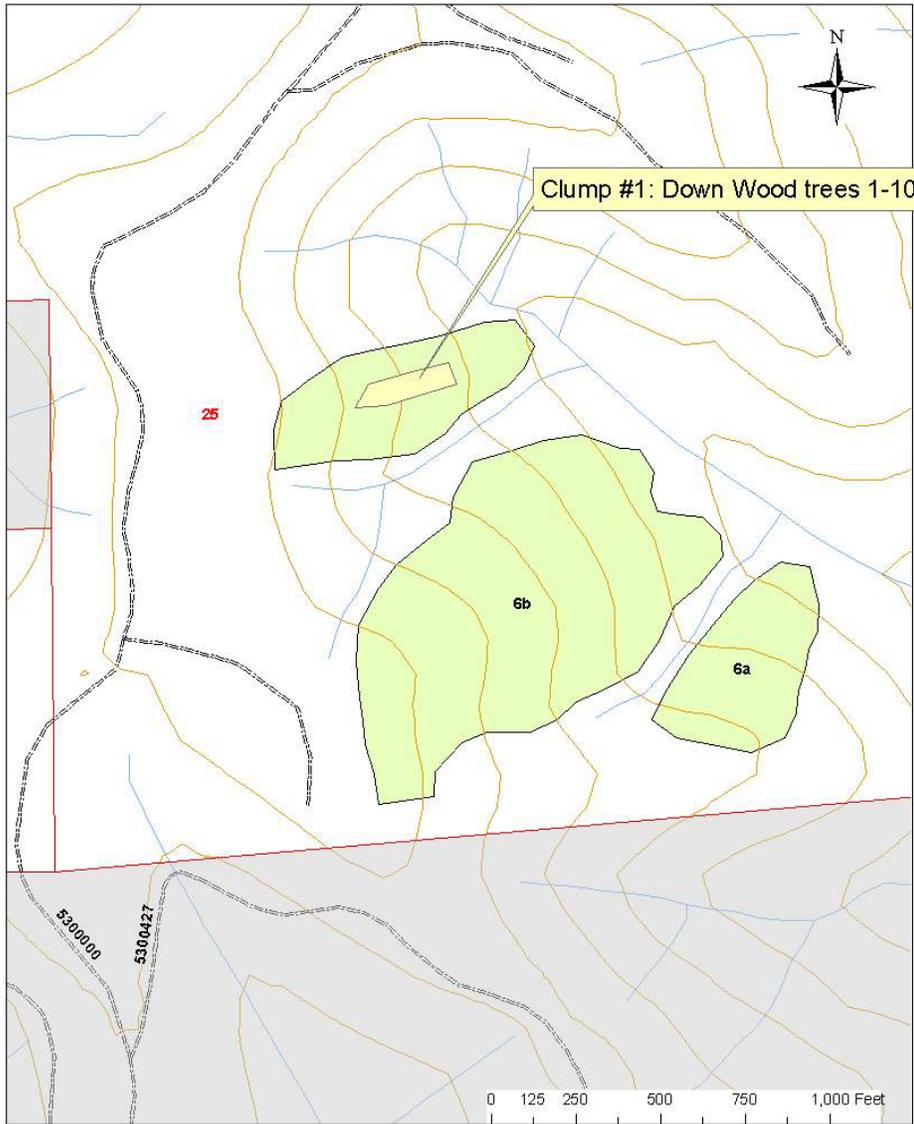
- 11) The Contractor is REQUIRED to submit a weekly plan of work at least two days before implementing each weekly plan. This plan shall be submitted to the project Contract Administrator.
- 12) The Contractor is REQUIRED to inform the project Contract Administrator within 7 days of when a subdivision has been accomplished and provide a completed tree register form with signature and a map showing accurate location of clumps or groups of treated trees and their corresponding tree-numbers. See attached example of completed map and tree register form.

When: Work can occur anytime of year, with the following exceptions:

- **For operating restrictions, use felling restrictions described in K-G.3.1.5# PROJECT OPERATION SCHEDULE**
- Power tool use shall be restricted between April 1 and September 15 to two hours after sunrise to two hours before sunset.

Inspection details: contractor will provide inspection reports.

Example - Unit 6



Project #3 - Road Decommissioning, Forest Service Temporary Road 39-2

End Result: Road will be decommissioned to effectively block motorized vehicles, promote drainage, remove at risk culverts and stabilize fill slopes. Objective is to reduce the risk to road and natural resources from water drainage, sediment, transport, and storm damage.

Project Description: Project consists of decommissioning 0.81 miles of temporary road 39-2 by removing all culverts and fills, installing water bars, and placement of an earthen berm at the beginning of the project area.

Location: The project begins at T3S R9W, SE/SE of section 10, and goes to station 43+00. The beginning location is at junction with road 8172. The project road surface is aggregate.

Completion Date: Completion date of the project is no later than September 15 of any calendar year prior to the termination date of Battle Thin Stewardship contract. Follow Oregon Guidelines for Timing of In-Water Work in live streams; work shall be completed between July 1 through September 15 in live streams.

Incidental Logging Out: Logging out road to access work items is incidental to the project design. This road will be opened and maintained for log haul to station 48+80.

Project Work Items: All work is on temporary road 39-2 as described above.

Item Number	Work Item	Quantity	Description/Notes
1	Pull and Remove Culverts	8	Seven 18" ditch relief culverts; One 18 - 48" stream culvert; normal fill. See specs below
2	Install Earthen Barricades	1	One at beginning of project, station 0+50, to effectively close road. See specs below
3	Install water bars	As required by specs but estimate minimum of one every 300 feet or approximately 14 - 18 total	See specs below

Item # 1 - Culvert Removal and Disposal Specs and Location: - The Contractor shall remove all culverts on temporary road 39-2 within the project area. Ditch relief and stream locations have been flagged in the field, and are listed below on work listing.

Culvert Removal: The Contractor shall remove culverts as designated by the Government. The Contractor shall be responsible for disposal of the removed culverts in a legal manner and for the payment of any fees required and shall submit proof of legal disposal prior to final project acceptance.

Excavation of fill during culvert removal shall be accomplished in a manner that minimizes sedimentation from entering streams. Temporary sediment control structures such as silt fencing or straw bales for short term sediment abatement shall be installed as needed, immediately downstream before excavation on culverts that are running water.

Following culvert removal, stream beds shall be reshaped to the natural stream gradient with sides sloped to a 2.0H to 1V grade or matched to the undisturbed side slopes associated with the channel. The re-established channel shall have a minimum bottom width as designated in the work listing below. Ditch relief culverts shall have a minimum bottom width of 4 feet as designated in the work listing below. Side slopes on ditch culverts shall also be re-shaped to a 2.0H to 1V grade.

Remove culverts and excavate all fill material down to the original live stream bed (streams) or bottom of pipe bedding. The removed fill material shall be placed against the cut slope and recontoured as close as possible to the original contours. The material shall be outsloped at a minimum of 20% gradient and no closer than 20 feet to stream courses, seeps and springs.

Trees cut or otherwise removed in the clearing area for the culvert removals shall be felled directionally in a manner that protects the trees outside the road prism from damage. Utilize rocks and boulders from excavation in the restored stream channel to dissipate energy and control flow path. Do not create areas which will cause head cutting.

Certified weed free straw mulch or approved vegetative matter shall be used to cover all removed fill material, overburden, earthen barricades and excavated culvert side slopes, and shall be spread evenly to an approximate two inch depth. Examples of on-site vegetative matter are brush, tree limbs or small trees removed during culvert fill removal. Use only certified weed free straw mulch that is pre-approved by the Forest Service.

Temporary road 39-2 Culvert Work Listing. Stations are measured starting at Forest road 8172.

Culvert Diameter Size	Station (feet)	Type	Minimum Channel Bottom Width (feet)
18"	2+50	Ditch relief	4
18"	5+50	Ditch relief	4
18"	10+30	Ditch relief	4
18"	15+20	Ditch relief	4
18"	23+00	Ditch relief	4
18"	24+30	Ditch relief	4
18"	34+00	Ditch relief	4
Size unknown ?	43+00	Perennial Stream	8

? - Pipe buried or missing.

Item #2 - Earthen Berm Road Closure Barricade Specs Location and Guidelines

The Contractor shall place an earthen berm barricade to completely close off temporary road 39-2 to motor vehicle traffic. The barricade shall be placed at 0+50 or as flagged in the field, or at the beginning of the project as described above. A Berm Barricade Typical Drawing is provided. Berm barricade shall be constructed to allow water drainage away from streams and other erodible surfaces.

Item #3 - Waterbar Specs and Location Guidelines

The Contractor shall storm proof road 39-2 by installing water bars from the beginning of the project at 0+00 to the end at 43+00. Water bar spacing is designated on the Typical Diagram(s) provided. The Government may increase or decrease the spacing intervals so as to fit specific road conditions. Temporary road 39-2 will not receive traffic; water bar installation type should be non-drivable, type I.

Water bars shall be constructed so as to channel water away from existing ditch lines and across the road surface to the outside of the road shoulder. Water bars shall be self-maintaining. See Water Bar Typical.

Water Bar Location Process

The first step is to plan for water bars at critical locations using guidelines for water collection and discharge. Then select additional locations to meet spacing requirements shown in Table 1. See attached drawing for typical water bar locations.

Water Collection Guidelines

Place water bars at natural small drainages that may not have justified a ditch relief culvert at the time of design. Try to keep as much of the water in its natural route as possible even if it requires an extra water bar.

Place water bars to back-up removed culverts that provided ditch relief or natural channel flow.

Place water bars to prevent road surface and cut bank sedimentation from entering directly into natural drainage channels.

Place water bars to dissipate water prior to steep grades.

Place water bars at road seeps, springs and wet subgrades to collect this water and quickly discharge it off the road. These areas may be notorious for potholes or fill failure.

Place water bars to effectively reduce ditch erosion. Reduce the upper reach of the ditch by a length greater than the area showing ditch erosion. For example: if the lower 90 feet of ditch shows signs of erosion, eliminate at least the first 90 feet of ditch by using a water bar.

Water Discharge Guidelines - consider these items for all waterbars.

Discharge onto undisturbed areas, preferable rocky ground or areas protected with vegetative cover.

Avoid discharging directly over fills. Seek natural ground areas first and then areas along edges of fills.

On steep slopes discharge on convex slopes rather than draws.

Avoid crossing road or shoulder cracks especially where steep slopes or side cast construction is evident.

If a vegetated or rocky location is not found, reduce water bar spacing to match native soil conditions found in Table 1.

Water Bar Spacing Guidelines

Water bar location may be determined by measuring or estimating the distances and grades in Table 1. The road surface for this project is aggregate and contractor will use recommended spacing provided below for aggregated surfaced with vegetated/rocky discharge points. Care should be taken not to exceed 150% of distances shown. During storms in 1996 several water bars exceeding 150% of recommended spacing received so much water that the water bars themselves had excessive erosion.

The spacing shown for native surface roads is typical for most of the Siuslaw's soils. If fine and light soils (silt & silty sands) are encountered, reduce spacing by 20%. If silty clay or sandy clay soils are encountered, spacing may be increased up to 50%.

Table 1 Typical Water Bar Spacing

Road grade	Aggregate surfaced with vegetated/rocky discharge point		Native surface or barren soil discharge points	
	Feet	Meters	Feet	Meters
1-3	600	200	100	35
4-6	300	100	80	25
7-9	200	70	70	23
10-12	150	50	60	20
13-18	120	40	50	15
19+	80	25	30*	*

***Consider using surface protection measures such as aggregate.**

Water bar Construction Guidelines: This project will use Type I waterbars.

Type I Water Bars: Intended for use on roadbeds that will not have traffic. Use on closure of temporary roads, roads to be obliterated, decommissioned or long term closure of roads in maintenance level I. These water bars are designed to remain effective until the road prism stabilizes with vegetation.

- AGGREGATE ROADS

Water bars that cut through the aggregate base of a road and reach erosive soils need to have aggregate surfacing bladed back into the water bar channel.

- COMPACTION OF BERM

Compaction of the excavated material used to make the berm on the downhill side of the water bar is recommended. Wheel-rolling or walking the excavation equipment over the downhill berm is adequate.

- ROADSIDE DITCHES

Intercept ditch water by including a ditch block during construction of all water bars.

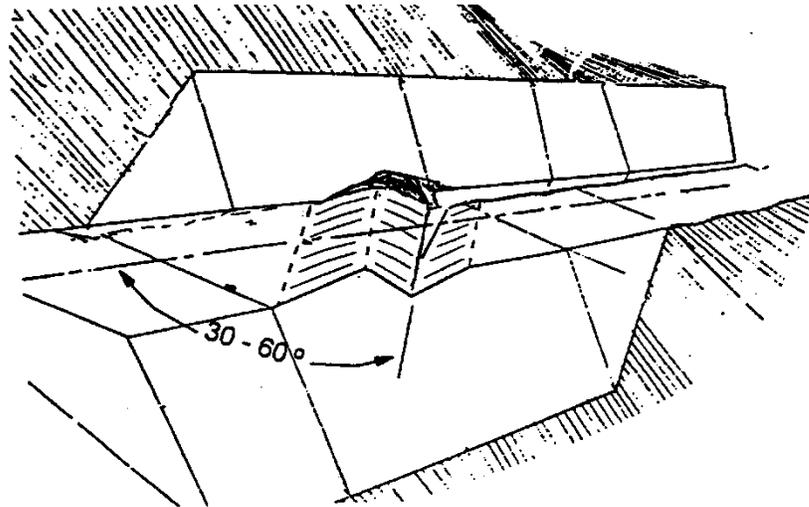
- SKEW

Construct with a 30 to 60 degree angle from road centerline.

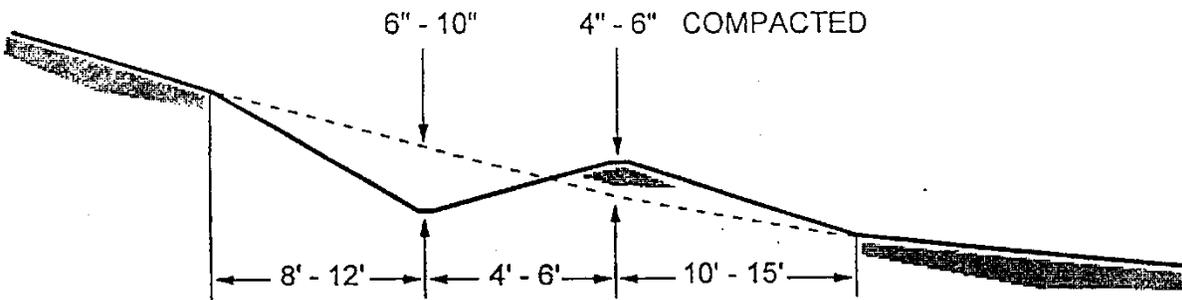
- DEPTH and WIDTH

Construction dimensions for a water bar are shown on the attached typicals. For road grades over 10% the cut depth and berm height should approach maximum values.

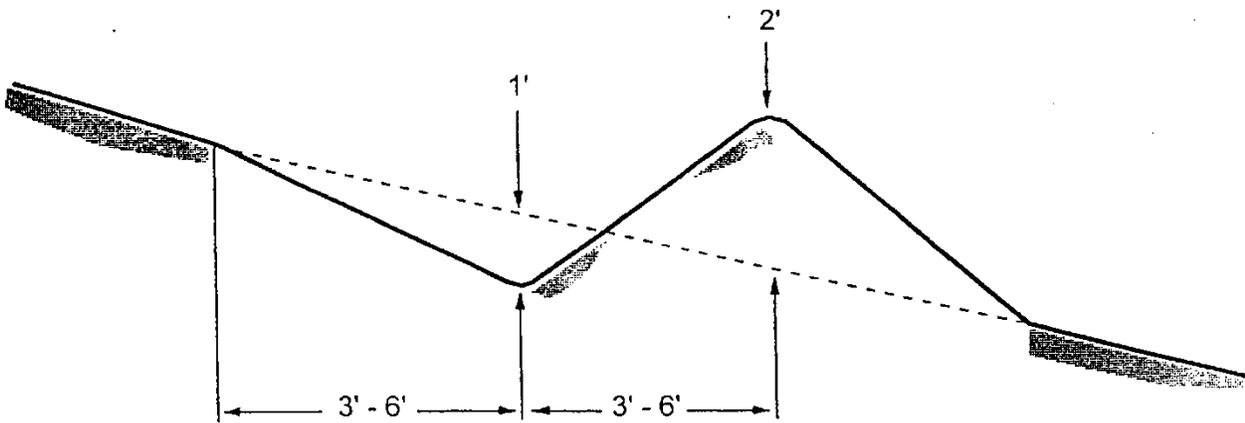
WATER BAR CONSTRUCTION DETAILS



PERSPECTIVE VIEW

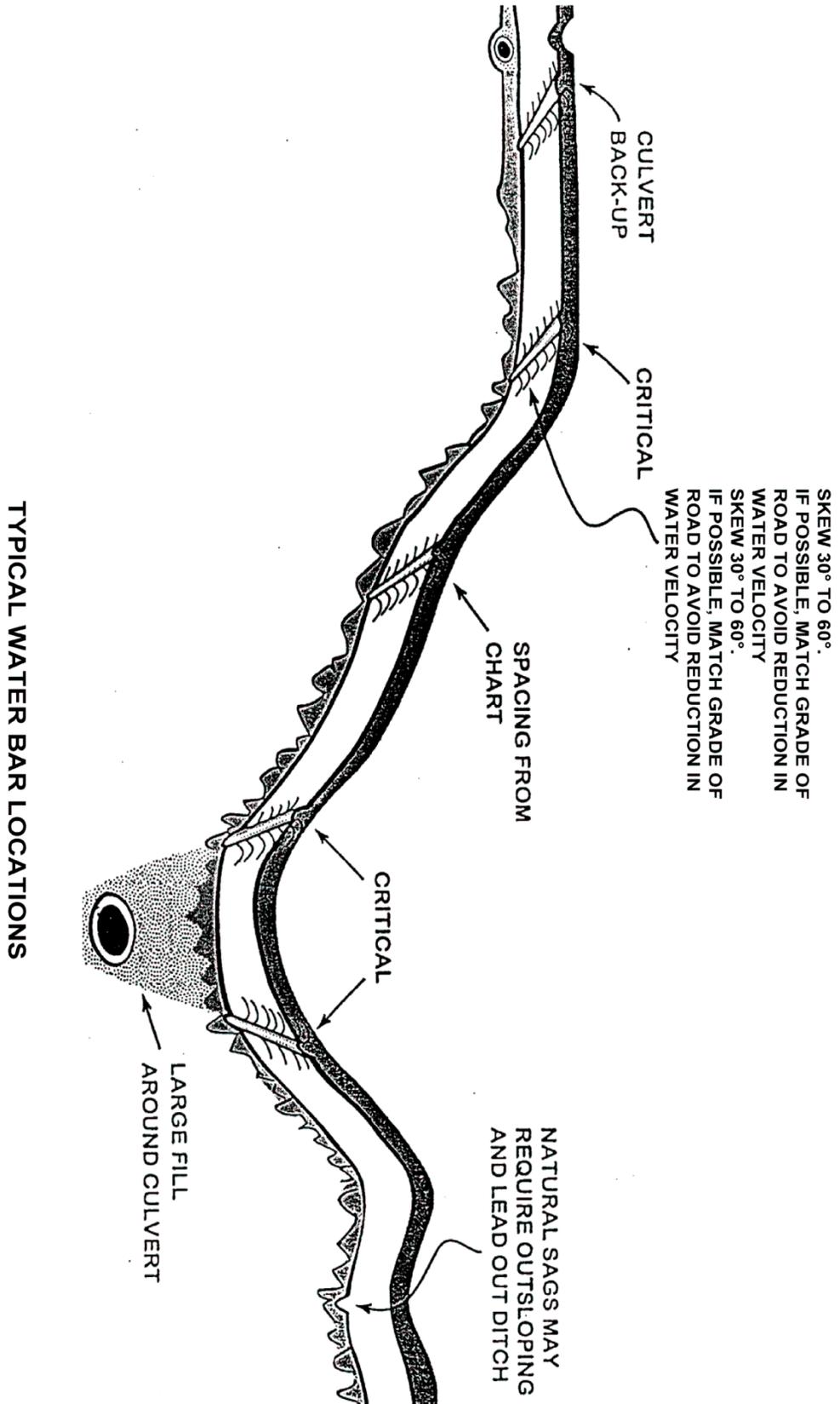


PROFILE -- TYPE II



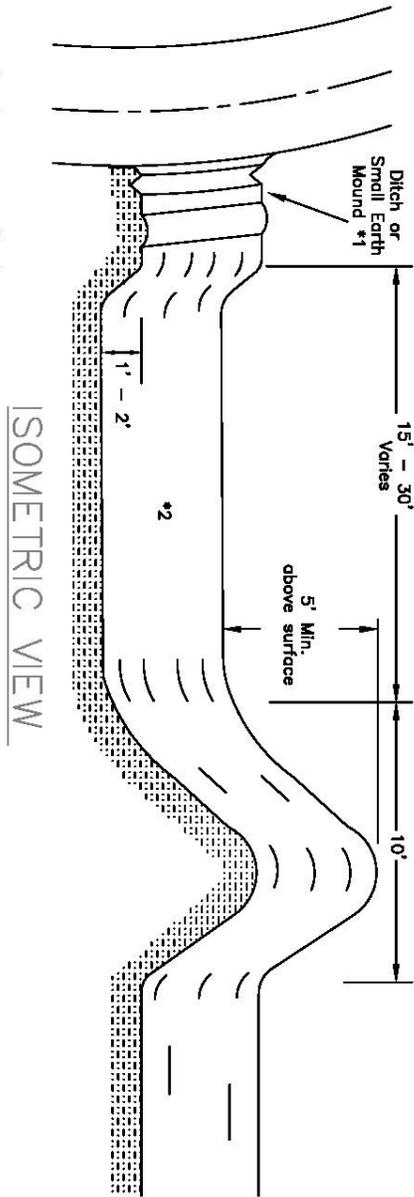
PROFILE -- TYPE I

NOTE: Block ditchline with excavated material to prevent ditch water from bypassing waterbar. No type II will be used on this project.

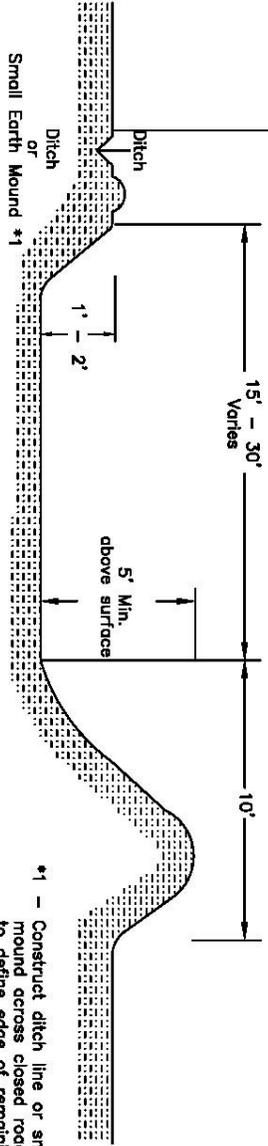


ROAD CLOSURE - EARTH MOUND TYPICAL

PROJECT SHEET	TOTAL SHEETS
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ISOMETRIC VIEW



PROFILE VIEW

- *1 - Construct ditch line or small earth mound across closed road entrance to define edge of remaining road.
- *2 - Slope Excavation area to drain

6-15-05