

speed bump blue



## Forest Service Suppression Repair Plan Devil's Knob Complex



KEVIN LARKIN

Digitally signed by KEVIN LARKIN  
Date: 2021.09.21 12:44:19 -07'00'

Kevin Larkin USFS Agency Administrator

Date

GABRIEL WISHART

Digitally signed by GABRIEL  
WISHART  
Date: 2021.09.21 12:10:55 -07'00'

Gabe Wishart USFS Agency Administrator(T)

Date

Rob Allen IC Devils Knob Complex  
Pacific Northwest IMT1

Date

## OBJECTIVE

The objective of this suppression repair plan is to mitigate adverse effects to resources resulting from suppression activities. Implementation of this plan will be in compliance with all pertinent rules and regulations regarding repair activities. This plan will comply with management direction, standards and guidelines contained in the Umpqua National Forest Land and Resource Management Plan. This plan covers all sites recorded in the Collector database and is subject to updates as new site information becomes available.

## 2021 Umpqua National Forest Suppression Repair Tasks by Priority

1. Repairs needed for operational safety. Example: hazard tree felling
2. Dozer line adjacent to streams, wetlands, ponds and within riparian reserves.
3. Ditch line and culvert cleaning: Slash treatments A: Hydrologic impacts in roadways
  - a. Establish drainage first priority, slash/fill removal
  - b. inlet cleaning and culvert repair is following priority
4. Hand line adjacent to streams, wetlands, ponds and within riparian reserves.
5. Dozer line >40% slope.
6. Handline >40% slope.
7. Dozer line 10 – 40% slope, can be water bars only until repairs can resume in 2022.
8. Hand line 10 – 40% slope, can be water bars only until repairs can resume in 2022.
9. Decking of merchantable timber. (Through discussion, timber is expected remain viable into the spring)
10. Slash treatments B: Fuel Hazards are a lower priority estimate implementation for Spring FY22
11. Pump chances and water sources.
12. Facilities work.
13. Road grading.
14. Dozer line <10% slope, can be water bars only until repairs can resume in 2022.
15. Hand line <10% slope, can be water bars only until repairs can resume in 2022.
16. MVUM road closures, water bars and cross ditches.
17. Trail work.
18. Work that can be done safely during on durable surfaces during the winter season.  
Examples:
  - a. Pulling shelter wrap, facility/ repair
19. Danger/Hazard Tree within burned area

### 1. USFS Operational Standards

- Consult READ and Archeologist before repairing any dozer or hand line, to identify any special measures that might be needed.
- Perimeter fire lines need to remain effective until agencies agree to the rehabilitation of those lines.
- Fall or otherwise mitigate hazard trees required for operational safety of suppression rehab efforts.

- Do not limb or buck felled trees or snags, except when necessary for safety or access.
- Remove and pack out flagging, including hazard flagging unless necessary for continuing fire operations.
- Remove all evidence of fire suppression activity including staged supplies, temporary signs, garbage, etc.
- If evidence of a cultural site is found immediately report to Resource Advisor or archaeologist.
- Do not deconstruct rock piles (cairns) for use in rehab unless cleared by archaeologist or heritage tech.
- Do not clear large woody debris from stream channels.
- When it is necessary to fall hazard trees near streams, they should be dropped into the stream channel at a 30° to 45° angle in either direction **where it is safe to do so**. Except immediately upstream of culverts and bridges.
- Do not disturb stream bottoms and stream banks (except to fall hazard trees into streams), except as directed by a READ.
- Equipment deployed in areas with the noxious weeds should be cleaned prior to mobilization to reduce the threat of spreading noxious weeds into exposed areas.
- Avoid parking or driving through areas flagged with "Noxious Weed" ribbon.
- Equipment used to transport water should be cleaned prior to mobilization to reduce the threat of spreading aquatic invasive species; if drafting/dipping from a site with known aquatic invasive species, equipment should be cleaned before moving to another water site.

## 2. Dozer Lines

Some dozer lines will receive standard treatment, while others specifically identified by the district will be considered "permanent" to be used in the future; these "permanent" control lines will receive a modified treatment.

### Standard Treatment

- Repair with excavator or hand crew only.
- Subsoil all line except where soils are too shallow or rocky.
- Pull in berms and woody debris created during construction of fire line. Distribute this material over the surface of the fire line similar to the pre-fire density of the surrounding areas. Subsoil to create a very lumpy surface with no continuous flow paths between water bars, except in rocky or shallow soils.
- Install water bars following guidelines in Appendix A, at a 30° to 45° angle to the fire line.
- Height of machine constructed water bars should not exceed 18 inches. On slopes greater than 40% the height should not exceed 30 inches.
- Restore slope to its original contour as much as possible.

- Block line at intersections with roads for 300 feet or site distance by placing logs or large rocks to prevent motorized use.
- Where dozer line crosses stream channel or wet areas, carefully pull back material pushed into channel or wet area, causing as little additional disturbance to channel/wetland as possible; redistribute material where it will not wash into stream. If a Corduroy or Humboldt bridge was used to get the dozer across a creek, remove logs or material used from streambed.
- Where line can deliver sediment to stream, cover a minimum of 60% with slash or other approved groundcover.
- For extra wide dozer lines on slopes <20% where water bars are not feasible, thoroughly subsoil to create a very lumpy surface with no continuous flow paths and cover well with groundcover, except in rocky or shallow soils.
- Use weed-free straw, wood straw or chips on slopes over 30% where slash is not available.
- Apply native seed supplied by FS to dozer lines in meadows; plant wetlands as needed.

### **Modified Treatment**

Check with READs for locations and treatment specifications since these are still being worked out.

- Follow Standard Treatment specifications with the following exceptions:
  - Whole tree length material used for repair will not exceed 12" diameter.
  - Tree boles  $\geq 16"$  diameter will be cut or broken by excavator at  $\approx 16'$  length.
  - Slash used for ground cover will not exceed 6" depth.
  - Excess slash will be disposed of following slash disposal guidelines below, except for trees  $\geq 16"$  diameter which may be removed upon approval from the Lead READ.
    - For lines within LSR and outer Riparian Reserve, preferred method is placement in areas deficit in large wood, then decking.
    - For lines in matrix trees may be decked and disposed.
    - For lines within 100' of streams, use standard treatment.

### **3. Hand lines**

- Redistribute berms, cup trenches, slash piles, and windrows created by suppression activities.
- Construct water bars according to guidelines in appendix.
- Access to hand lines should be camouflaged when access is no longer needed.
- Woody material should be distributed across fire lines, similar to the density in the surrounding area.

### **4. Pump Chances**

- Remove all materials used to construct diversions, crossings or impoundments. Stream rocks should be redistributed so that water can flow freely.

- Where banks and riparian areas were significantly disturbed by fire suppression activities at stream crossings or pump chances leaving bare ground, cover with rock, slash, chips, wood straw or erosion control matting.

## **5. Drop points, Landings, Parking areas, Safety zones and Staging areas**

- Pull berms back into area and smooth out.
- Scatter brush or material back into area or use wood straw or weed free straw if appropriate as to not create an additional fire hazard. Use wood straw on slopes over 30% where slash is not available.
- In larger (>1/4 acre) parking areas and safety zones, subsoil then seed with grass seed provided by FS, before mulching.
- Where available, place logs and rocks to discourage use by motorized vehicles.

## **6. Road & Roads as Fireline**

### **General:**

- Equipment used for road repair work will be approved by the READ.
- Remove woody debris, berms, logs, gravel and rocks (large enough to divert water flow) from drainage ditches along impacted roads, and from culverts.
- Disperse all dozer piles found along road edges.
- Do not side-cast any material, end-haul to approved disposal area.
- Grade and apply drainage features to all roads that were used during fire operations according to maintenance level requirements (see road list in appendix) and existing drainage type. This includes pulling gravel displaced by fire traffic or heavy equipment back onto road bed, reconstruction of water bars and drain dips, and ditch cleaning where debris impedes storm flow.
- Repair crushed culvert inlets and outlets. Replace culvert if unrepairable.
- After repair, construct appropriate barrier type as indicated by Umpqua MVUM. See road list in appendix for specific road requirements. Some roads are closed to all traffic, while others need to pass OHVs only.
- Native surface roads may need water bars, and to have slash, wood straw or weed-free straw mulch applied to prevent surface erosion from the disturbed surface. (see road list in appendix for specific road guidelines).
- Where chips were generated from fire line construction, keep piles to less than 4" depth, dispose of at an approved site, or use as groundcover on dozer lines or other disturbed areas.
- Where road damage was caused by the fire and is a safety hazard to fire operations, it will be repaired.

### **Blading** (See attached drawing Appendix B)

Surface blade the traveled way to a condition that facilitates traffic and provides proper drainage. Blading includes shaping the crown or slope of the travel way, berms, and drainage dips. Compaction may be required.

- Blade and shape the existing traveled way and shoulders, including turnouts, to produce a surface which is uniform, consistent to grade, and crowned or cross-sloped as indicated by the character of the existing surface, to at least ½ inch per 1 foot of width, but not more than ¾ inch per 1 foot of width. Thoroughly loosen surfacing material to no less than 2 inches depth or the depth of potholes or corrugations. Scarification to facilitate cutting to the full depth of potholes or corrugations may be elected, but will be considered incidental to blading. Do not scarify to a depth that will cause contamination of the surfacing.
- Apply water during blading when sufficient moisture is not present to prevent segregation.
- Shape existing native rock or aggregate surfaced drainage dips to divert surface runoff to existing outlet devices, ditches, or discharge locations.
- Establish a blading pattern which provides a uniform driving surface, retains the surfacing on the roadbed, and provides a thorough mixing of the materials within the completed surface width. Upon final blading, no disturbed rock shall protrude more than 2 inches above the adjacent surface unless otherwise provided in the contract. Remove and place outside the roadbed, material not meeting this dimension so as not to obstruct drainage ways or structures. This material may be scattered off the roadbed if there is free drainage.
- Shape roadbed width in excess of the dimensions shown only as needed to provide drainage away from the traveled way. Do not remove established grasses and other vegetation from the excess width except as incidental to providing drainage.
- Undercutting roadway backslope is not permitted.
- At intersections, blade the roadbeds of side roads which are not closed or restricted from vehicular use to ensure smooth transitions.
- Do not blade material onto bridges, or into culverts, cattleguards, or drainage dips.
- Maintain existing berms to the condition of adjacent segments. Do not create new berms unless directed.

**Culvert cleaning** (See attached drawing Appendix C)

- Clean drainage structures, inlet structures, culverts, catch basins, and outlet channels as directed. Clean catch basins by removing the material within the area SHOWN ON THE DRAWINGS.
- Clean the transition from the ditch line to the catch basin a distance of 10 feet from the catch basin. Clean outlet channels and lead-off ditches a distance of 6 feet. Remove and place debris and vegetation so as to not enter the channel or ditch or obstruct traffic. Haul debris and vegetation to a designated disposal area, and shape to drain.
- Hydraulic flushing of drainage structures is not allowed unless approved by local Ranger District specialists.
- Cleaning and reconditioning of culverts are limited to the first 3 feet of inlet and outlet, determined along the top of the structure. Recondition culvert inlet and outlet by field methods such as using a jack or cutting away damaged metal which obstructs flow. Treat cut edges with a zinc rich coating, in accordance with AASHTO M 36M and ASTM A 849.

### Ditch cleaning (No drawing for this work)

- Maintain ditches by removing rock, soil, wood, and other materials. Maintained ditches shall function to meet the intent of the original design.
- Undercutting backslopes during removal operations is not permitted.
- Suitable material up to 4 inches in greatest dimension removed from the ditches may be blended into existing native road surface and shoulder or placed in designated berm.
- Do not blend material from ditch cleaning operations into aggregate surfaced roads. Do not blade material across aggregate or bituminous surfaced roads, unless approved in writing by the Contracting Officer.
- Haul excess material to a designated waste area. Remove excess materials temporarily stored on the ditch slope or edge of the shoulder daily.
- Remove limbs and wood chunks in excess of 12 inches in length or 3 inches in diameter from ditches and place outside the roadway.
- Clean paved surfaces of all materials resulting from ditch maintenance work.
- Shape lead-off ditches to drain away from the traveled way.

### Closures (See attached drawing Appendix D)

Roads that were opened for fire use, may need a barrier constructed after use if indicated by the Umpqua MVUM.

- The barrier type must comply with the approved use for that road. Roads listed as trails open to vehicles <50" will need a Type A barrier to allow OHVs. Roads listed as closed to all vehicles will need a Type B barrier. Height of barriers may need to be higher than specified to account for settling.
- New closure will be a simple barrier with no hidden ditch or hole behind the structure (See Appendix D for specifications).
- Material used for closures may be large rocks, pit-run, earth material, buried logs, etc. Other local materials may be used with approval of local Ranger District specialists.

### Water bars and cross ditches

#### A. General

- Close coordination with local Ranger District specialists is essential to ensure roads are left with appropriate water bar or cross ditch type.

#### B. For roads to be left available for motorized vehicles (type A):

- These structures should be passable to high clearance pickups or SUV type vehicles and passenger cars. A prudent driver should be able to drive over them.
- See attached drawings Appendix E

#### C. For roads which are to be blocked to motorized vehicles (type B):

- These structures are not intended to be driven over with passenger vehicles. ATVs may be able to cross them.
- See attached drawing Appendix F

## **7. Slash Disposal**

Slash generated from fire suppression actions and repairs may be disposed of by chipping, piling and burning or other methods as approved by the READ.

### **Chipping**

- All slash along paved roads (FSR 28 & FSR 29) will be chipped or hauled away and disposed of to prevent damage to the pavement and road shoulders.
  - Slash along FSR 28 from the Buckeye Bridge upstream to the day use fee sign above South Umpqua Falls Day Use Area will be hauled away to either the 28-344 (Party Pit) or 27-900 (Quartz Reload) quarries and disposed of by chipping or burning.
- Chipping operations should disperse chips along the roadway rather than create larger piles. Chip depth should be less than 4". Concentrations of chip piles should be dispersed or hauled away and used as ground cover on fire lines.
- Slash may be piled and chipped with a masticator with approval from a READ.

### **Pile and Burn**

- Slash will be machine piled along roads in approximately 10' x 10' by 6' high piles.
- Slash pile size at landings will be no greater than 24' x 24' x 12' high. Piles shall not have a width greater than two times the height.
- Piles should be compact and free of noncombustible material, minimize airspace within each pile.
- Cover all piles with 4-mil polyethylene plastic to cover at least 2/3 of the surface of each pile. All four corners and the middle of the plastic sheets shall be securely anchored with slash or other debris.
- Do not construct piles on logs or stumps, within 3' of roadways, pull-outs or drainage ditches. Avoid constructing piles on slopes if possible.
- Avoid piles under canopy cover or near standing trees to minimize live tree scorch, and do not construct piles within 50 feet of a stream or wetland.

## **8. Merchantable Timber**

- All merchantable whole trees <22" at the butt occurring along roads used as fire line will be stockpiled at landings as directed by the READ.
- All small decks of processed logs will be transported by self-loader or rubber-tired forwarder and stockpiled at landings as directed by the READ.
- All trees occurring along dozer lines will be left in place for repair needs, unless the Lead READ, FMO or Ranger determines that these trees need to be removed due to excessive fuel loading along "permanent" control lines.
- Trees cut along Inventoried Roadless Area will be placed back on the side of the road they were removed if it is safe to do so.



## 9. Facilities

- Remove all point protection structure wrap from buildings after it is clear that it is no longer needed. Fold wrapping up for reuse to the extent practical. Pull staples with pliers, do not use screwdriver to "pop" staples out; if staples are flush with wood and cannot be removed with pliers, leave them in.
- Pump outhouses used during fire suppression activities listed in work list.: Summit Prairie (Private LUA, 2 outhouses; 3C Rock Picnic Area (FS) and Dumont Creek Campground (FS).
- Replace or repair signs, gates, barriers, fences, permitted waterlines, etc. damaged by fire suppression activities.
- Repair Milo ICP to standards provided by Milo Academy.

## 10. Cultural

- Previously documented archaeological sites (known sites) that have been impacted by suppression activities will be evaluated and a determination of eligibility for the archaeological site will be completed. Evaluation is typically done by a contractor and costs can be \$20,000 or more, depending on the site and extent of the damage.
- If a new archaeological site is discovered during the course of surveying hand- or dozer-line, pushouts, landing, etc. the Forest Archaeologist will be provided the resources to document the site in its entirety. Newly discovered sites not associated with fire suppression actions are not covered under the repair plan.
- Repair of sites will be conducted in consultation with the Forest Archaeologist; heavy equipment will not be used to repair any cultural sites.

## 11. Trails

- Where dozer line or hand line crosses trail, after line repair is completed re-construct the tread, adding appropriate drainage features. If slash on dozer line is inadequate for good coverage, add more within view of trail if possible.
- Where trail was used for fire line trails will be restored to their original Design Parameters. Trails should have a slight 2-5% downhill out-slope when the trail bed is on a slope and adequate drainage installed. Drainage or diversion methods can simply be the construction of a packed soil berm across the tread at an angle not perpendicular so that water running downhill in the tread is diverted off the trail on the downslope side. The berm should about 12-16 inches wide and not so tall that one trips over it, but it still manages to successfully divert the water. Tread width should be between 18-24 inches. Knock down berms. If trail was trenched during hand line construction, pull berm back into the original tread and compact with tools and foot traffic. Scatter cut vegetation or where there is too much to scatter, pile it to be burned, preferably a little away from trail.
- Along Cow Creek National Recreation Trail (#1424), flush cut or camouflage cut stumps, including small diameter maple stumps, as well as logs and bucked rounds in a manner that blends with the surrounding natural landscape and observes the six foot wide (three feet from centerline of trail on each side) trail corridor specifications. Use a variety of

means to camouflage cut faces of low cut larger stumps (rocks, dead woody material, and/or soil; move any small cut material that appears unnatural out of view from the trail. Fill in areas with loose soil where roots were dug out to expose hot spots within view from the trail bed. Repair user trails leaving main trail bed down to pump sites by filling with woody debris.

## **12. Fire Danger Tree Removal:**

Remove danger trees occurring adjacent to road corridors that access the fire area or roads that serve as the fire perimeter. Proactively treat roadside danger trees in a timely and efficient way to provide for firefighter safety and continued safe access for suppression repair using the following guidelines:

- Felled trees should not be bucked, with the following exceptions.
  - Where they cross trails or roads. Leave trees at the longest length possible. On roads, buck logs no less 5' (horizontal distance) from the top of the cut slope. On trails, buck logs 2-3' from trail prism on either side. Disperse rounds on downhill side if possible.
- Fall only trees that have an imminent failure potential as defined in the "Field Guide for Danger Tree Identification and Response."
- Fall Danger trees within two tree-lengths, or up to 300' of roads.
- Do not cut hard snags unless they are burning or a danger to firefighters. In cases where safety dictates cutting snags, keep the pieces 20 feet long or longer if possible.
- When it is necessary to fall hazard trees near streams, they should be dropped into the stream channel at a 30° to 45° angle in either direction **where it is safe to do so.**
- Felled hazard trees should be left in place and kept in as long of pieces as possible unless they must be moved to protect firefighter and public safety, or where they must be removed to clear roads, ditches or other areas.
- Fall only trees that pose a risk to firefighter, public safety or threaten infrastructure.

## **13. Other Guidelines**

- Repair any other areas impacted from fire suppression activities that are not mentioned above, as directed by the READ.

## **General Repair Strategy**

The general repair strategy will be one of first fire contained, first fire repaired: 1) Cow Creek; 2) Big Hamlin; then 3) Smith. Dozer line that is used as primary containment line can be reduced in width to 18"-24" before a fire is called out or wetting rains occur, upon approval by the FMO, District Ranger and IC. Using this strategy provides a larger window for the repair. For ongoing fires where this strategy is impractical, contingency lines then interior lines and finally primary fire lines will be repaired. Additionally, work may be done out of sequence to take advantage of economies of scale or hard to obtain equipment or personnel.

## **Repair Prioritization**

When the availability of personnel and/or equipment, fire status, and/or weather requires prioritization of fire suppression repair efforts, repairs will be made first in the South Umpqua River basin, then Jackson Creek and then Cow Creek following these priorities:

20. Repairs needed to protect public and firefighter safety.
21. Dozer line adjacent to streams, wetlands, ponds and within riparian reserves.
22. Hand line adjacent to streams, wetlands, ponds and within riparian reserves.
23. Pump chances and water sources.
24. Dozer line >40% slope.
25. Handline >40% slope.
26. Ditch line and culvert cleaning, culvert repair.
27. Dozer line 10 - 40% slope, can be water bars only until repairs can resume in 2022.
28. Hand line 10 - 40% slope, can be water bars only until repairs can resume in 2022.
29. Slash treatments.
30. Facilities work.
31. Decking of merchantable timber.
32. Road grading.
33. Dozer line <10% slope, can be water bars only until repairs can resume in 2022.
34. Hand line <10% slope, can be water bars only until repairs can resume in 2022.
35. MVUM road closures, water bars and cross ditches.
36. Trail work.
37. Work that can be done safely during inclement weather.

## Appendix A

### Dozer and Hand line Water-bar Guidelines

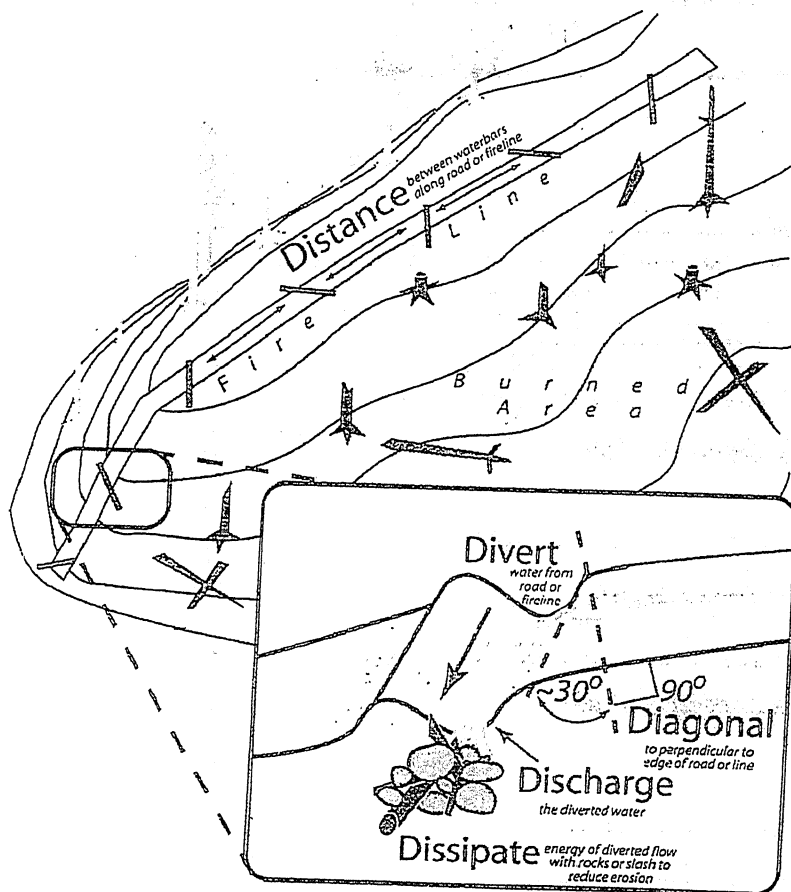
These spacing distances should be used as a guide. Judgment must be used in locating water bars to minimize erosion potential. Some sections of steep slope (>45%) may need water bars at closer intervals than listed to adequately control runoff. Average angle to the direction of the hand-line should be 30 to 45 degrees.

For Fire lines located in the Cow Creek Watershed (South end of district, including Wildcat, Applegate and other fires in vicinity):

Fire line slope	Maximum Distance Between Water bars (ft)
0-10%	150
11-20%	75
21-40%	50
>41%	25

For Fire lines located outside the Cow Creek Watershed:

Fire line slope	Maximum Distance Between Water bars (ft)
0-10%	200
11-20%	150
21-40%	100
>41%	50

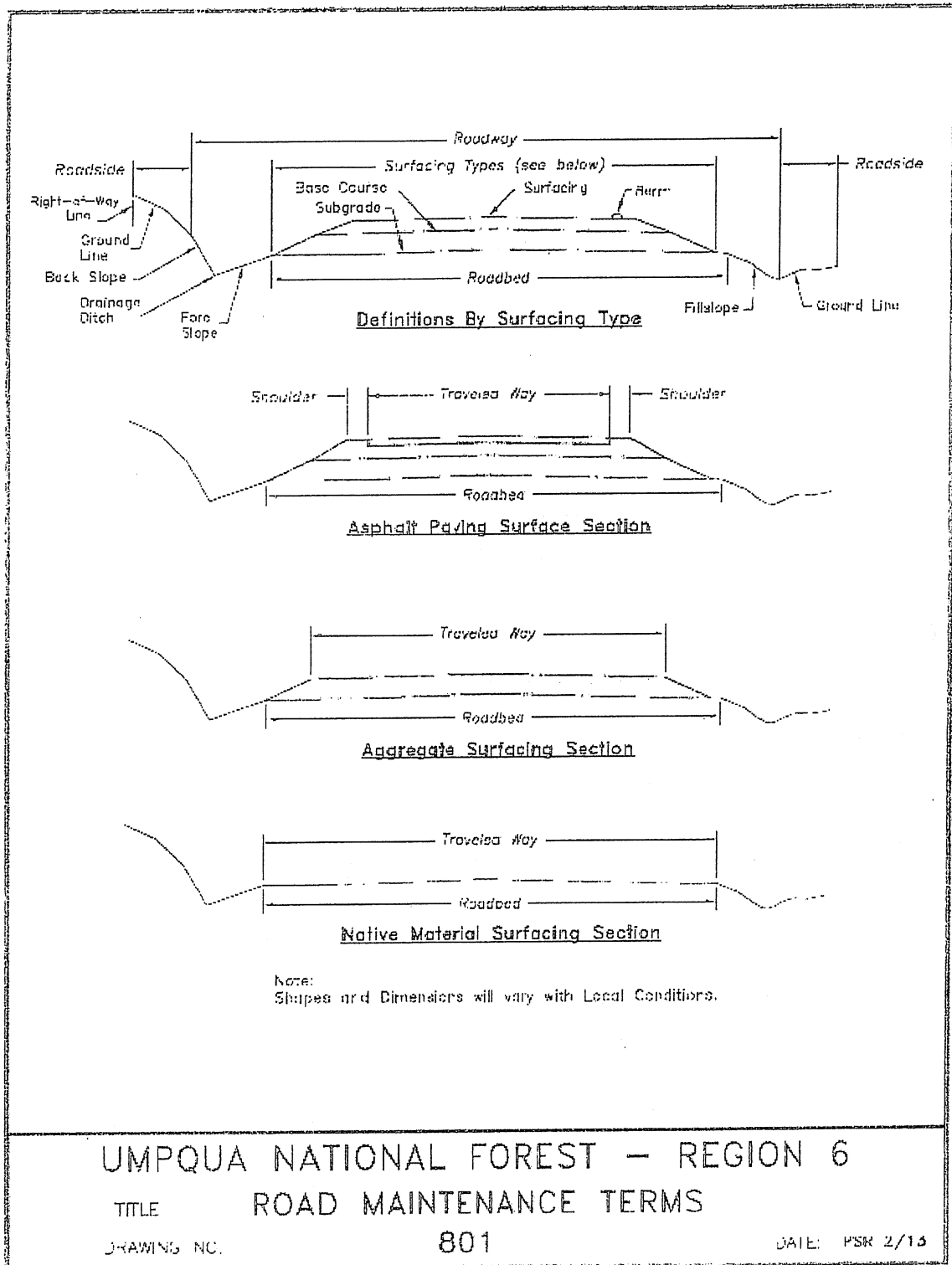


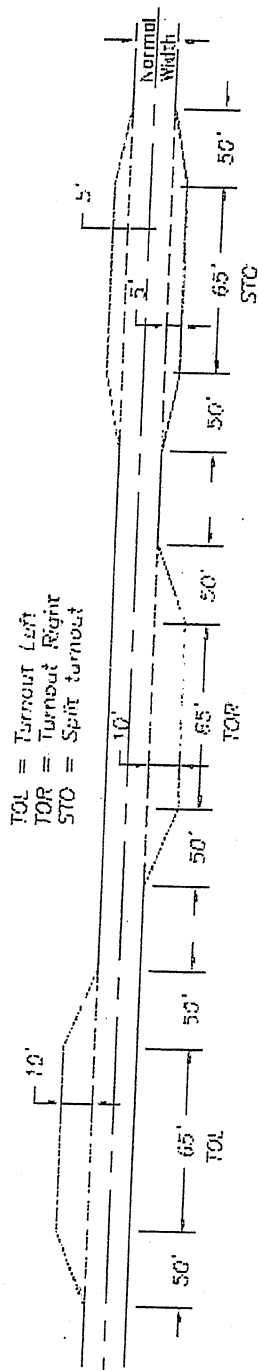
- a. Cut in the water-bar – do not simply push up loose soil.
- b. Water bars should direct runoff away from the burned area where possible.
- c. Assure that the down slope end of the water-bar is open and has adequate length to allow free flow of water off the fire line. Make sure water will not re-enter fire line farther down slope.
- d. Place slash below outlets of water bars to help slow runoff and help collect sediment.

In selecting areas for establishing water-bars the following should be considered:

- a. Locate bars at natural slope breaks. The idea is to move water off the fire line before it can build up enough energy to erode soil.
- b. When possible locate bars where the outlet empties onto a resistant surface (i.e. rock or log debris).
- c. Locate bars to provide maximum buffer distance to stream channel, etc.

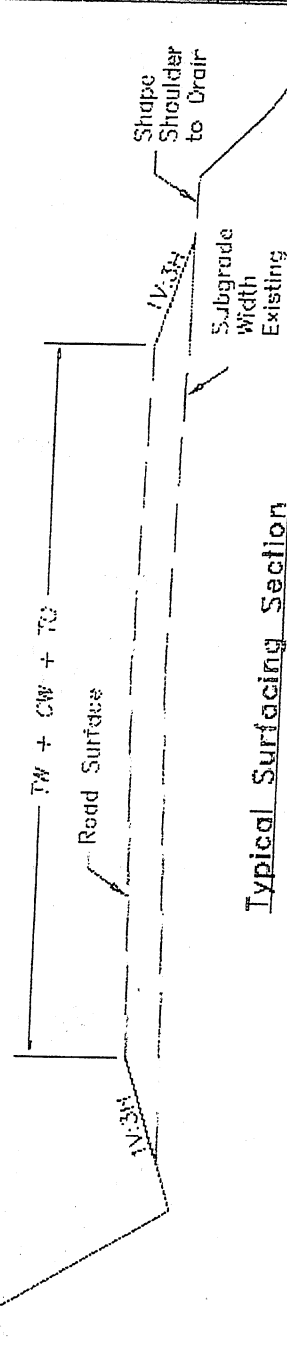
## Appendix B Road Blading





### Typical Turnout Dimensions

note: Blade and shape all turnouts to dimensions shown or to full extents of existing turnout if smaller.



### Typical Surfacing Section

TW = Travelled Way  
 CW = Curve Widening  
 TO = Turnout

UMPQUA NATIONAL FOREST — REGION 6

TITLE

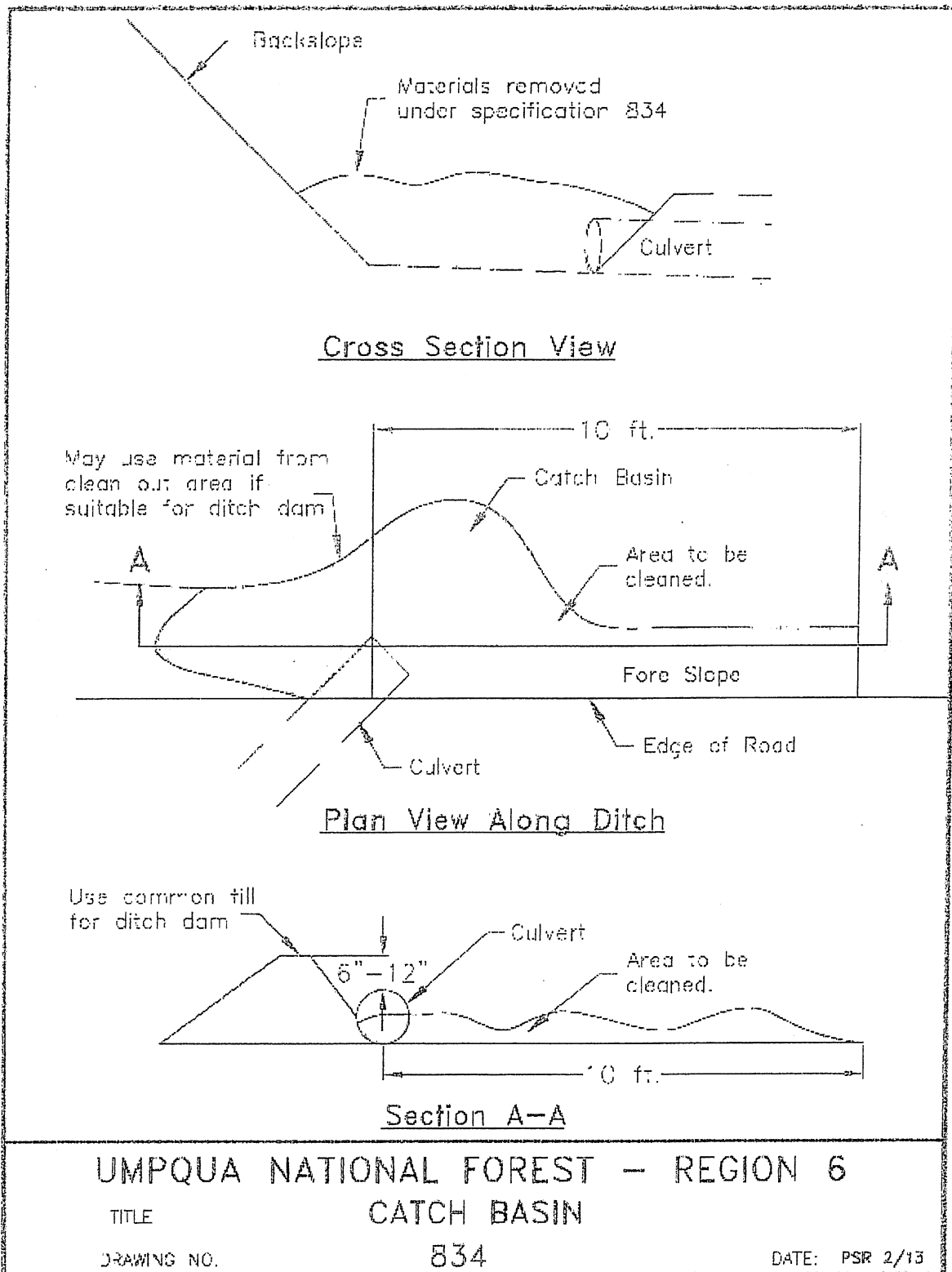
BLADING

DRAWING NO.

811

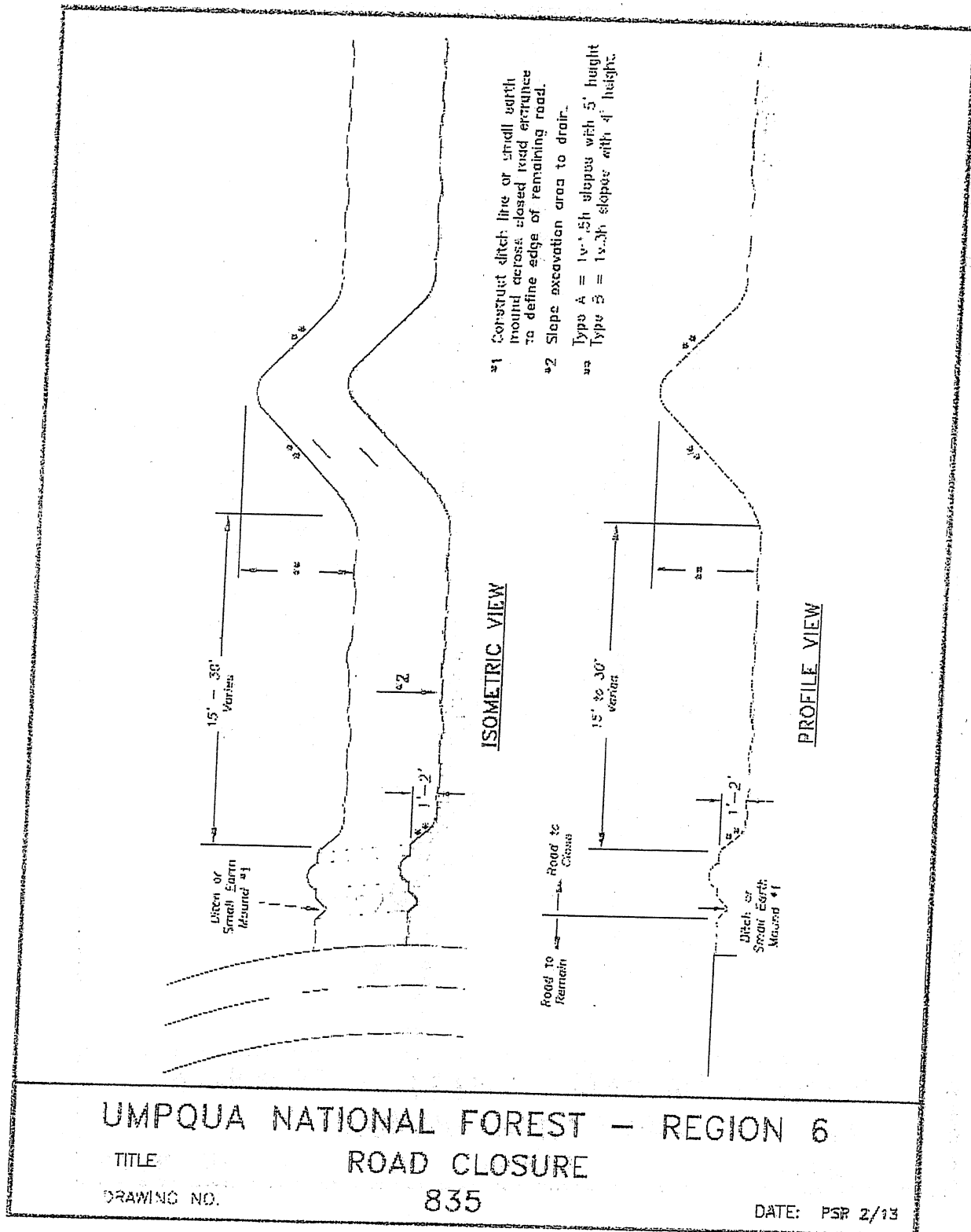
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# Appendix C Culvert Cleaning

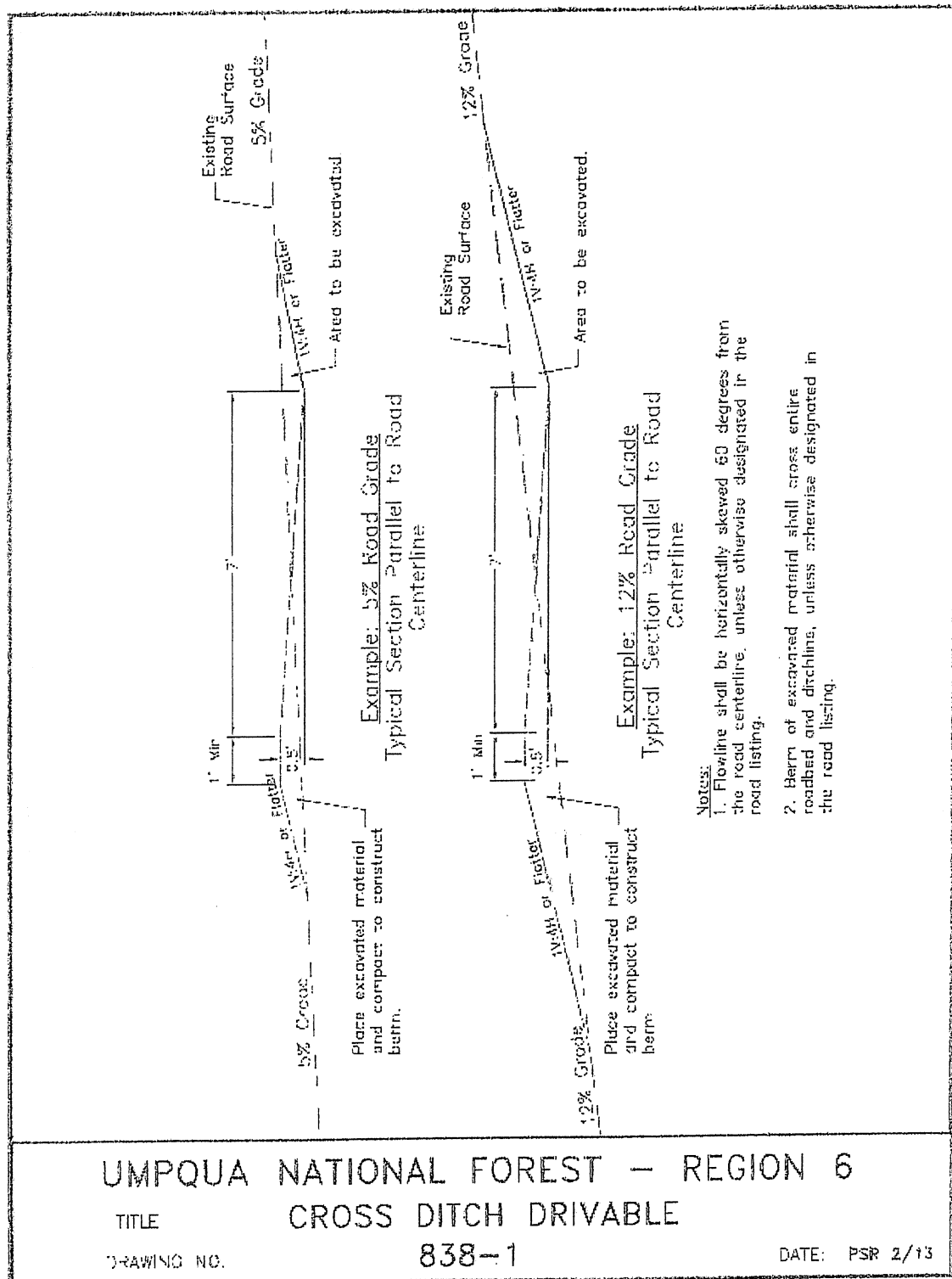


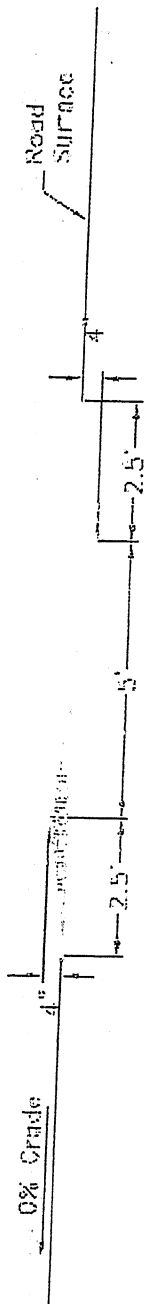


# Appendix D Road Closure - Type A and Type B

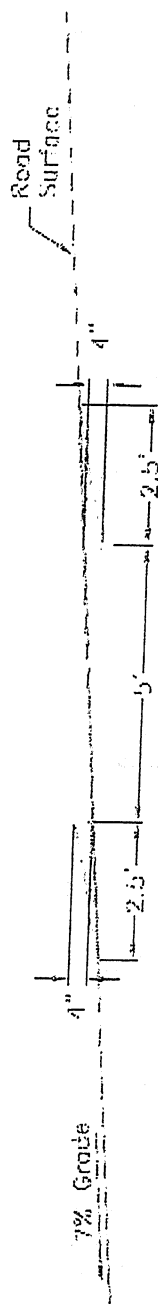


## Appendix F Drivable Cross Drains



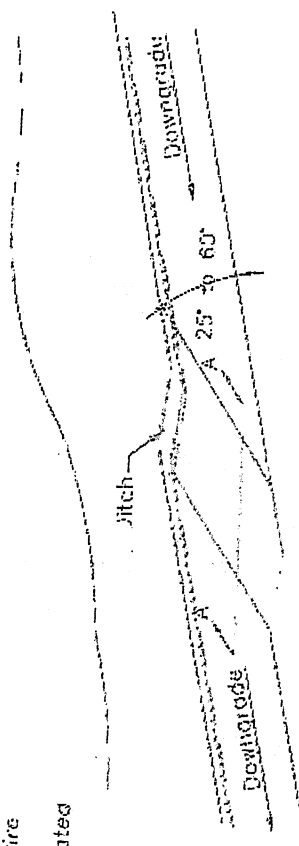


Section A-A  
Example: 0% Grade



Section A-A  
Example: 7% Grade

NOTE: Berm of excavated material shall cross entire roadbed and ditchline, unless otherwise designated in the road listing.



Typical Cross Section  
for High Clearance Vehicles

UMPQUA NATIONAL FOREST — REGION 6  
TITLE WATER BAR DRIVABLE

DRAWING NO.

838-2

DATE: PSR 2/13

Appendix F  
Non-Drivable Cross Drains

