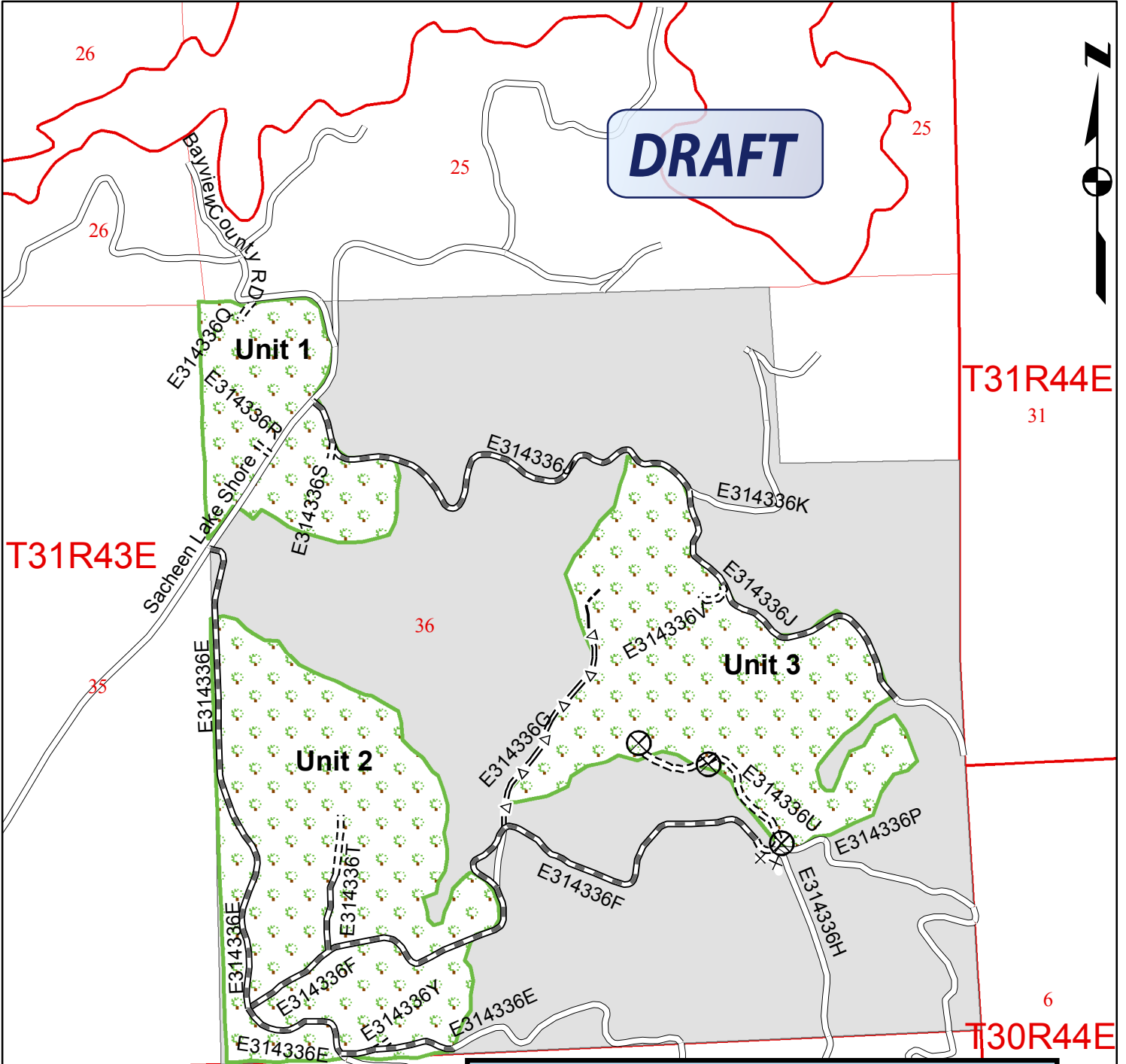
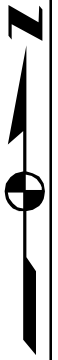
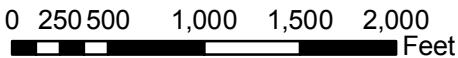


**DRAFT**

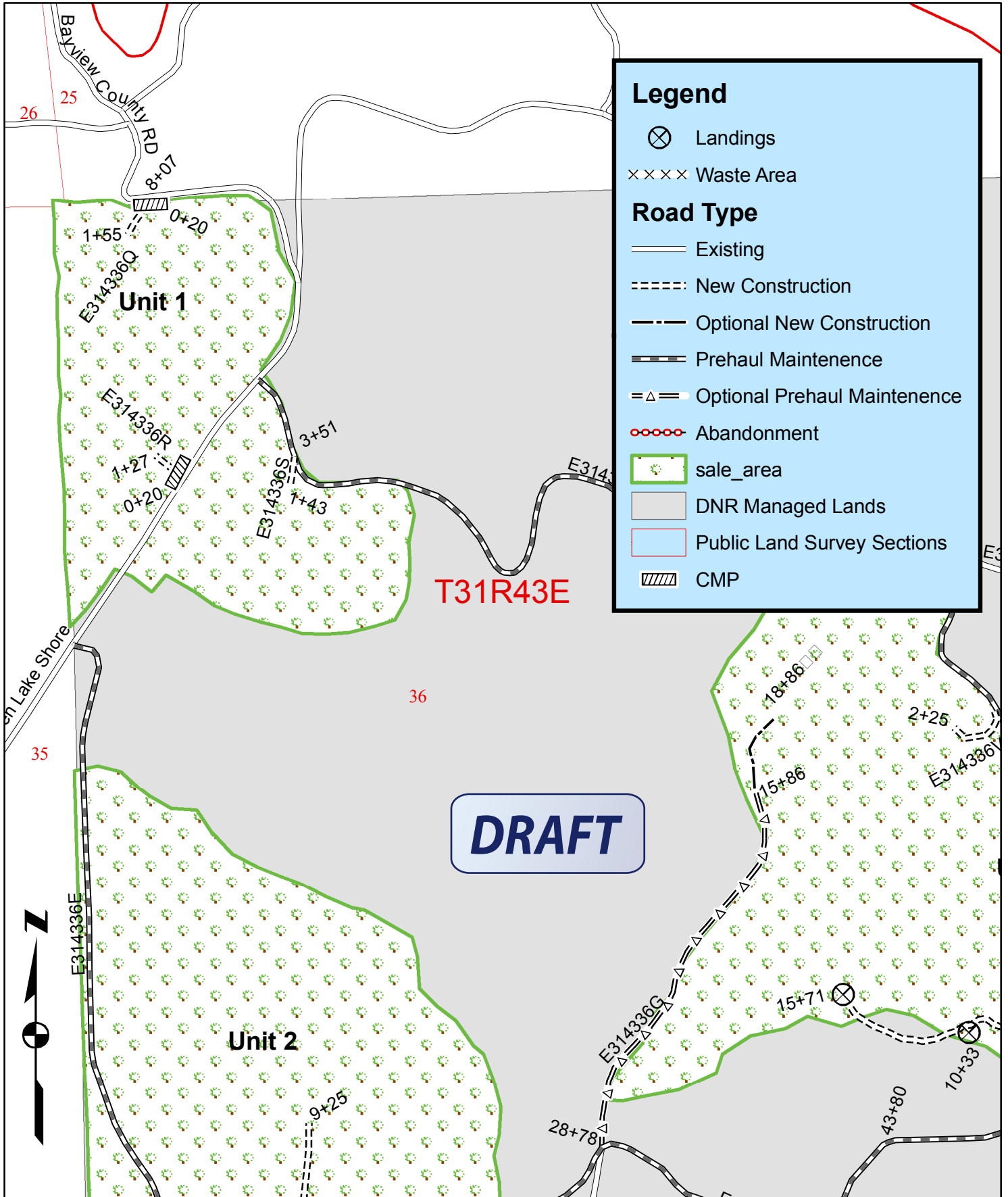


**Legend**

<b>Road Type</b>	sale_area
Existing	DNR Managed Lands
New Construction	Public Land Survey Sections
Optional New Construction	Waste Area
Prehaul Maintenance	Landings
Optional Prehaul Maintenance	
Abandonment	



1 inch equals 1,000 feet



**Legend**

- ⊗ Landings
- ×××× Waste Area

**Road Type**

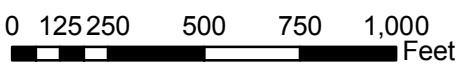
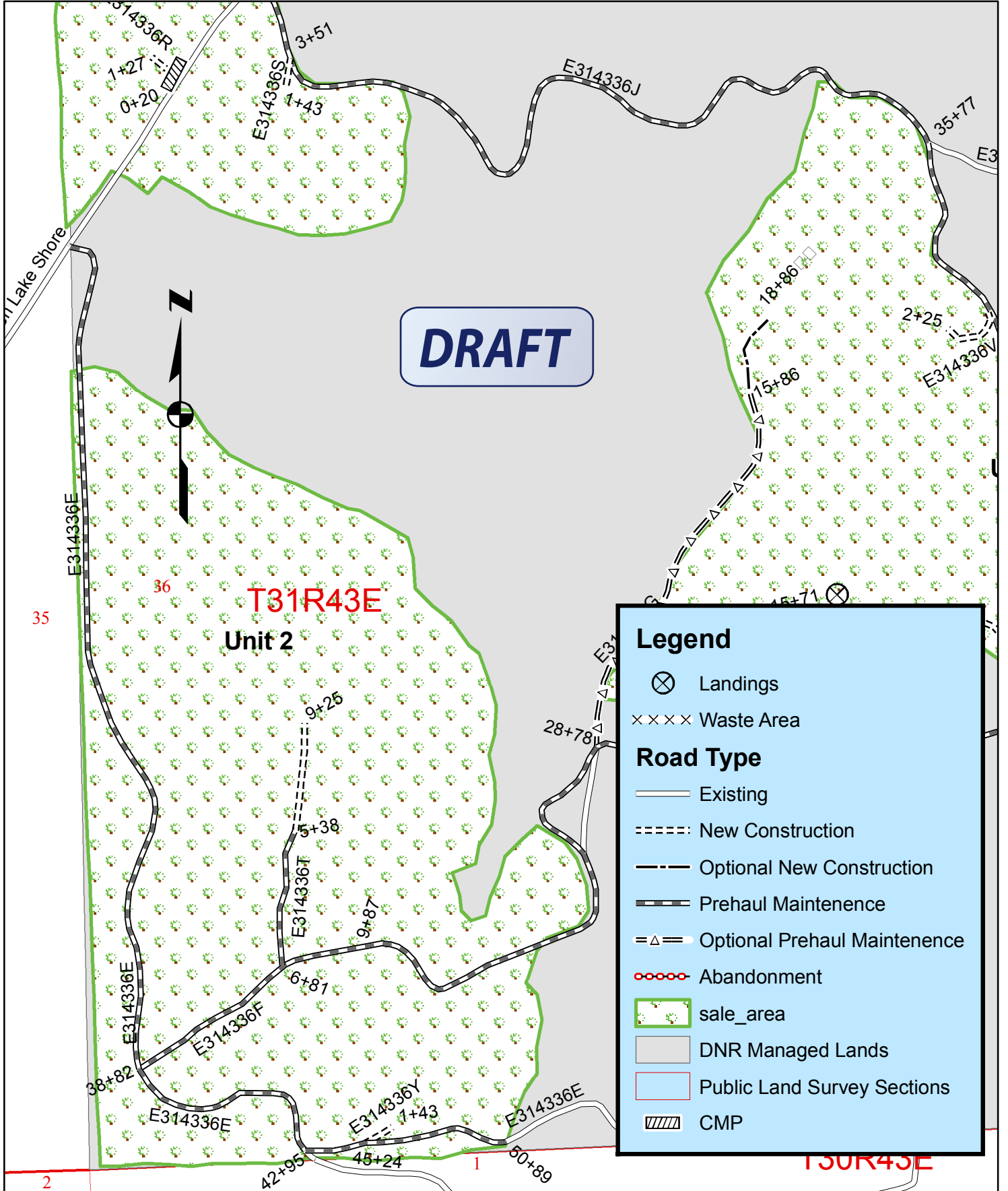
- Existing
- - - - - New Construction
- · - · - Optional New Construction
- ▨ - ▨ Prehaul Maintenance
- ▴ - ▴ Optional Prehaul Maintenance
- ○ ○ ○ Abandonment

sale\_area  
 DNR Managed Lands  
 Public Land Survey Sections  
 CMP

**DRAFT**

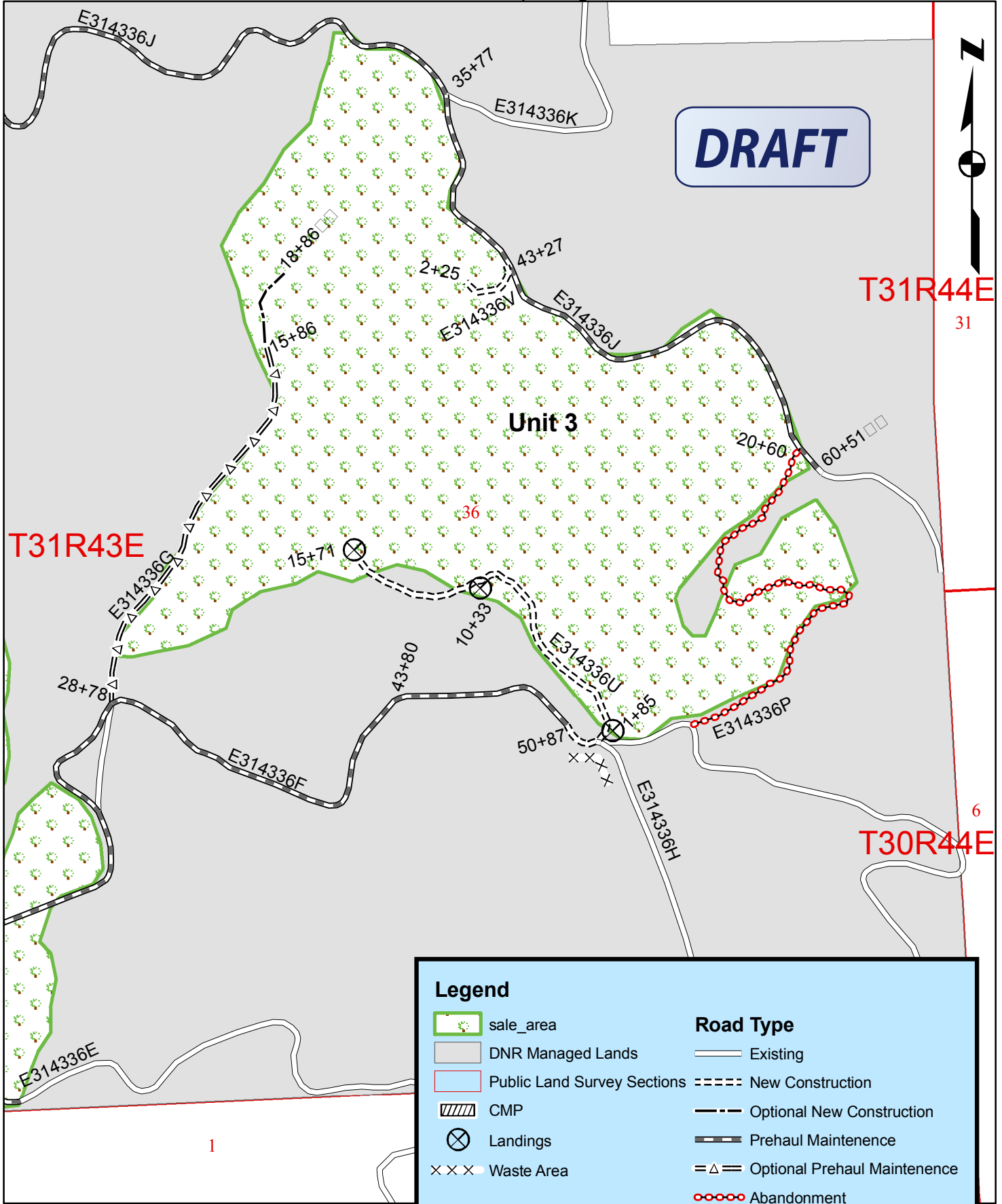
0 125 250 500 750 1,000 Feet

1 inch equals 500 feet



1 inch equals 500 feet

**DRAFT**



Legend	
	sale_area
	DNR Managed Lands
	Public Land Survey Sections
	CMP
	Landings
	Waste Area
	Existing
	New Construction
	Optional New Construction
	Prehaul Maintenance
	Optional Prehaul Maintenance
	Abandonment

0 125 250 500 750 1,000 Feet

1 inch equals 500 feet

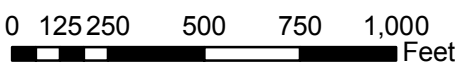
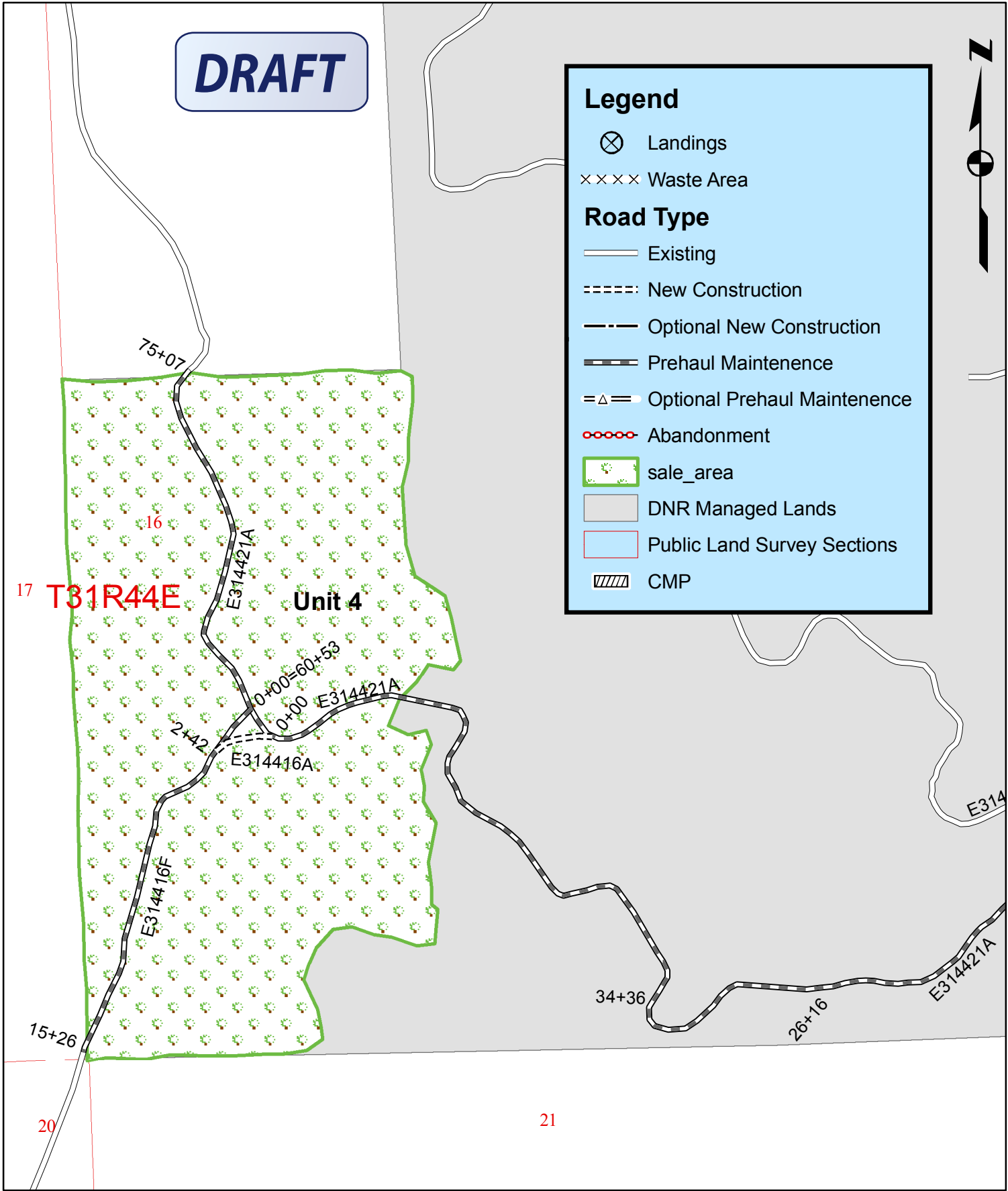
**DRAFT**

**Legend**

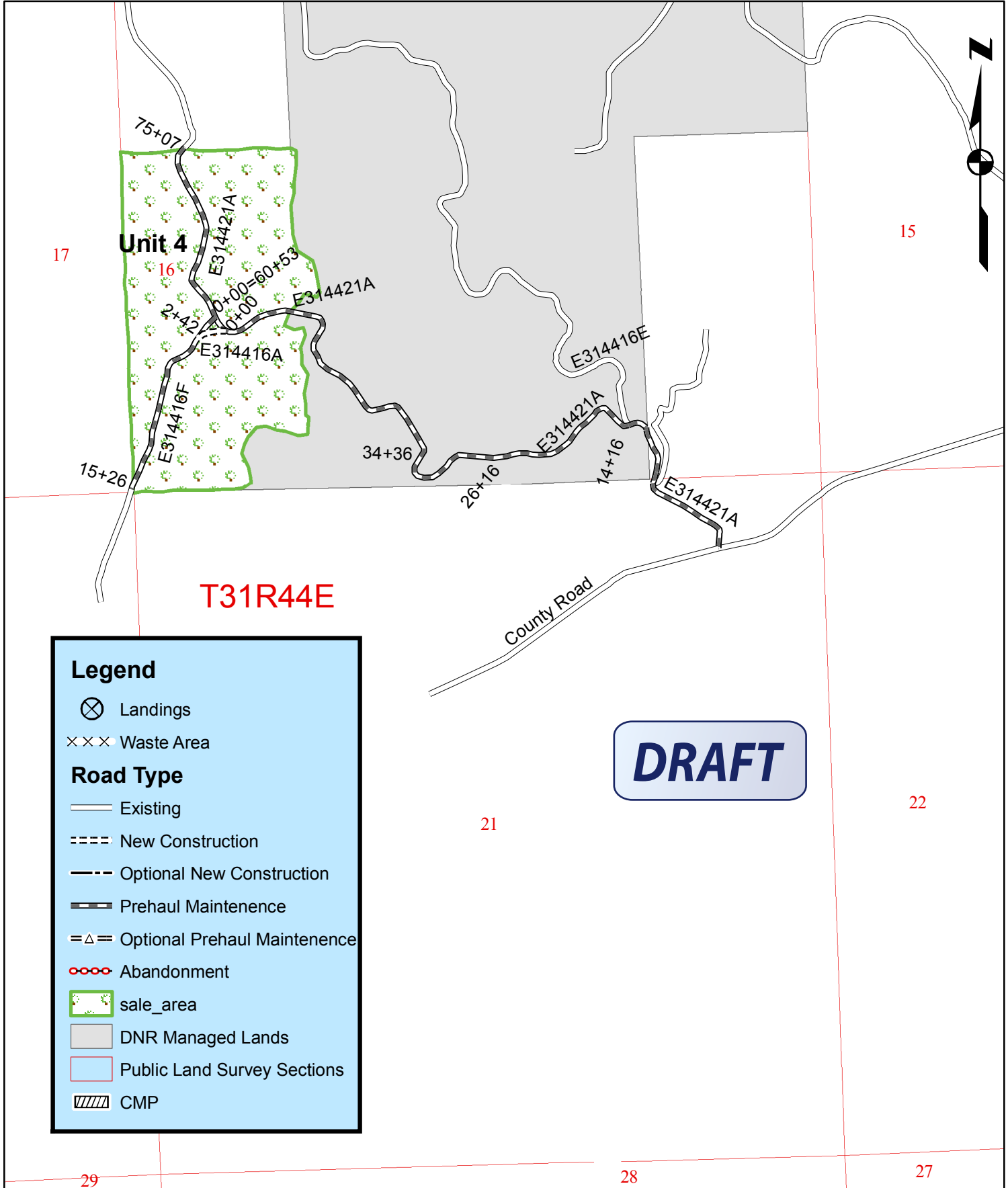
- ⊗ Landings
- ×××× Waste Area

**Road Type**

- Existing
- - - - - New Construction
- · - · - Optional New Construction
- = - = - Prehaul Maintenance
- = Δ = Optional Prehaul Maintenance
- ○ ○ ○ Abandonment
- sale\_area
- DNR Managed Lands
- Public Land Survey Sections
- /// CMP



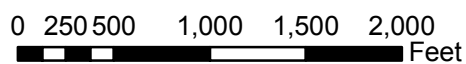
1 inch equals 500 feet



**Legend**

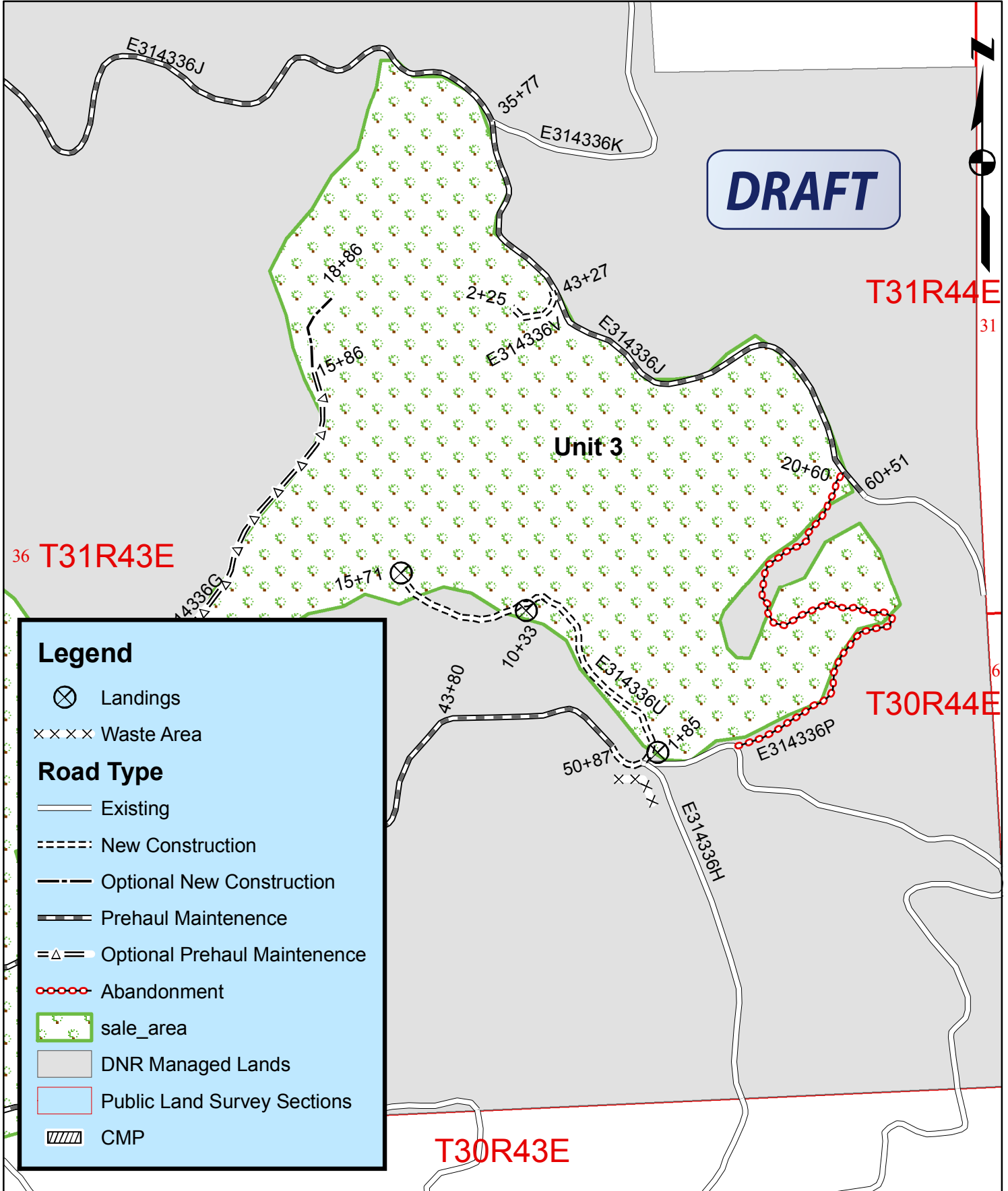
- ⊗ Landings
- ××× Waste Area
- Road Type**
- Existing
- - - New Construction
- - - Optional New Construction
- == Prehaul Maintenance
- =△= Optional Prehaul Maintenance
- ⊖⊖⊖ Abandonment
- sale\_area
- DNR Managed Lands
- Public Land Survey Sections
- CMP

**DRAFT**



1 inch equals 1,000 feet

**DRAFT**



**Legend**

- Landings
- Waste Area
- Road Type**
- Existing
- New Construction
- Optional New Construction
- Prehaul Maintenance
- Optional Prehaul Maintenance
- Abandonment
- sale\_area
- DNR Managed Lands
- Public Land Survey Sections
- CMP

0 125 250 500 750 1,000  
 Feet

1 inch equals 500 feet

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

ROAD PLAN

AGREEMENT NUMBER: 30-082440

SALE NAME: South Shore Sunrise Sorts

ROAD PLAN DATE: 1/8/09

SCOPE OF PROJECT

This project includes, but is not limited to construction including; clearing; grubbing; right-of-way debris disposal; excavation and/or embankment to subgrade, acquisition and installation of drainage structures, drilling and blasting of rock in the course of right-of-way construction may be encountered.

DEFINITIONS

Construction

Where in the terms of this contract the activity of building a new right of way and road over ground that has not had a previously established road, or is a relocation that is at least a full right of way width from an existing road.

Reconstruction

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Reconstruction includes activities that would be classified as a **Class II, Class III or Class IV Special Forest Practice**.

Pre-haul Maintenance

Where in the terms of this contract the activity of right of way development and road building in a location that lies completely or partially within the right of way of an existing road and which activity is required or recommended to improve upon the pre-existing conditions. Pre-haul maintenance includes activities that would be classified as a **Class 1 Forest Practice**.

Maintenance

Where the pre-existing conditions of an existing road were acceptable to the State prior to this contract, and the repair and/or replacement of materials, components or structures become necessary as result of deterioration by use or inordinate damage during the terms of this contract.

Optional Construction

Where in the terms of this contract the option to construct road over ground that has not had a previously established road. Only roads that have been previously located and marked in the field, as well as identified as optional construction in the road plan may be constructed. The decision of which optional roads to construct, and the amount to construct are left to the purchaser.

Optionally constructed roads will be required to meet the post harvest criteria as identified in road plan

Abandonment

Where in the terms of this contract the activity of blocking, controlling the erosion and water movement within natural drainages, removing all drainage structures, and removing unstable fill slopes that have delivery potential. This activity may include but is not limited to obliteration of road prisms, haying and revegetation of exposed soils, and scattering of natural debris.

## SECTION 1 - GENERAL CLAUSES

- 1.1 Clauses in this plan apply to all construction and/or reconstruction, including landings unless otherwise noted.
- 1.2 Construction, reconstruction, pre-haul maintenance, and abandonment of the following road/s are required. All road/s shall be constructed on the State's location, and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E314336Q	0+00 to 1+55	New Construction
E314336R	0+00 to 1+27	New Construction
E314336J	0+00 to 60+51	Prehaul Maintenance
E314336S	0+00 to 1+43	New Construction
E314336V	0+00 to 2+25	New Construction
E314336E	0+00 to 50+89	Prehaul Maintenance
E314336Y	0+00 to 1+43	New Construction
E314336T	0+00 to 5+38	Prehaul Maintenance
E314336T	5+38 to 9+25	New Construction
E314336F	0+00 to 50+87	Prehaul Maintenance
E314336G	0+00 to 15+86	Optional Prehaul Maintenance
E314336G	15+86 to 18+86	Optional New Construction
E314336U	0+00 to 15+71	New Construction
E314421A	0+00 to 75+07	Prehaul Maintenance
E314416A shoe fly	0+00 to 2+42	New Construction
E314416F	0+00 to 15+26	Prehaul Maintenance

- 1.3 Construction or reconstruction of the following road/s is not required. Road/s constructed shall be on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E314336G	0+00 to 15+86	Optional Prehaul Maintenance
E314336G	15+86 to 18+86	Optional New Construction

- 1.5 This sale also includes, but is not limited to pre-haul maintenance including;

<u>ROAD</u>	<u>STATIONS</u>	<u>REQUIREMENTS</u>
E314336J	0+00 to 60+51	Reshape road to provide drainage as needed.
E314336E	0+00 to 50+89	Reshape road to provide drainage as needed.
E314336T	0+00 to 5+38	Reshape road to provide drainage as needed.
E314336F	0+00 to 9+87	Reshape road to provide drainage as needed.
E314336F	9+87 to 43+80	Reshape road to provide drainage as needed, also reshape approximately 8 severe rolling dips to allow for log truck and traffic. Reshape rolling dips to original condition at completion of timber hauling.
E314336F	43+80 to 50+87	Reshape road to provide drainage as needed.
E314336G Optional	0+00 to 15+86	If this road is used it will be reshaped to provide drainage as needed, and will be reshaped upon completion of sale.
E314421A	0+00 to 26+16	Reshape road to provide drainage as needed.
E314421A	26+16 to 34+36	Reshape road to remove ruts and provide drainage.
E314421A	34+36 to 75+07	Reshape road to provide drainage as needed.
E314416F	0+00 to 15+26	Reshape road to provide drainage as needed.

- 1.6 If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.
- 1.7 On this plan, quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions, or the Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to, solid subsurface rock, subsurface springs or saturated ground, and/or unstable soil conditions.
- 1.8 Purchaser shall not use roads constructed or reconstructed under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.
- 1.9 Roads shall be constructed using track mounted hydraulic or cable excavators unless otherwise authorized, in writing, by the Contract Administrator.
- 1.10 Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction, as approved in writing by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the Contract Administrator prior to the application of rock, or final subgrade compaction.

- 1.11 The construction of the following roads shall be completed by the following dates:  
All New Construction November 1, 2009.

Road

E314336Q

E314336T

E314336S

E314336U

E314336A shoefly

E314336R

E314336G

E314336V

E314336Y

- 1.12 Construction restrictions apply to this contract. All construction and transportation of heavy equipment and/or trucks is prohibited between and including the following dates, except as may be authorized, in writing, by the Contract Administrator.

March 15 to April 30

- 1.14 Landings are required to be constructed at specific locations as designated on the Road Plan Map. The relocation of landings in the vicinity of those designated, and the use of additional landings in this project shall be subject to written approval from the Contract Administrator. Landings shall be sloped sufficiently to provide controlled drainage, without ponding or concentration of sediments into streams.
- 1.21 Maintenance on all road/s used, constructed or reconstructed under this Road Plan shall be performed in accordance with the Forest Access Road Maintenance Specifications.
- Rutting of finished road surfaces shall not exceed 4 inches in depth. In the event that surface or base stability problems may persist, the purchaser/contractor will be required to cease operations, or perform corrective maintenance and/or repairs, subject to specifications within this contract, and the written approval of the Contract Administrator.
- 1.23 Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.
- 1.25 Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.
- 1.26 Hauling of forest products or equipment may require a county road hauling permit. Purchaser is responsible for obtaining a permit, and any costs associated with extra maintenance or repair levied by a county.

## SECTION 2 - CLEARING

- 2.1 Fell all vegetative material larger than 6 inches d.b.h., or over 20 feet high between the marked right of way boundaries, and within waste and/or debris areas. If clearing limits are not marked in the field, clearing limits are as specified on the Typical Section Sheet.
- 2.2 Deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline, and within the cleared right-of-way. The decks shall be free of dirt, limbs and other debris, and removable by standard log loading equipment from the completed roadbed.

- 2.3 Brushing shall be done in accordance to the attached Brushing Detail. Lesser standards may be applied with permission by the Contract Administrator.

### SECTION 3 - GRUBBING

- 3.1 All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed. Stumps over 22 inches in diameter shall be split. Stumps over 40 inches in diameter shall be quartered.
- 3.2 Grubbing Limits are defined as the entire area between the external limits shown on the Typical Section Sheet.
- 3.3 Removal of stumps shall not be required, within the waste and/or debris areas, provided that they are cut flush with the ground.

### SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

- 4.1 Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume, within waste area and/or clearing limits as shown on the Typical Section Sheet.
- 4.6 Right-of-way debris shall be scattered outside the right-of-way limits in natural openings. Debris shall not be placed against standing timber. Where natural openings are unavailable or restrictive, alternative debris disposal methods shall be subject to the written approval of the Contract Administrator.

### SECTION 5 - EXCAVATION

- 5.1 Unless controlled by construction stakes or specific design sheets herein, road/s shall be constructed in accordance with dimensions shown on the Typical Section Sheet.

Excavation and embankment slopes shall be constructed to a uniform line, and left rough for easier vegetation.

Organic material shall be excluded from road prism embankments.

Road pioneering operations shall not undercut the final slope, deposit excavated material outside the clearing limits, or restrict drainage.

- 5.2 Purchaser or road construction contractor shall not bury merchantable material.
- 5.3 The construction of road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except as directed by the contract administrator. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

<u>Favorable Grade</u>	<u>Adverse Grade</u>	<u>Minimum Curve Radius</u>
18%	12%	60 feet

Changes in road grade shall not exceed 7%, except as required in this clause.

Adverse grades on curves shall not exceed 10 percent..

Favorable grades through switchbacks shall not exceed 12%.

Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

The switchback is defined as, the curved segment of road, between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations, shall be constructed on the tangents preceding and departing from the switchbacks.

- 5.5 Curve widening shall be added to the inside of curves as follows:

2 feet extra	80 to 100 foot radius curves
4 feet extra	60 to 80 foot radius curves

- 5.7 Roads shall be built to the dimensions shown on the Typical Section Sheet.
- 5.8 Except as construction staked or designed, excavation slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes to 55%)	1:1
Common Earth (55% to 70% side slopes)	3/4:1
Common Earth (on slopes over 70%)	1/2:1
Fractured or loose rock	1/2:1

Hardpan or solid rock 1/4:1

5.9 Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier re-vegetation.

5.10 Except as construction staked or designed, each embankment side shall be widened as follows:

<u>Height at Centerline</u>	<u>Subgrade Widening</u>
Less than 6 feet	2 feet
6 feet and over	4 feet

5.11 Except as construction staked or designed, embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>
Common earth and rounded gravel	1-1/2:1
Angular rock	1-1/4:1
Sandy soils	2:1

5.12 All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts, and routing excavation equipment over the entire width of each lift. Except for areas specifically requiring keyed embankment construction, side hill embankments too narrow to accommodate excavation equipment may be placed by end dumping or side casting until sufficiently wide to support the equipment.

5.14 Except as construction staked or designed, where side slopes exceed 45 percent, full bench construction shall be utilized for the entire subgrade width.

5.15 Waste material may be deposited adjacent to the road prism on side slopes up to 55 percent if the waste material is compacted, free of debris, and more than 50 feet away from live streams and/or culvert installations. On side slopes of 55 percent or more, all excavation shall be endhauled or pushed to designated embankment sites, except as approved in writing by the Contract Administrator. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.24 Turnouts shall be constructed at a maximum distance of 1000 feet apart, unless shown otherwise on drawings. Turnouts shall be intervisible.

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location of additional

turnarounds and/or alternate locations shall be subject to the written approval of the Contract Administrator.

## SECTION 6 - DRAINAGE

- 6.1 Finished subgrade and running surfaces shall be sloped as shown on the Typical Section Sheet, uniform, firm, rut-free, and shaped to ensure road surface runoff in an even, unconcentrated manner.
- 6.2 Berms shall be removed from shoulders to permit water runoff. The construction of ditchouts will be required where ponding will result from the effects of sidecast debris and waste material.
- 6.3 Temporary road culverts shall be installed as part of this contract. The minimum requirements shall be as designated on the Culvert and Drainage list, and the Road Plan map.

Temporary culverts shall be supplied by the purchaser, and shall remain the property of the purchaser. Corrugated metal pipe and/or polyethylene culverts are specified. If the purchaser desires to provide an alternative stream crossing structure, the design shall be subject to written approval by the Contract Administrator.

Temporary culverts shall be removed within 30 days following completion of timber harvesting and site cleanup, or as directed by the Contract Administrator. Excavated material from the temporary crossings shall be scattered on side slopes less than 45%, and 20 feet beyond the normal high water marks. Removal of temporary crossings shall not introduce soil or debris into live stream crossings.

- 6.5 Metal, concrete, or plastic culverts and bands removed from the roadbed shall be removed from state land prior to termination of this contract.
- 6.10 On required roads, permanent culverts, downspouts, flumes, bands and gaskets as listed on the Culvert List which are not installed, shall remain the property of the State.
- 6.14 Cross drains and surface culverts on road grades in excess of 3 percent shall be skewed at least 30 degrees, from perpendicular to the road centerline.
- Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3 percent nor more than 10 percent.
- 6.18 Outfalls from drainage structures shall not terminate directly on unprotected soil because of the potential for erosion. Downspouts, flumes and energy dissipaters shall be installed to prevent erosion, and are subject to the approval of the Contract Administrator.

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the posts with No. 10 galvanized smooth wire, in accordance with the Culvert and Flume Installation Detail.

- 6.20 Ditch reshaping, new ditch construction, and headwall construction shall be done concurrently with construction or reconstruction of the subgrade, and prior to any application of surfacing rock. Ditches shall drain to culverts, ditchouts, and natural drainages. The shape of ditches shall be in accordance with the Typical Section Sheet and the Culvert and Drainage Specification Detail.

Site indicative ditching may be required on this project regardless of road template specifications on the Typical Section Sheet, which may require insloping or outsloping of the subgrade. The purchaser/operator will be required, as part of this contract, to construct ditches as directed by the Contract Administrator, where unforeseen site conditions dictate. Ditching will generally be required to control runoff on steeper grades, in conjunction with culvert installations, and approaches to fill embankments.

- 6.22 Catch basins shall be constructed to resist erosion, with back slopes consistent with standards in Section 5. Minimum dimensions shall be 4 feet wide and 4 feet long, unless specified otherwise on the Culvert List.
- 6.23 Headwalls shall be constructed in accordance with the Culvert and Drainage Specification Detail. Headwalls shall be constructed at all cross drain culverts, except temporary culverts. Headwalls shall also be constructed at any culvert identified on the Culvert and Drainage List that specifies the placement of riprap.
- 6.28 Rolling dips are intended to direct surface water off the road, and away from natural drainages. Direct the discharge from Rolling Dips into debris concentrations, onto rocky sites, preferably onto ridges rather than directly into draws, to reduce sediment movement and sideslope erosion. Ditchouts will be required if there is risk of ponding.

Rolling dips shall be constructed and skewed in accordance with the Rolling Dip Detail. The frequency of Rolling Dips shall be at a maximum spacing of 400 feet horizontal or one every 10 feet vertical. All Rolling Dips shall include gradual grade transitions into, and out of the dip. Construction, workmanship, alternative locations and/or design are subject to the written approval of the Contract Administrator.

## SECTION 7 - ROCK

- 7.20 Rock applied as surfacing, as designated on the Rock list shall be angular material and

have a minimum of 90 percent of the top 4 inches pass a 3-inch square opening. Specifications may be adjusted with approval from the Contract Administrator.

- 7.30 Placement and compaction of rock shall be accomplished in lifts not to exceed 6 inches uncompacted depth.
- 7.31 Each lift of rock shall be sloped as shown on the Typical Section Sheet, and shall be uniform, firm, rut free, and shaped to ensure surface runoff in an even, unconcentrated manner.
- 7.32 Placement of rock shall be accomplished with a crawler tractor in lifts no greater than 6", unless the Contract Administrator approves other methods in writing.

Compaction shall be completed after rock has been spread into place, by walking the spread equipment back and forth over the entire spread surface. The traffic of rock hauling equipment shall be directed to use the entire running surface, and avoid driving in the same tracks, to assist in surface compaction.

- 7.40 Rock shall be applied as designated on the Rock List and/or spot patching as directed by the Contract Administrator. Quantities specified herein are compacted yards. Loose yardage is pit specific and must be applied by the purchaser to meet specified rock depths.
- 7.41 Measurement of specified rock depths, are defined as the compacted depth/s using the compaction methods required in this contract. Specified rock depths are minimum requirements, and shall not be subject to reduction.
- 7.42 Turnouts, turnarounds, and curve widening shall have rock applied to the same depth and specifications as the traveled running surface.

## SECTION 9 - ROAD AND LANDING DEACTIVATION

- 9.0 Road/s and/or landings are required to be deactivated as part of this contract. The purchaser shall; reduce or relocate landing debris, to avoid landing failures and potential debris slides; provide for unconcentrated drainage of the road and/or landing surface/s; in a manner, that is approved, in writing, by the Contract Administrator.

Purchaser shall stockpile culverts removed, in a location approved by the contract administrator.

Road deactivation shall be completed within 30 days after approval to proceed has been given by the Contract Administrator.

9.1 The following road/s shall be deactivated by the Purchaser.

<u>Road</u>	<u>Stations</u>
E314336Q	1.55
E314336R	1.27

Road/s shall be deactivated at termination of use.

9.5 Deactivation of the above road/s shall consist of; removing the culverts and leaving the trench open for a non-drivable waterbar.

9.6 Road deactivation shall consist of blocking roads with stumps, large boulders, and logging debris at the termination of harvesting or as directed by written approval from the Contract Administrator. (see soils berm detail) The locations of Road Blocks are approximate, as depicted on the Road Plan Map. Locations are site dependent and shall be determined in the field by the Contract Administrator.

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1 The following road/s shall be abandoned by the Purchaser at the termination of use or within 30 days following completion of timber harvest removal prior to the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E314336P	0+00 to 20+60	Light

10.3 Light Abandonment shall consist of: constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet; or as marked in the field; skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade; keying water bars into ditchline; blocking the roads to 4X4 traffic using stumps, large boulders, and logging debris; removing culverts and bridges from State Land; removing ditch cross drain culverts and leaving the resulting trench open; sloping all trench walls and approach embankments no steeper than 1.5:1; grass seeding concurrently with abandonment; covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with an 8-inch deep layer of straw.

**FOREST ROAD ACCESS**  
Road Maintenance Specifications

Prior to Acceptance of Contract or Acceptance on Timber Sale

**A. Cuts and Fills**

- (1) Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½:1 slopes with selected material or as directed. Remove overhanging material from cut slopes.
- (2) Material from slides or other sources requiring removal must not be deposited in streams or at locations where it will erode into streams or water courses.
- (3) Undesirable slide materials and debris must not be allowed to contaminate or mix with surface material.

**B. Roadway Surfaces**

- (1) Grade and shape road surface, turnouts and shoulder to original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
- (2) Blading must not undercut backslopes at bottom of cut slopes.
- (3) Watering may be required to control dust and to retain fine surface rock.
- (4) Desirable surface material shall not be bladed off roadway.
- (5) Replace surface material lost or worn away.
- (6) Remove berms except as otherwise directed by the State.

**C. Drainage**

- (1) Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions.
- (2) Inspect and clean culverts at least monthly, with additional inspection during storms and periods of high runoff. This must be done even during periods of inactivity.
- (3) Place non erodable material or rock at drainage outfalls.
- (4) Keep silt bearing surface runoff from contaminating live streams.

**D. Structures**

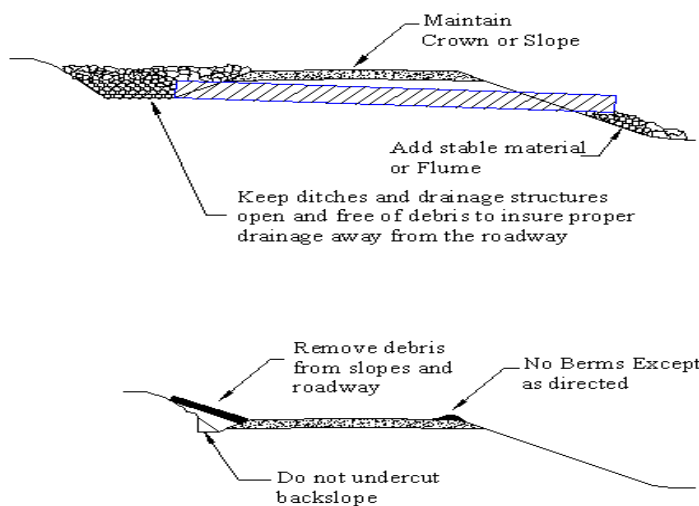
- (1) Repair bridges, culverts, cattle guards, fences and other road structures to conditions required by construction specifications.

**E. Termination of Use, or End of Season**

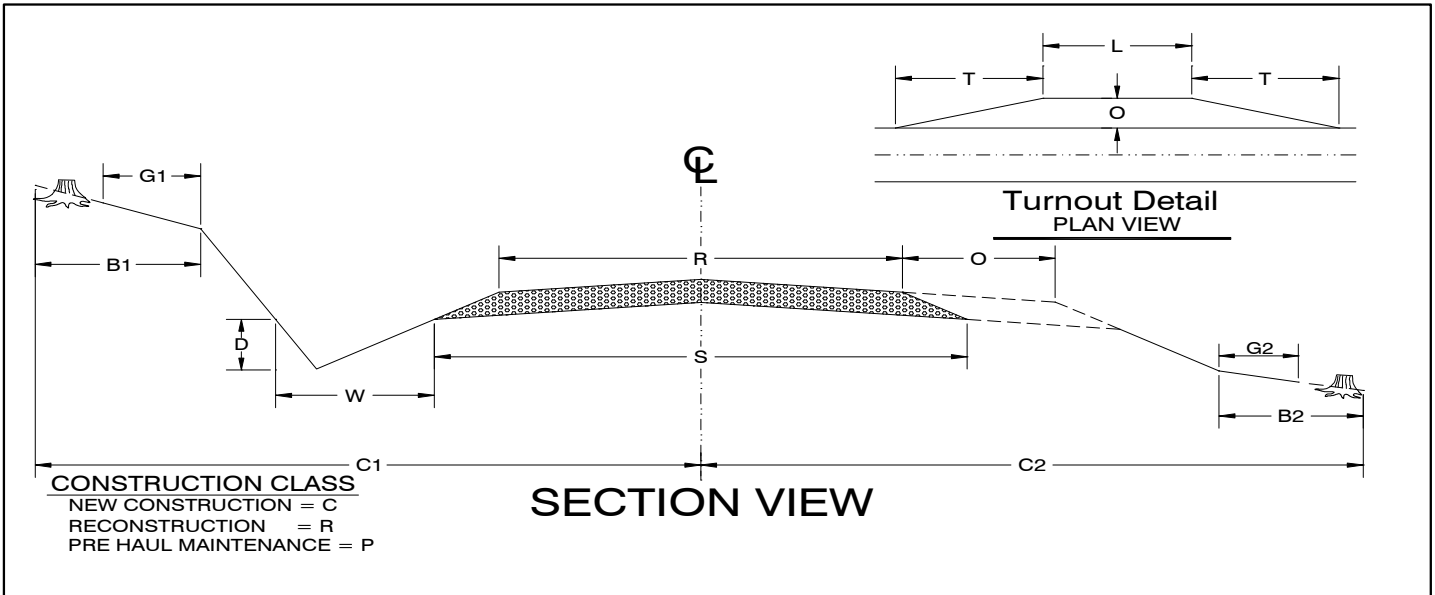
- (1) Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert clearing and water bars.

**F. Debris**

- (1) Remove fallen timber, limbs, stumps from slopes and roadway, ditchlines and culvert inlets.



TYPICAL SECTION SHEET



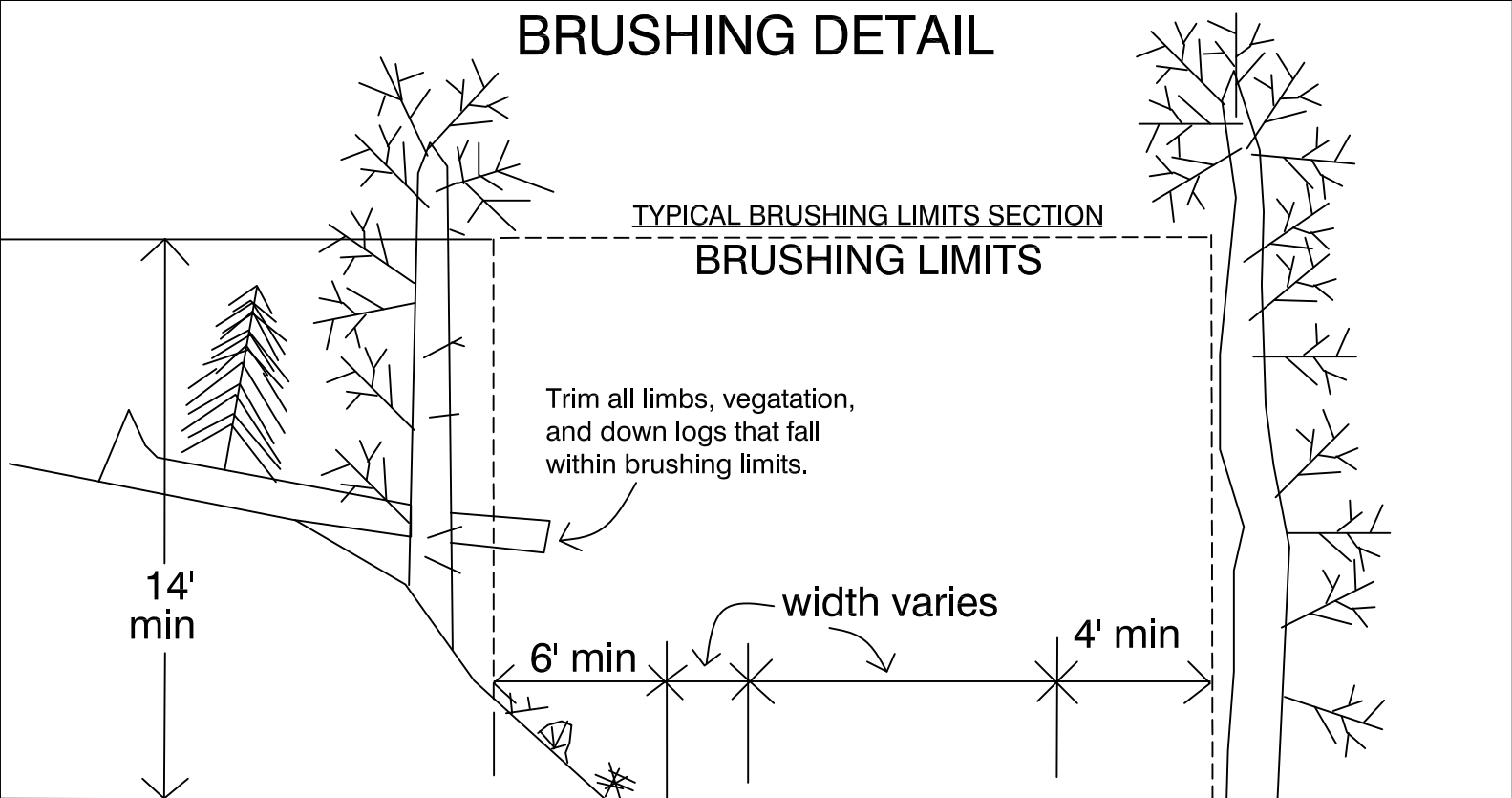
ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	FULL BENCH	KEYED FILL	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	INSLOPE "/10'	OUTSLOPE "/10'	CROWN " AT CL	DITCH WIDTH (W)	DITCH DEPTH (D)	DITCH 2 SIDES	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (B1)	ROAD FILL CLEARING (B2)	R/W CUT CLEARING (C1)	R/W FILL CLEARING (C2)
E314336Q	0+00	1+55	C			14	12	4						4	4	4	4		
E314336R	0+00	1+27	C			14	12	4						4	4	4	4		
E314336J	0+00	60+51	P			14	12	4											
E314336S	0+00	1+43	C			14	12	4						4	4	4	4		
E314336V	0+00	2+25	C			16	14	4						4	4	10	10		
E314336E	0+00	50+89	P			14	12	4											
E314336Y	0+00	1+43	C			14	12	4						4	4	4	4		
E314336T	0+00	5+38	P			14	12	4											
E314336T	5+38	9+25	C			14	12	4						4	4	4	4		
E314336F	0+00	50+87	P			14	12	4											
E314336G OPT	0+00	15+86	P			14	12	4											
E314336G OPT	15+86	18+86	C			14	12	4						4	4	4	4		
E314336U	0+00	15+71	C			14	12	4						4	4	4	4		
E314421A	0+00	75+07	P			14	12	4											
E314416A shoefly	0+00	2+42	C			16	14	4						4	4	10	10		
E314416F	0+00	15+26	P			14	12	4											



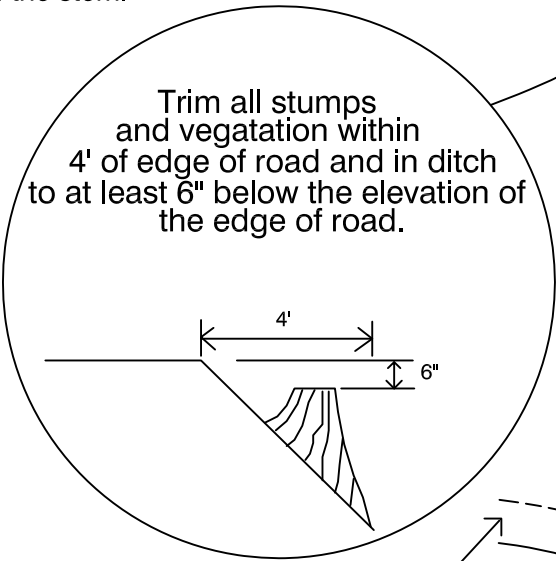




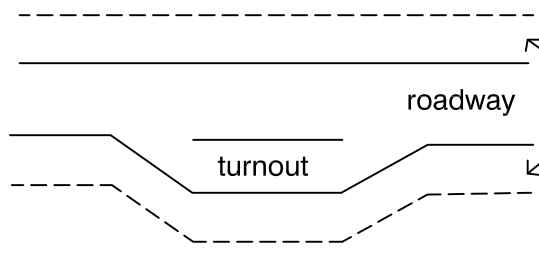
# BRUSHING DETAIL



All limbs on standing trees that extend into the brushing limits shall be trimmed within 6" of the stem.



## CURVE BRUSHING PLAN



## TURNOUT BRUSHING PLAN

Brushing limits as shown on typical section

extra 4' brushing limits on inside of curve

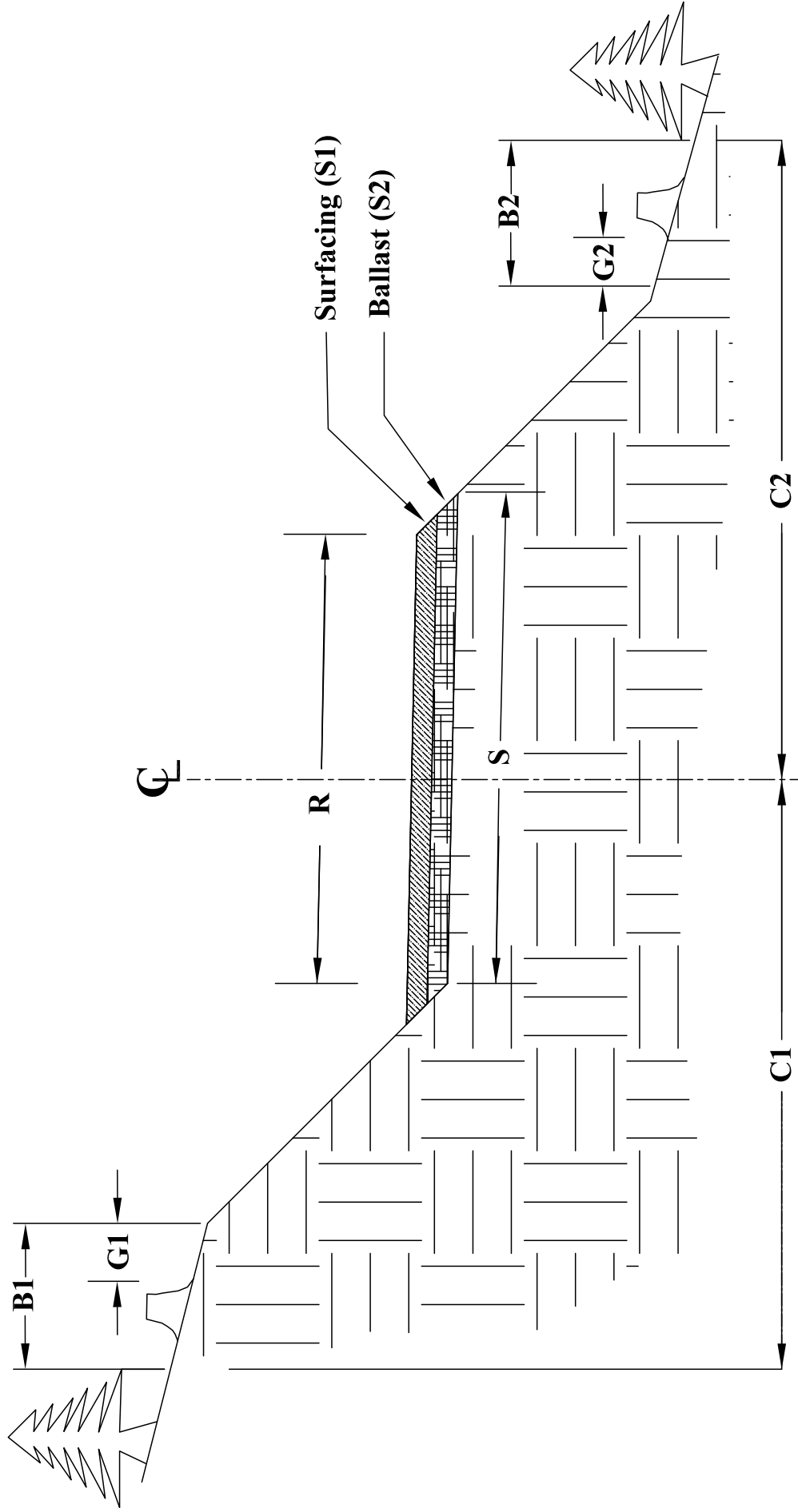
50' taper

50' taper

1. All vegetation within the brushing limits shall be cut to within 8" of the ground, unless otherwise directed by the contract administrator.
2. All brush, trees, limbs, etc. shall be removed from the road surface and ditchline.
3. All debris that may roll or migrate into the ditchline shall be removed.

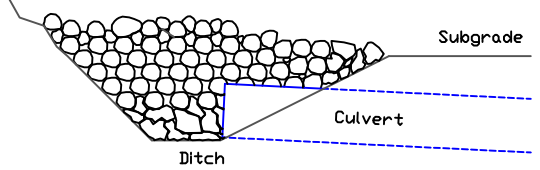
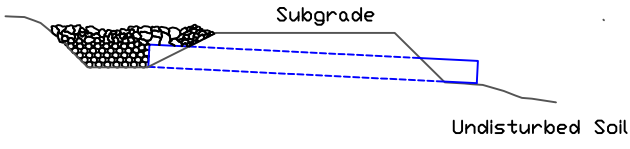
# OUTSLOPED ROAD CROSS-SECTION

(not to scale)



# CULVERT AND DRAINAGE SPECIFICATIONS DETAIL - D1

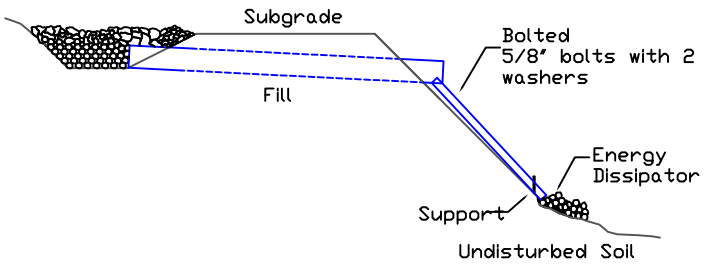
## HEADWALLS



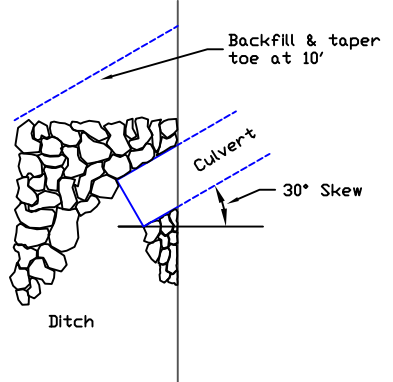
Headwall to be constructed of material that will resist erosion

## FLUME

Use where ground conditions are uniform, providing for stability of flume.

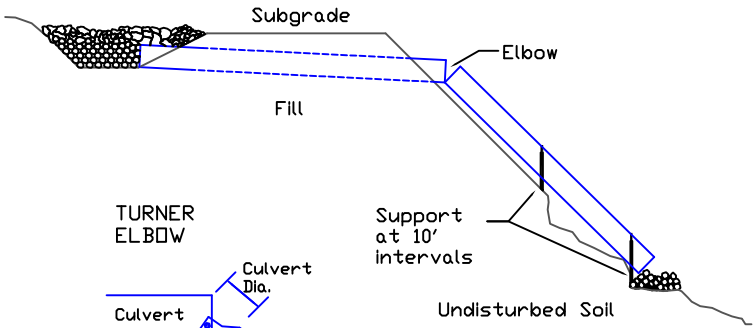


## PLAN VIEW



## DOWNSPOUT

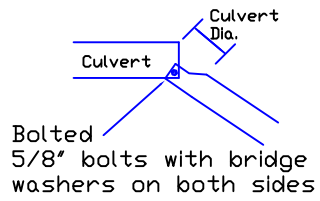
Use where ground conditions are irregular.



## CULVERT BACKFILL & BASE PREPARATION (For Culverts Less Than 36")

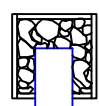
Minimum Cover	Minimum Bed Depth	Min. Trench Width	Nominal Diameter
A	B	C	D
12"	6"	36"	18"
12"	6"	42"	24"
12"	6"	48"	30"
12"	6"	54"	36"

## TURNER ELBOW

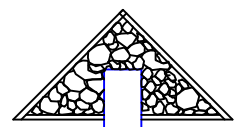


DISSIPATOR SPEC'S  
Size In Culvert Diameters

Area	2 X 2
Depth	1
Aggregate	1/3

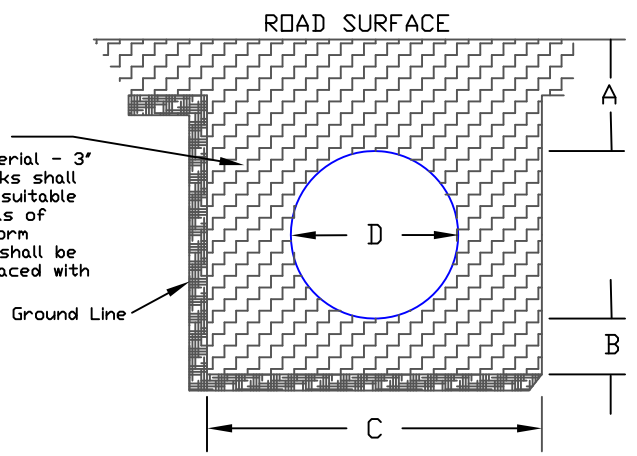


Level



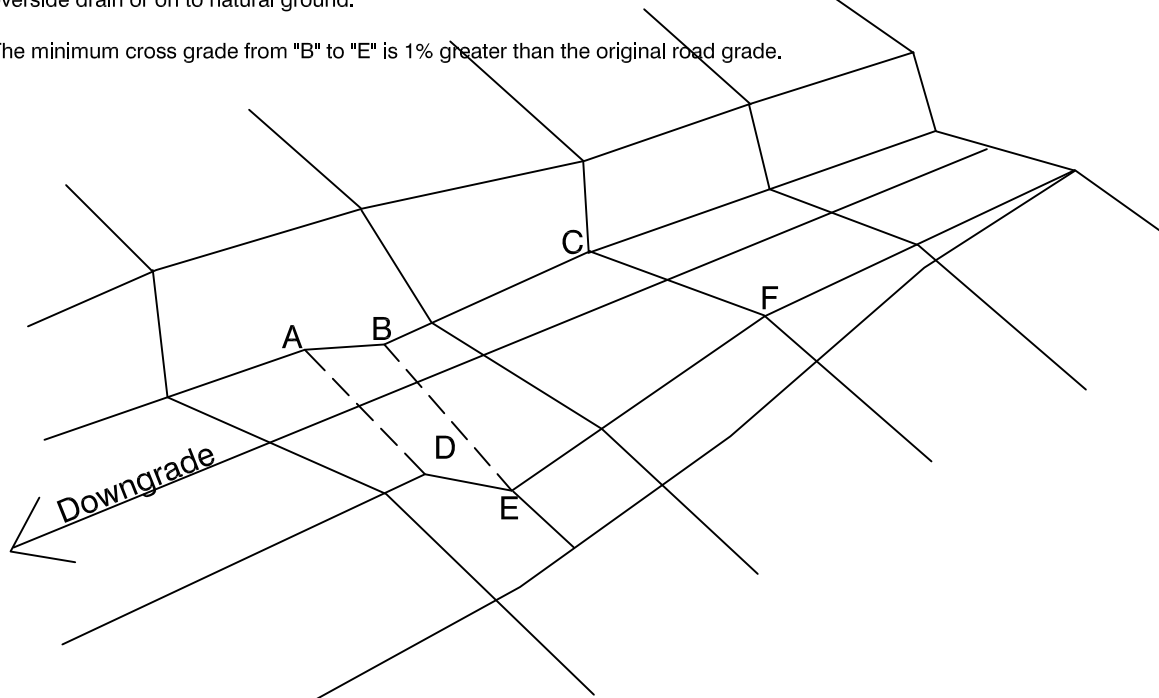
Side Hill

**BEDDING MATERIAL:**  
Use granular material - 3" minus. Large rocks shall be replaced with suitable material. Materials of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill.

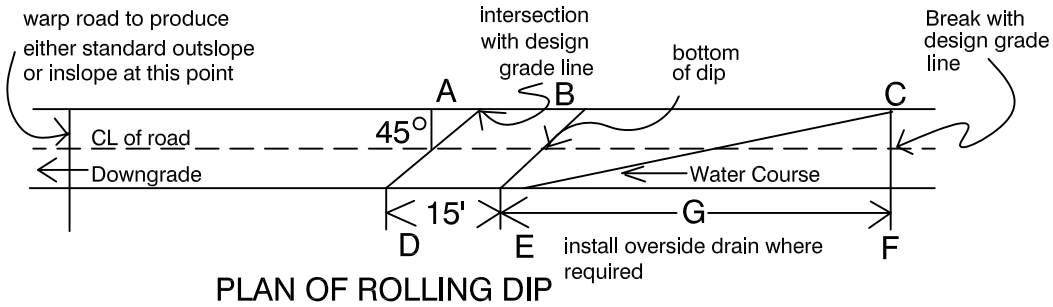


Note: Plan of dip shown is for an outsloped rolling dip. Dips may be either insloped or outsloped. When insloped, dips shall discharge into a culvert, drop inlet, overside drain, or drainage ditch. When outsloped, they shall discharge into an overside drain or on to natural ground.

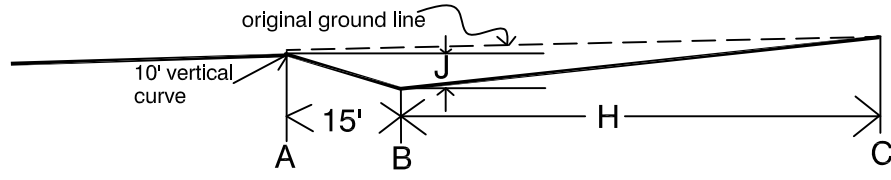
The minimum cross grade from "B" to "E" is 1% greater than the original road grade.



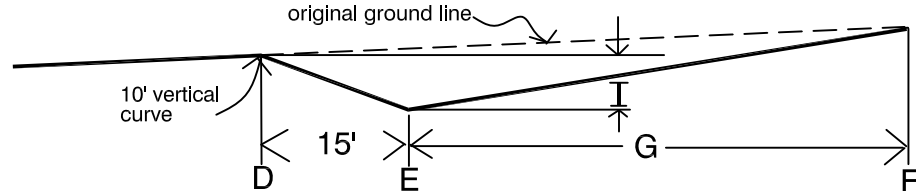
### STANDARD ROLLING DIP - D5 SKEW 45°



PLAN OF ROLLING DIP



ROAD PROFILE ALONG A-B-C OF ROLLING DIP

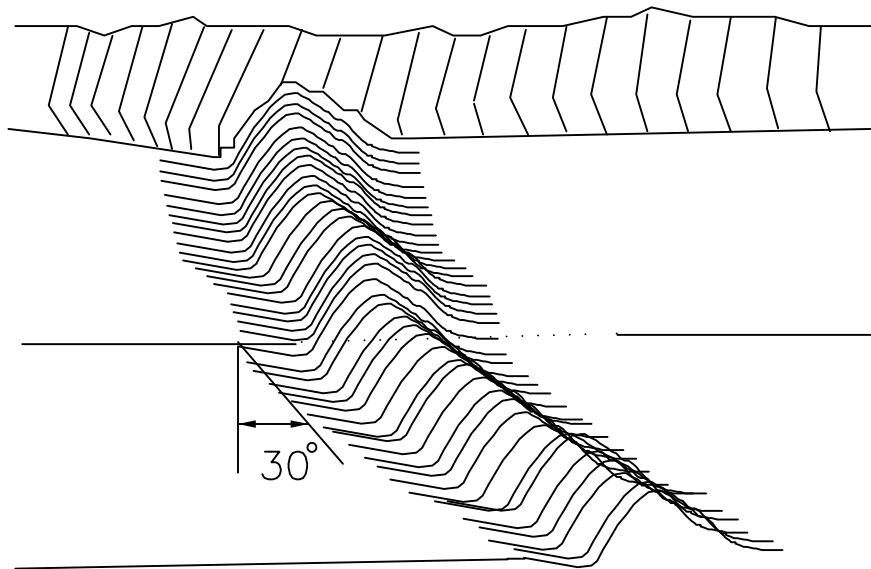


ROAD PROFILE ALONG D-E-F OF ROLLING DIP

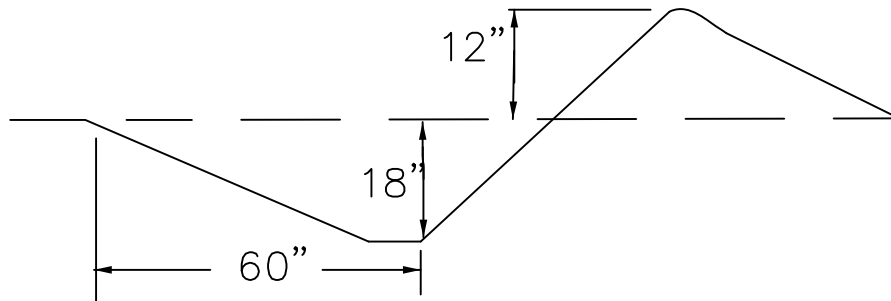
TABLE OF ROLLING DIP DEMENSIONS

Width	12'	14'	16'	ALL		
Dimension	G			H	I	J
Road Grade 6% and under	60	61	62	52	.8	0.3
8%	70	71	72	62	1.0	0.2
10%	80	81	82	72	1.1	0.1

### Top View

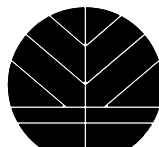


### Side View



1. Waterbar construction for forest roads with little or no traffic.
2. Specifications are average and may be adjusted to conditions.
3. Bottom of waterbar must be outsloped to ensure proper drainage.
4. Rock outlet if steep fill slope is present.

## Driveable Waterbar Detail



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**

Northeast Region  
 Colville, Washington

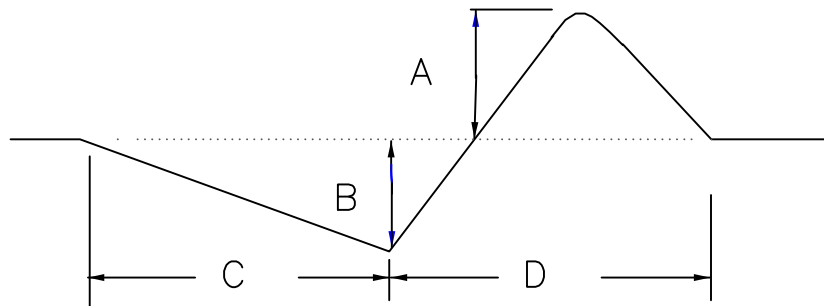
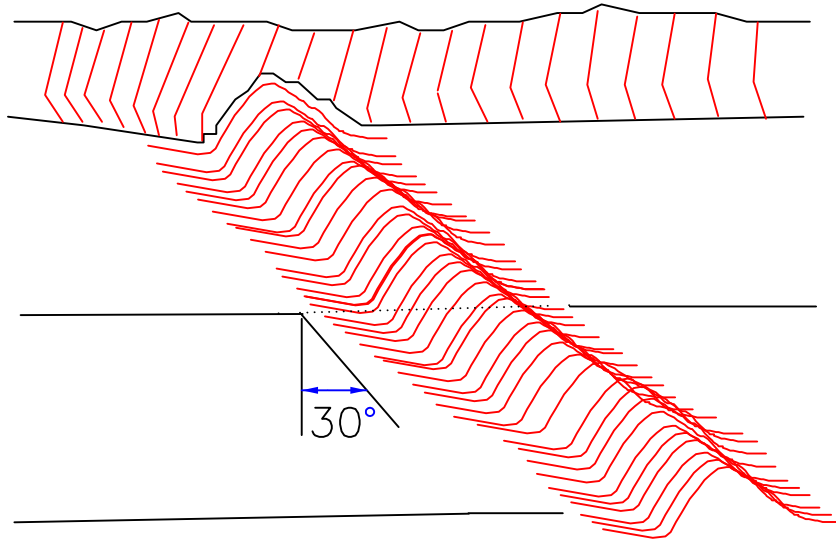
Designed By: Stash Slabinski 9/06/05

Drawn By: Stash Slabinski 9/06/05

Revised: 12/17/07

1 OF 1

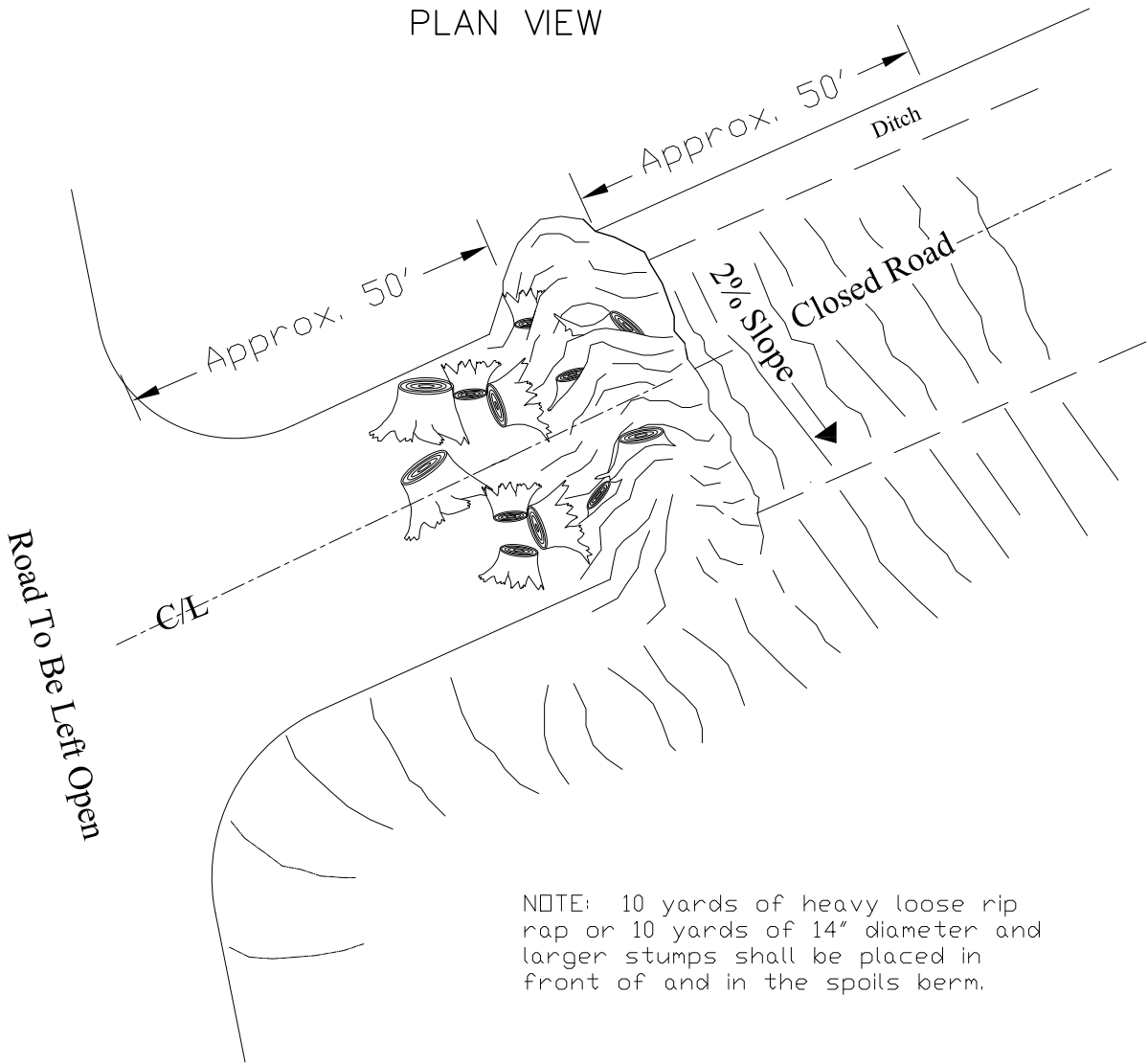
# NON DRIVABLE WATERBAR DETAIL-D6



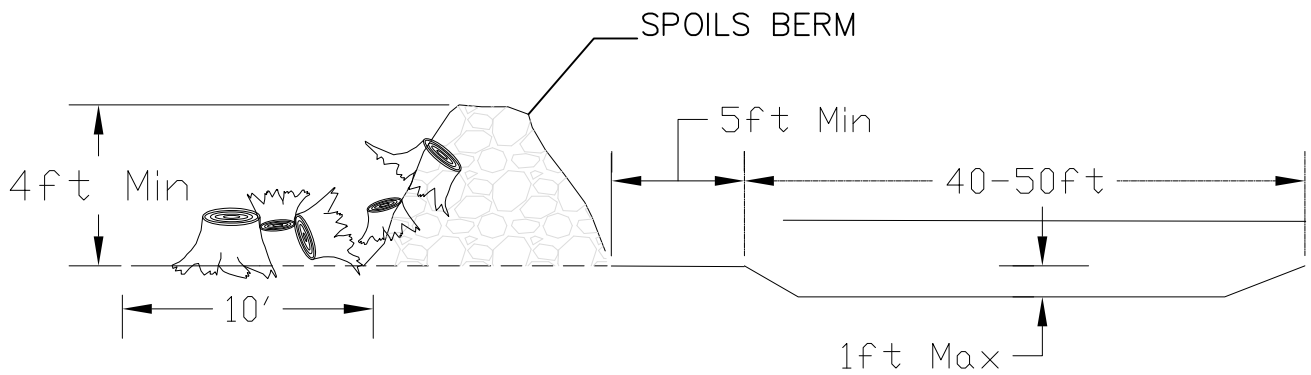
1. Waterbar construction for forest roads Specifications are average and may be adjusted to conditions.
2. A is the berm height 24" to 30".
3. B is the depth, minimum 18"; maximum 24".
4. C and D should be 36" to 48".
5. Waterbar must be keyed into bank, and the bottom of the waterbar must be outsloped for proper drainage.
6. Rock outlet if steep fill slope is present.

# SPOILS BERM DETAIL

## PLAN VIEW



NOTE: 10 yards of heavy loose rip rap or 10 yards of 14" diameter and larger stumps shall be placed in front of and in the spoils berm.



Note:  $\frac{1}{3}$  of stumps or rip rap shall be partially buried in the spoils berm and/or road surface.