



**Oregon Department of Forestry**  
 2600 State St Salem OR 97310

PART III: EXHIBITS

**EXHIBIT B**

**TIMBER SALE OPERATIONS PLAN**

(See page 2 for instructions)

Date Received by State: \_\_\_\_\_

(5) State Brand Information ( Complete)

(1) Contract Number: SW-341-2020-GF8919-01

(2) Sale Name: GM GNA

(3) Contract Expiration Date: 10/31/2024

(4) Purchaser Name: \_\_\_\_\_

(6) State Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(7) Purchaser Representatives:

<u>Name</u>	<u>Circle One</u>	<u>Phone No.</u>	<u>Cell No.</u>	<u>Alt Phone</u>
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			
	Logging Projects All			

(8) Name of Subcontractors and Start Dates:

<u>Project No.</u>	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Completion Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>

	<u>Subcontractor Name.</u>	<u>Start Date</u>	<u>Cell No.</u>	<u>Alt Phone</u>
FELLING				
YARDING				

(9) Comments:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(10) Operations Map: Attach a copy of timber sale Exhibit A or other suitable map which plainly shows the items listed on the instruction sheet.



**Oregon Department of Forestry**

2600 State St Salem OR 97310

PART III: EXHIBITS

**EXHIBIT B**







**INSTRUCTION SHEET FOR OPERATIONS PLAN**

**SUBMIT ONE COPY OF PLAN STATE**

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

**Explanation of Item No.(from Page 1)**

- (5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.
- (6) The contract requires you to have a designated representative available on the sale area or work location who is authorized to receive in your behalf any notice or instruction given by STATE and to take action in regard to performance under the contract. If logging and project work is widely separated, a representative is required for each.
- (7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.
- (8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not Known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.
- (9) Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
  2. Locations of spur roads planned for construction, other than required by the timber sale contract. Provide spur road specifications
  3. Locations of proposed tractor yarding roads. Show if and how marked on the ground.
  4. Locations of temporary stream crossings.
  5. List the sequence of performing project work.
  6. Location of rock sources - attach pit development plans.

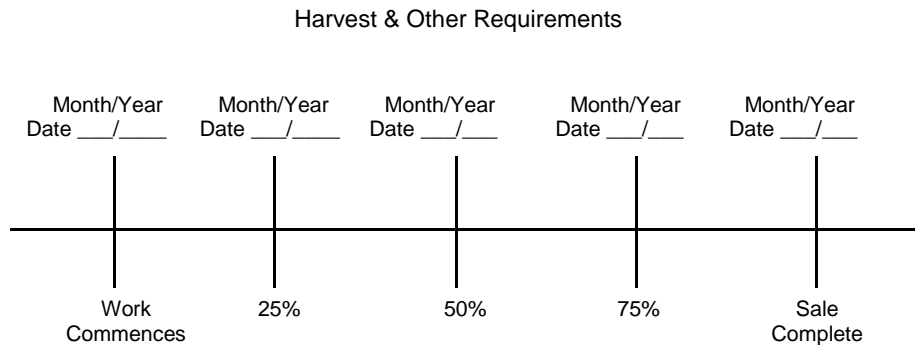
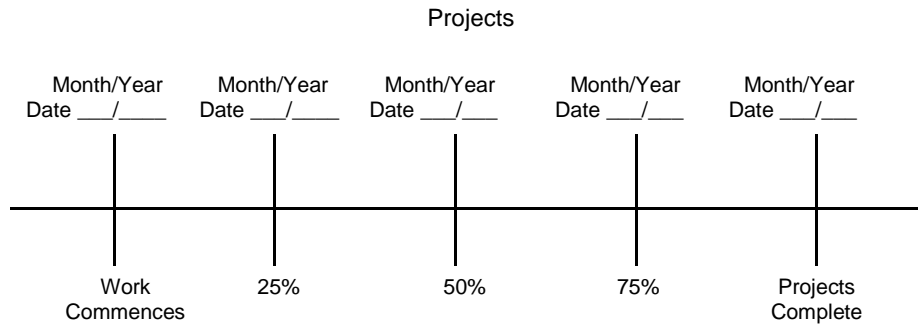
	1	Cable Landing, with numbers for sequence.
	A	Tractor Landing with alphabetical sequence.
		Approximate setting boundary.
		Spur truck roads.
		Tractor yarding roads.
		Temporary stream crossings.



**Oregon Department of Forestry**  
 2600 State St Salem OR 97310  
 PART III: EXHIBITS  
**EXHIBIT B**  
**OPERATIONS PLAN**

**Completion Timeline**

Indicate on the appropriate timeline below, the dates by which you plan to complete the work as required under this contract. The purpose of this section is to develop a plan that will ensure you complete the work as required, and meet the interim completion date(s) and contract expiration date. This plan is incorporated and made a part of the contract. When, in the opinion of STATE, operations are not commencing in a manner that meets the intent of this plan, you may be placed in violation of contract and your operations suspended until an amended plan is submitted and approved by STATE.



The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASER's must comply with all applicable state, federal, and local laws.

PURCHASER's compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.

APPROVED; Date: \_\_\_\_\_

SUBMITTED BY:  
PURCHASER

STATE OF OREGON - DEPARTMENT OF  
FORESTRY

\_\_\_\_\_  
Title \_\_\_\_\_

\_\_\_\_\_  
Title \_\_\_\_\_

# PART III: EXHIBITS

State Timber Sale Contract  
No. SW-341-2020-GF8919-01  
GM GNA

EXHIBIT B

629-Form 341-203  
Revised 5/18

## OREGON DEPARTMENT OF FORESTRY

### TIMBER SALE OPERATIONS PLAN

(See Page 2 for instructions)

Date Received by STATE: \_\_\_\_\_

(5) State Brand Information (complete):

(1) Contract No.: SW-341-2020-GF8919-01



(2) Sale Name: GM GNA

(3) Contract Expiration Date: 10/31/2024

Project Completion Dates: 10/31/2020

(4) Purchaser: \_\_\_\_\_

(6) Purchaser Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Projects: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Email: _____

(7) State Representatives:

Projects: _____	Phone: _____	Cell/Other Phone: _____	Email: _____
Logging: _____	Phone: _____	Cell/Other Phone: _____	Email: _____

(8) Name of Subcontractors & Starting Dates:

Projects: No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
No(s) _____ - _____	Date: _____	Phone: _____
Logging: Felling _____	Date: _____	Phone: _____
Yarding: _____	Date: _____	Phone: _____

(9) Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(10) Operations Map: Attach a copy of timber sale Exhibit A or other suitable map which plainly shows the items listed on the instruction sheet.

EXHIBIT B

INSTRUCTION SHEET FOR OPERATIONS PLAN

**SUBMIT ONE COPY OF PLAN TO STATE**

Operations shall be limited to the work shown in the plan until a revised plan or supplemental plan is submitted covering additional work. Compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act. If STATE has prepared a required Forest Practices Act (FPA) "Written Plan" for operations, PURCHASER shall comply with all provisions of the Written Plan.

**Explanation of Item No. (from Page 1)**

- (5) All sales require you to use a brand furnished by STATE. If the State brand has not been assigned when the plan is submitted, it will be furnished and assigned later. Complete drawing. If more than one brand is assigned to the sale, complete both drawings.
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- (7) The STATE representative will be designated when your plan is approved and is the person who will inspect and issue instructions regarding performance.
- (8) Show names of subcontractors to be used for any or all phases of the operations. If subcontractors are not known, or are changed later, give notification to the STATE representative prior to commencement of work by subcontractor.  
  
Show projected dates for commencement of both projects and logging. If projected dates need to be changed at a later date, notification must be given to the STATE representative by supplemental plan or otherwise, prior to commencement of such operations.
- (10) The STATE representative will furnish extra copies of Exhibit A of the contract for your use in preparing the operations map. The map shall use the following legend and show:
  - 1. Landing locations, approximate setting boundaries, and probable sequence of logging the settings. Number the settings in sequence.
  - 2. Locations of spur roads planned for construction, other than those required by the timber sale contract. Provide spur road specifications.
  - 3. Location of proposed tractor yarding roads. Show if and how marked on the ground.
  - 4. Location of temporary stream crossings.
  - 5. List the sequence of performing project work.
  - 6. Location of rock sources - attach pit development plans.



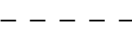



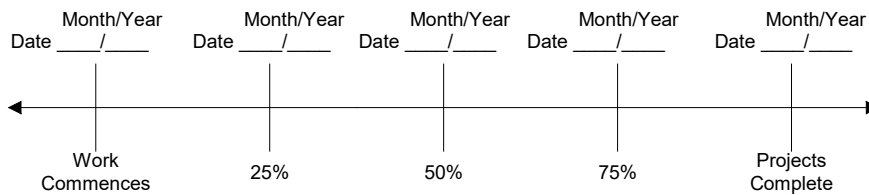
	Cable Landing, with numbers for sequence.
	Tractor Landing with alphabetical sequence.
	Approximate setting boundary.
	Spur truck roads.
	Tractor yarding roads.
	Temporary stream crossings.

EXHIBIT B  
 OPERATIONS PLAN

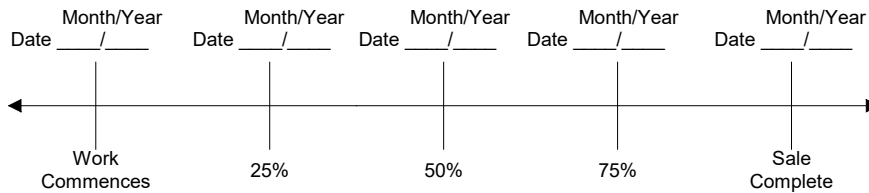
**Completion Timeline**

Indicate on the appropriate timeline below, the dates by which you plan to complete the work as required under this contract. The purpose of this section is to develop a plan that will ensure you complete the work as required, and meet the interim completion date(s) and contract expiration date. This plan is incorporated and made a part of the contract. When, in the opinion of STATE, operations are not commencing in a manner that meets the intent of this plan, you may be placed in violation of contract and your operations suspended until an amended plan is submitted and approved by STATE.

**Projects**



**Harvest & Other Requirements**



**The Federal Endangered Species Act (ESA) prohibits a person from taking any federally listed threatened or endangered species. Taking under the federal ESA may include alteration of habitat. STATE's approval of this plan does not certify that PURCHASER's operation under the plan is lawful under the federal ESA. As provided in the timber sale contract, PURCHASERS must comply with all applicable state, federal, and local laws.**

**PURCHASER's compliance with this plan is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.**

APPROVED: Date: \_\_\_\_\_

SUBMITTED BY:  
 PURCHASER

STATE OF OREGON - DEPARTMENT OF FORESTRY

\_\_\_\_\_  
 Title \_\_\_\_\_

\_\_\_\_\_  
 Title \_\_\_\_\_

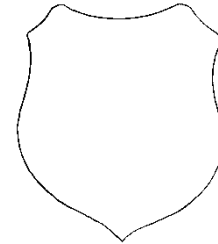
Original: Salem  
 cc: District File  
 Unit  
 Purchaser  
 Operator  
 (Purchaser Representative) \_\_\_\_\_

**EXHIBIT C – SAWMILL GRADE (WESTSIDE SCALE)**

**SCALING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION**

- (1) ORIGINAL REGISTRATION  Date \_\_\_\_\_  
 REVISION NUMBER \_\_\_\_\_  Date \_\_\_\_\_  
 CANCELLATION  Date \_\_\_\_\_
- (2) TO: \* \_\_\_\_\_  
 (Third Party Scaling Organization)
- (3) FROM: South Cascade Phone 541-726-3588  
 (State Forestry District)  
 Address 3150 Main St. Springfield, OR 97478
- (4) PURCHASER: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_

- (9) SALE NAME: GM GNA  
 COUNTY: Lane
- (10) STATE CONTRACT NUMBER: SW-341-2020-GF8919-01
- (11) STATE BRAND REGISTRATION NUMBER: \_\_\_\_\_
- (12) STATE BRAND INFORMATION (COMPLETE):



- (13) PAINT REQUIRED: YES   
 COLOR: Orange

(5) MINIMUM SCALING SPECIFICATIONS	
SPECIES	MINIMUM NET VOLUME
Conifers	10
Hardwoods	10

\* Apply minimum volume test to whole logs over 40' Westside

- (6) WESTSIDE SCALE: YES  NO   
 Use Region 6 actual taper rule. Logs over 40'.
- (7) Weight Scale Sample  YES

(14) SPECIAL REQUESTS (Check applicable)	
PEELABLE CULL (all species) .....	<input checked="" type="checkbox"/>
<b>NO DEDUCTIONS ALLOWED FOR MECHANICAL DAMAGE</b> .....	<input checked="" type="checkbox"/>
ADD-BACK VOLUME - Deductions due to delay .....	<input checked="" type="checkbox"/>
OTHER: _____	

(8) APPROVED SCALING LOCATIONS (as shown on the ODF Approved Locations web-site)	Species	Yard	Truck	Weight

- (15) REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operator's Name (Optional inclusion by District): \_\_\_\_\_

- (16) SIGNATURES:
- \_\_\_\_\_  
 Purchaser or Authorized Representative Date
- \_\_\_\_\_  
 State Forester Representative Date
- \_\_\_\_\_  
 State Forester Representative PRINT NAME

**Notify the District within one hour when branding or painting is inadequate for quick identification, the receipts are missing, not correctly or completely filled out, and/or when logs presented for scaling are impossible to scale accurately.**

**Distribution (See specific instructions on pg. 2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit**

**EXHIBIT C – SAWMILL GRADE**  
INSTRUCTIONS FOR FORM 343-307a (rev. 11/11)

- (1) Check appropriate box. REVISION NUMBER requires comments. CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.
- (2) Designate Third Party Scaling Organization (TPSO).

Columbia River Log Scaling & Grading Bureau  
P.O. Box 7002, Eugene, OR 97401  
Phone: (541) 342-6007 Fax: (541) 342-2631  
Email: [services@crls.com](mailto:services@crls.com)

Pacific Rim Log Scaling Bureau, Inc.  
8288 28<sup>th</sup> Court North East, Lacey, WA 98516  
Phone: (360) 528-8710 Fax: (360) 528-8718  
Email: [office@prlsb.com](mailto:office@prlsb.com)

Mountain Western Log Scaling & Grading Bureau  
P.O. Box 580, Roseburg, OR 97470  
Phone: (541) 673-5571 Fax: (541) 672-6381  
Email: [info@mwlsgb.com](mailto:info@mwlsgb.com)

Yamhill Log Scaling & Grading Bureau  
P.O. Box 709, Forest Grove, OR 97116  
Phone: (503) 359-4474 Fax: (503) 359-4476  
Email: [yamhill@attglobal.net](mailto:yamhill@attglobal.net)

Northwest Log Scalpers, Inc  
5526 NE 122<sup>nd</sup> Ave, Portland, OR 97230  
Phone: (503) 254-0600 Fax: (503) 408-0919  
Email: [info@nwlogscalpers.com](mailto:info@nwlogscalpers.com)

Pacific Log Scaling & Grading Bureau, Inc.  
P.O. Box 23939, Portland, OR 97281  
Phone: (503) 684-5599 Fax: (503) 639-4880  
Email: [PacLogScale@aol.com](mailto:PacLogScale@aol.com)

- (3) State District office, address and phone.
- (4) Enter Purchaser's business name, address, and phone number as it appears on the Contract.
- (5) Minimum Scaling Specifications.
- (6) Westside – Region 6 actual taper segment scale. Check Yes or No. Special Service Rules on file with TPSO. See: Segment Scaling and Grading of Long Logs -- All Species -- State Forestry Department Scaling Practices (Westside).
- (7) Weight Scale Sample – Check box if sale is to be a Weight Scale Sample. All specifics for handling, scaling and processing will be attached or explained in the Remarks section Item (15).
- (8) Show scaling locations only applicable to TPSO. Location name should appear as it does on the ODF Approved Scaling Location web site: [http://www.odf.state.or.us/DIVISIONS/management/asset\\_management/ScalingLocation.asp](http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp) Locations with scaling and processing directions specific to their location should be on a separate form. Species should be identified if not capable of receiving "all" species. Check appropriate box for either: yard, truck scale, or weight. Refer to the web site listed above for the locations approval status.
- (9) Enter sale name and county.
- (10) Enter sale Contract number.
- (11) Enter Oregon's State Brand Registry Number **(REQUIRED)**.
- (12) Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (15).
- (13) Check yes for Paint Required and designate "Orange" for color. Non required removal volumes may sometimes require blue paint.
- (14) Special Requests. These are requests that will be applied to ODF timber sales. All boxes applicable to the timber sales designated in the Exhibit C form must be "marked." If "Other" is indicated, it must contain a description and any necessary comments.
- (15) Use this space to designate any weight conversion factors, per load volumes, weight scale sample instructions or any other explanations to clarify scaling, processing and/or mailing requirements. If additional scaling locations are approved, revise original or current form showing all (old and new) locations. Check REVISION box at top of form and explain under remarks. Route as indicated.
- (16) Require purchaser to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

**Salem Distribution Instructions:** Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive <\\WP0DFILL01\Transfer\ScalingInstructions> or e-mailed directly to [scaling@odf.state.or.us](mailto:scaling@odf.state.or.us). Scaling instructions for each brand should be scanned separately, for each approved TPSO.

**Distribution (See specific instructions on pg. 2): ORIGINAL: Salem / COPIES: TPSO, Approved Scaling Location, Purchaser, District, Mgmt. Unit**



### EXHIBIT C – PULP SORT

#### PROCESSING INSTRUCTIONS -- LOCATION APPROVAL -- BRAND INFORMATION

(1) ORIGINAL REGISTRATION  Date \_\_\_\_\_  
REVISION NUMBER \_\_\_\_\_  Date \_\_\_\_\_  
CANCELLATION  Date \_\_\_\_\_

(9) SALE NAME: GM GNA  
COUNTY: Lane

(2) TO: \_\_\_\_\_  
(Approved Pulp Processing Facility)

(10) STATE CONTRACT NUMBER: SW-341-2020-GF8919-01

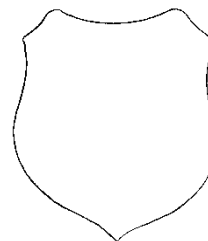
(3) FROM: South Cascade Phone 541-726-3588  
(State Forestry District)  
Address 3150 Main St. Springfield, OR 97478

(11) STATE BRAND REGISTRATION NUMBER \_\_\_\_\_

(12) STATE BRAND INFORMATION: (COMPLETE BELOW)

(4) PURCHASER: \_\_\_\_\_

(5) Scaling Bureau (TPSO) Processing Weight receipts:



Mailing Address: \_\_\_\_\_  
Phone Number: \_\_\_\_\_

(6) **STATE Definition of Approved Pulp Sort:**

- Top portion of the tree (tops).
- All logs with a diameter (Big End) greater than 8 inches marked with blue paint.

(13) REMARKS: \* \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(7) PULP FACILITY PROCESSING INSTRUCTIONS:

- Pulp loads shall be weighed in lieu of scaling.
- One Ton = 2000 lbs (Short Ton).
- Pulp loads shall have a yellow Log Load Receipt attached.
- Gross weight and truck tare weight for each load shall be machine printed on the weight receipt.
- Weigher shall sign the weight receipt.
- Weigher shall record the Log Load Receipt number on the weight receipt.
- Weigher shall attach the Weight receipt to the Log Load Receipt and mail them weekly to the TPSO processing the Weight receipt.

Operator's Name (Optional inclusion by District):  
\_\_\_\_\_

(8) TPSO PROCESSING INSTRUCTIONS

- Mail to ODF weekly.

(14) SIGNATURES:

_____	_____
Purchaser or Authorized Representative	Date
_____	_____
State Forester Representative	Date
_____	_____
State Forester Representative PRINT NAME	

**Notify the District within one hour when branding is inadequate for quick identification, the logs are marked with orange paint, the receipts are missing, not correctly or completely filled out, and/or logs do not meet the specifications of the STATE definition of Approved Pulp Sort.**

**Distribution: ORIGINAL: Salem / COPIES: TPSO, Approved Pulp Processing Location, Purchaser, District, Mgmt. Unit**

**EXHIBIT C – PULP SORT**  
INSTRUCTIONS FOR FORM 343-307b (rev. 11/11)

- (1) **Must Complete.** Check appropriate box. REVISION NUMBER requires comments in the Remarks Section (13). CANCELLATION requires logging and hauling to be complete, recall branding hammers, date and sign where indicated, write diagonally across page "CANCEL", and send to TPSO.
- (2) **Must Complete.** Approved Pulp Processing Facility. Write in as written in the Approved Log Delivery Location [http://www.odf.state.or.us/DIVISIONS/management/asset\\_management/ScalingLocation.asp](http://www.odf.state.or.us/DIVISIONS/management/asset_management/ScalingLocation.asp)
- (3) **Must Complete.** State Forestry District and District Phone Number.
- (4) **Must Complete.** Purchaser's business name as it appears on the Contract.
- (5) **Must Complete.** Third Party Scaling Organization that will be processing the weight tickets, mailing address, and phone number.

Columbia River Log Scaling & Grading Bureau  
P.O. Box 7002, Eugene, OR 97401  
Phone: (541) 342-6007 Fax: (541) 342-2631  
Email: [services@crls.com](mailto:services@crls.com)

Pacific Rim Log Scaling Bureau, Inc.  
8288 28<sup>th</sup> Court North East, Lacey, WA 98516  
Phone: (360) 528-8710 Fax: (360) 528-8718  
Email: [office@prlsb.com](mailto:office@prlsb.com)

Mountain Western Log Scaling & Grading Bureau  
P.O. Box 580, Roseburg, OR 97470  
Phone: (541) 673-5571 Fax: (541) 672-6381  
Email: [info@mwlsgb.com](mailto:info@mwlsgb.com)

Yamhill Log Scaling & Grading Bureau  
P.O. Box 709, Forest Grove, OR 97116  
Phone: (503) 359-4474 Fax: (503) 359-4476  
Email: [yamhill@attglobal.net](mailto:yamhill@attglobal.net)

Northwest Log Scalars, Inc.  
5526 NE 122<sup>nd</sup> Ave, Portland, OR 97230  
Phone: (503) 254-0600 Fax: (503) 408-0919  
Email: [info@nwlogscalars.com](mailto:info@nwlogscalars.com)

Pacific Log Scaling & Grading Bureau, Inc.  
P.O. Box 23939, Portland, OR 97281  
Phone: (503) 684-5599 Fax: (503) 639-4880  
Email: [PacLogScale@aol.com](mailto:PacLogScale@aol.com)

- (6) **Must Complete.** Big end log not to exceed \_\_\_\_\_ inches. Big end of log is not to exceed 2 inches greater than the minimum removal specifications in the contract. Example: Minimum removal specifications 6 inches and 20 board feet, then the Big end of log not to exceed 8 inches. When conifer and hardwood removal specifications are different, use the smaller removal diameter to determine this specification.
- (9) **Must Complete.** Enter sale name and county. If more than one county write in all the counties that the sale is located in.
- (10) **Must Complete.** Enter sale Contract number.
- (11) **Must Complete.** Enter Oregon's State Brand Registry Number (**REQUIRED**).
- (12) **Must Complete.** Show brand assigned to timber sale. One brand only. If more than one brand is assigned to the sale: (1) make a separate form for each brand and (2) on each form, explain and show other brand(s) in the Remarks section Item (13).
- (13) Use this section to list any special instructions or the reason for any revisions in section item (1).
- (14) **Must Complete.** Purchaser required to sign and date completed form in addition to State Forester Representative, sign and print name on the form.

**Salem Distribution Instructions:** Original will be mailed to Salem after it is electronically scanned and placed in the Salem transfer drive \\WPODFILL01\Transfer\ScalingInstructions or e-mailed directly to [scaling@odf.state.or.us](mailto:scaling@odf.state.or.us) . Scaling instructions for each brand should be scanned separately, for each approved TPSO.

State Timber Sale Contract  
No. SW-341-2020-GF8919-01  
GM GNA

EXHIBIT D

SEE THE FOLLOWING PAGES FOR DETAILS

TABLE PURSUANT TO C5.12# - USE OF ROADS BY PURCHASER (06/1999)

Restricted Road List					
Road Number	Road Name	Termini		Map Legend	Description of Restrictions
		From	To		
1900000	Aufderheide Drive	1985000	Hwy 126	U/R	/4/,/5/
1985000	Green Mtn.	1986000	1900000	R	/1/,/2/
1986000	Rider Creek	Unit 10a	MP 3.25	U/R	/1/,/2/
1986000	Rider Creek	MP 3.25	1985000	R	/1/,/2/
1986118		End	1986000	R	/1/,/2/,/3/
1986120		End	1986000	R	/1/,/2/,/3/
1986124		End	1986000	R	/1/,/2/,/3/
1986125		Private Boundary	1986000	U/R	/1/,/2/
1986132		Unit 10a	1986000	R	/1/,/2/
1986138		End	1986000	U/R	/1/,/2/

/1/ Road is unsuitable for hauling prior to all prehaul road maintenance requirements identified in C5.31# being completed and accepted.

/2/ These roads have limited strength and are likely to be damaged if used when adverse conditions exist in the roadbeds. Use of roads may occur during the wet season (approximately **November 1 to May 31**) when placement of additional aggregate or other damage and erosion control mitigating measures are in place. These additional measures will be planned by the purchaser in a manner to support haul during poor weather conditions and at the expense of the purchaser. Purchaser is required to monitor road conditions and erosion control measures and perform additional mitigation work if needed. When necessary, haul shall be suspended during periods of heavy rainfall to prevent sedimentation, if roads use is causing rutting, ponding, failure of drainage structures or other actions that increase sediment delivery to protected stream courses.

/3/ Haul will be restricted during the wet weather season, unless waived by Contracting Officer. The wet weather season is typically **November 1 to May 31**.

/4/ Haul on 1900 is not allowed evenings or weekends or during long holiday periods, unless waived by Contracting Officer.

/5/ Use of roads by purchaser with loads exceeding Oregon State legal loading for an STP (Single Trip Permit) that will cross bridges under FS jurisdiction shall apply for a Bridge Overload Use permit.

**Title and Date of Governing Road Rules Document:**

Willamette NF Road Rules  
Commercial Road Rules

December 2016  
Effective Date

**C5.31# - ROAD MAINTENANCE REQUIREMENTS.** (7/01) Purchaser shall maintain roads in accordance with the following Contract Road Maintenance Requirements Summary:

**Contract Road Maintenance Requirements Summary**

Road	Termini		Miles	Applicable Prehaul Road Maintenance Specifications											
	From	To		T-803	T-811	T-812	T-813	T-831	T-834	T-836	T-838	T-839	T-842	T-854	T-891
1986132	Unit 10a	JCT 1986	0.08		P		P					P			P
1986138	End	JCT 1986	0.10										P		P
1986125	End	1986	0.47									P			P
1986125	WEST Y INT.	JCT 1986	0.11									P			P
1986124	End	JCT 1986	0.20										P		P
1986120	End	JCT 1986	0.12										P		P
1986118	End	JCT 1986	0.04										P		P
1986	Unit 10a	1985	5.87			P	P				P				P
1985	JCT 1986	JCT 1900	1.33		P	P	P				P				P
1900	JCT 1985	Hwy 126	8.38												

P = Purchaser Item, D = Deposit to Forest Service, D3 = Deposit to Third Party

Road	Termini		Miles	Applicable During Haul Road Maintenance Specifications											
	From	To		T-803	T-811	T-812	T-813	T-831	T-834	T-836	T-838	T-839	T-842	T-854	T-891
1986132	Unit 10a	JCT 1986	0.08				P					P			P
1986138	End	JCT 1986	0.10										P		P
1986125	End	1986	0.47		P							P			P
1986125	WEST Y INT.	JCT 1986	0.11		P							P			P
1986124	End	JCT 1986	0.20										P		P
1986120	End	JCT 1986	0.12										P		P
1986118	End	JCT 1986	0.04										P		P
1986	Unit 10a	1985	5.87		P	P	P				P				P
1985	JCT 1986	JCT 1900	1.33		P	P	P				P				P
1900	JCT 1985	Hwy 126	8.38					D							

P = Purchaser Item, D = Deposit to Forest Service, D3 = Deposit to Third Party

Road	Termini		Miles	Applicable Post Haul Road Maintenance Specifications											
	From	To		T-803	T-811	T-812	T-813	T-831	T-834	T-836	T-838	T-839	T-842	T-854	T-891
1986132	Unit 10a	JCT 1986	0.08		P							P			P
1986138	End	JCT 1986	0.10										P		P
1986125	End	1986	0.47		P							P			P
1986125	WEST Y INT.	JCT 1986	0.11		P							P			P
1986124	End	JCT 1986	0.20										P		P
1986120	End	JCT 1986	0.12										P		P
1986118	End	JCT 1986	0.04										P		P
1986	Unit 10a	1985	5.87		P						P				P
1985	JCT 1986	JCT 1900	1.33		P						P				P
1900	JCT 1985	Hwy 126	8.38												

P = Purchaser Item, D = Deposit to Forest Service, D3 = Deposit to Third Party

ROAD MAINTENANCE REQUIREMENTS SPECIFICATION TABLE PURSUANT TO  
C5.31# - ROAD MAINTENANCE REQUIREMENTS (7/01)

1 Road No. and Termini	2 Special Project Specifi- cation	3 Travel Way		4 Brushing And Log Out	5 Surfacing	6 Dust Abatement			7 Seasonal Mainte- nance	8 Snow Removal		9 Post Haul	
		Width	Cross Slope			Comp	Product	Rate		Width	Snow Removal	Block	Treat
<u>1900000</u> 1985000 To Hwy 126													
<u>1985000</u> 1986000 To 1900000	T-811 T-812 T-813 T-836 T-891	EX	AI	B	200 CY 1-1/2" minus, as staked by FS	Water**	0.5 Gal. per Sq. Yd.	EX	T-836				PR
<u>1986000</u> Unit 10a Boundary. To MP 3.25	T-811 T-836 T-891	EX	AI	B	4 Ft. LEFT & Right, OPT				T-836				PR
<u>1986000</u> MP 3.25 To 1985000	T-811 T-813 T-836 T-891	EX	AI	B	480 CY 1-1/2" minus, as staked by FS	Water**	0.5 Gal. per Sq. Yd.	EX	T-836				PR
<u>1986118</u> End of Rd. To 1986000	T-839 T-891	EX	AI	A	4 Ft. LEFT & Right, OPT				T-839			B*	PR W
<u>1986120</u> End of Rd. To 1986000	T-839 T-891	EX	AI	A	4 Ft. LEFT & Right, OPT				T-839			B*	PR W
<u>1986124</u> End of Rd. To 1986000	T-839 T-891	EX	AI	A	4 Ft. LEFT & Right, OPT				T-839			B*	PR W

<b>1986125</b> Private Boundary. To 1986000	T-838 T-891	EX	AI	B	4 Ft. LEFT & Right, OPT	20 CY 1-1/2" minus, as staked by FS				T-838			PR
<b>1986132</b> Unit 10a Boundary To 1986000	T-838 T-891	EX	AI	B	4 Ft. LEFT & Right, OPT					T-838			PR
<b>1986138</b> End of Rd. To 1986000	T-839 T-891	EX	AI	B	4 Ft. LEFT & Right, OPT					T-839		B*	PR W

\*Waterbar and berm placement to be staked by C.O.

\*\*Apply water as needed or when ordered by the Contracting Officer. Dust abatement applies to both rock and timber haul.

ROAD MAINTENANCE REQUIREMENTS SPECIFICATION CODES TABLE PURSUANT TO  
C5.31# - ROAD MAINTENANCE REQUIREMENTS (7/01)

<b>Column No.</b>	<b>Heading</b>	<b>Entry</b>	<b>Explanation</b>
	Any	Blank	Except as otherwise described, no entry indicates Purchaser is not authorized or required to perform the work item(s).
	Any	RC	This work requirement applies only when haul of sale related construction materials occurs.
2	Special Project Specification	Number	Entry indicates Special Project Specification which applies.
3	Travel Way	EX	Purchaser shall maintain the traveled way to the width existing upon entry, or at the completion of Specified Road work.
		Numbers	Purchaser shall maintain the traveled way to the standard width indicated by the entry, plus curve widening, in accordance with Section T-811. If required, the road template shall be shaped to this width and to the designated cross slope before haul and during recurring maintenance.
		IS, C, OS, F, or AI	Cross slopes are designated as: IS (Inslope), C (Crown), OS (Outslope), F (Flat), AI (As Is).
		A or B	If compaction is required.
4	Brush and Log Out	Numeric & R and or L	Purchaser shall remove brush for specified width on either or both the right (R) side or left (L) side of road.
		As Staked	Limits of brushing are as staked or marked in the field.
		OPT	Purchaser may use hand or mechanical means of brushing.
		H	Only hand brushing may be used.



ROAD MAINTENANCE REQUIREMENTS SPECIFICATION CODES TABLE PURSUANT TO  
C5.31# - ROAD MAINTENANCE REQUIREMENTS (7/01)

<b>Column No.</b>	<b>Heading</b>	<b>Entry</b>	<b>Explanation</b>
5	Surfacing	Aggregate Grading	Purchaser shall place surfacing on roads listed according to the grading indicated.
6	Dust Abatement	OPT	Product selection is Purchaser's choice from those listed in Section T-812.
		Product Abbr.	Unless otherwise agreed, Purchaser is restricted to product listed corresponding to the abbreviation shown in Section T-812; (i.e., LigS = Lignon Sulfonate) Application rates are estimated amounts.
		EX	Purchaser shall abate dust on the existing width
		Numbers	Purchaser shall abate dust to the width indicated by entry.
7	Seasonal Maintenance	W	Waterbars and/or crossditching shall be required prior to expected seasonal precipitation.
		B	Entrance barriers shall be installed by Purchaser prior to nonuse periods.
8	Snow Removal	TS	Snowplowing authorized for Purchaser's Operations without recreation access being provided per Section T-803 requirements.
		JU	Snowplowing authorized, but must provide for recreation joint use per Section T-803 requirements.
		Blank	Snowplowing is not authorized. Forest Service may authorize plowing by permit when not in conflict with other uses.
9	Post Haul	PR	PR denotes that work is Purchaser's Responsibility to perform.

**FOREST SERVICE SPECIFICATIONS LIST**

**GNA GM Timber Sale**

Road Number			1900	1985	1986	1986118	1986120	1986124	1986125	1986132	1986138
Location				---	---	---	---	---	---	---	---
Seg. Length (miles)			8.38	1.33	5.87	0.04	0.12	0.20	0.47	0.08	0.10
<b>Maint. Spec. Number</b>	<b>TITLE</b>	<b>Latest Revision Date</b>									
<b>T-803</b>	Snow Removal	2007									
<b>T-811</b>	Blading	2007		X	X						
<b>T-812</b>	Dust Abatement	2007		X	X						
<b>T-813</b>	Surfacing	2007		X	X						
<b>T-831</b> <sup>2</sup>	Ditch Maintenance	2007									
<b>T-832</b> <sup>2</sup>	Remove and End Haul Materials	2007									
<b>T-834</b> <sup>2</sup>	Drainage Structure Maintenance	2007									
<b>T-835</b> <sup>2</sup>	Roadway Drainage Maintenance	2007				X	X	X			X
<b>T-836</b>	Maintenance for Limited Use	2007		X	X						
<b>T-838</b>	Maintenance for High Clearance Use	2007							X	X	
<b>T-839</b>	Maintenance for Project Use	2007				X	X	X			X
<b>T-842</b>	Cutting Roadway Vegetation	2007									
<b>T-851</b>	Logging Out	2007									
<b>T-854</b>	Treatment and Disposal of Danger Trees	2007									
<b>T-891</b>	Water Supply and Watering	2007		X	X	X	X	X	X	X	X

**Notes:**

<sup>2</sup> -- These specifications are referenced by T-836, T-839, T-838, T-834

**T - 811 BLADING (10/07)**

811.01 Description

This work consists of surface blading the traveled way to a condition that facilitates traffic and provides proper drainage. Blading includes shaping the crown or slope of travel way, berms, and drainage dips in accordance with this specification. Compaction is required when shown on the ROAD LISTING.

811.02 Maintenance Requirements

- A. Timing - Perform surface blading during the contract period as often as needed to provide conditions stated for the maintenance level of the road.
- B. General
  - 1. 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, unless otherwise shown in the ROAD LISTING, to at least 1/2 inch per 1 foot of width, but not more than 3/4 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.
  - 2. Apply water during blading when sufficient moisture is not present to prevent segregation. Supply, haul, and apply water in accordance with Section T-891.
  - 3. Shape existing native rock or aggregate surfaced drainage dips to divert surface runoff to existing outlet devices, ditches, or discharge locations.
  - 4. 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.
  - 5. Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
NA

## C. Routine Blading

1. Conform to the dimensions SHOWN ON THE DRAWINGS or designated in the SUPPLEMENTAL SPECIFICATIONS upon completion of blading.
2. 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 or unless otherwise provided in the contract.

## D. Compaction

- 1 Roads requiring compaction will be included in the ROAD LISTING.
2. Unless Compaction Method B is designated in the ROAD LISTING, all traveled ways requiring compaction may be compacted by Method A. Compaction shall commence immediately following blading.

Compaction methods are:

Compaction Method A: Breaking track while operating equipment on the traveled way.

Compaction Method B: 7-10 ton pneumatic, steel, or equivalent vibratory roller, operated to cover the full width two (2) times.

E. Undercutting - Undercutting roadway back slope is not permitted.

## F. Intersections

At intersections, blade the roadbeds of side roads which are not closed or restricted from vehicular use to ensure smooth transitions.

Signing, cross ditching in the road surface (traveled way), earth berms, or other devices placed to discourage or eliminate use by passenger cars, are field evidence of road closure or restriction. Roads listed for work under Sections T-835, T-836, T-838, and T-839 shall be considered restricted.

Side roads listed for work under this Section are not restricted.

G. Cleaning of Structures - Do not allow materials resulting from work under this Section to remain on or in structures, such as bridges, culverts, cattle guards, or drainage dips.

H. Berms - Maintain existing berms to the condition of adjacent segments. Do not create new berms.

I. Smooth Blading - Smooth blading may be used as an interim measure to remove loose surfacing material from the wheel paths, and store removed materials in a recoverable windrow, until blade processing as described in this section is feasible.

Watering will not be required for smooth blading. Accomplish smooth blading without distorting the existing cross-slope or crown of the traveled way.

Move and store loose surfacing materials on the high side of super-elevated curves and sections with uniform inslope or outslope. In crowned sections, store the material on either or both sides as elected. Windrow and place stored materials to provide not less than 12 feet of smooth traveled way on one-lane segments, or 20 feet of smooth traveled way on two-lane segments, or segments with turnouts. Cut holes through windrows, which may collect water on the road, for drainage at least every 500 feet.

**T-812 - DUST ABATEMENT (10/07)**

## 812.01 Description

This work consists of applying dust palliatives on roads shown in the Road Listing.

## 812.02 Materials

The dust palliative materials are shown in the Road Listing, unless shown as Optional for Purchaser's election. If Optional is shown then the Purchaser may use any of the products listed below. Dust palliative materials shall meet the following requirements:

- A. Water (H2O) will be obtained from sources SHOWN ON THE DRAWINGS or listed in the SUPPLEMENTAL SPECIFICATIONS to Section T-891 Water Supply, unless otherwise approved by the Contracting Officer.
- B. Lignin Sulfonate (LIG S) Provide certification that the material meets the requirements of Subsection 725.20 of the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03)" and the Forest Service Supplemental Specification 725.20.
- C. Magnesium Chloride (MG CL2) Provide certification that that the material meets the requirements of Subsection 725.02 of the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP03) " and the Forest Service Supplemental Specification 725.02.
- D. Calcium Chloride Brine (CA CL2B). Provide certification that the material meets the requirements of Subsection 725.02 of the " Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP03) " and the Forest Service Supplemental Specification 725.02.
- E. Calcium Chloride Flake (CA CL2F). Provide certification that that the material meets the requirements of Subsection 725.02 of the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP03) " and the Forest Service Supplemental Specification 725.02.
- F. Bituminous dust palliatives. Manufacture materials specifically for dust abatement purposes which conform to the requirements of Section T-892 for each listed road in the Road Listing.

## 812.03 Methods

As shown in the SUPPLEMENTAL SPECIFICATIONS, Purchaser may utilize a variety of methods to decrease or eliminate the need for dust abatement.

## 812.04 Equipment

- A. Design, equip, and operate application equipment for spreading dust palliatives so that the material is uniformly applied at the rate and traveled way widths shown in the Road Listing.
- B. For bituminous palliatives provide equipment that heats and applies the bituminous material. Provide a bituminous distributor that is self-powered and mounted on pneumatic tires and equipped with a pump and circulating spray bar, a tachometer, pressure gauges, accurate volume measuring devices such as visual

volume dial or gauge calibrated to the tank, and a thermometer. Provide equipment which is a standard commercial type of proven performance.

- C. Accomplish dilution of dust palliatives within the application vehicle with the water source protected from contamination. Circulate the resulting mixture at least five (5) minutes to ensure uniform mixing prior to application.

#### 812.05 Maintenance Requirements

A. Limit water applications to abatement for hauling vehicles and provide at a frequency and rate which controls dust such that vehicle tail lights and turn signals remain visible. Vary rates of application as needed but remain low enough to avoid forming rivulets. Accomplish the abatement by sufficient frequency of application without saturating and softening the traveled way. Compacted or glazed road surface or wheel tracks may be loosened as needed for water penetration.

B. Apply all other dust palliatives at the rates and times agreeable to the Contracting Officer. The Road Listing shows the expected average application rate and may be varied to meet field conditions. Lignin Sulfonate, Magnesium Chloride, and Calcium Chloride Brine are listed as gallons per square foot of the undiluted product at fifty (50), thirty-three (33), and thirty-eight (38) percent respectively. Calcium Chloride Flake is listed in pounds per square foot at seventy-seven (77) percent concentration.

C. Apply bituminous dust palliatives only when the surface to be treated contains sufficient moisture to obtain uniform distribution of the dust palliative unless noted differently in the SUPPLEMENTAL SPECIFICATIONS.

D. Prior to initial application, when needed, the road will be bladed and shaped under Section T-811, Blading.

E. Required subsequent applications may be applied to the existing road surface without blading.

F. Dust palliatives will not be applied in a manner that spatters or mars adjacent structures or trees, or placed on or across cattle guards or bridges. Discharge dust abatement material only on roads approved by the Contracting Officer.

**T - 813 SURFACING (10/07)**

813.01 Description

This work consists of placing surface aggregate as DESIGNATED ON THE GROUND, or as ordered by the Contracting Officer. It includes preparing the area, furnishing, hauling, and placing all necessary materials and other work necessary to blend with the adjacent road cross section.

813.02 Materials

Materials will be Government-furnished when stated in the supplemental specifications.

Materials furnished by the Purchaser shall conform to the gradation and quality requirements of Section 703 of the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-03 U.S. Customary Units" and FS supplements to the FP-03.

All materials transported onto National Forest System land shall be free of invasive species of concern. Written documentation of methods used to determine the invasive species of concern free status of any and all materials furnished by the Purchaser shall be submitted to the Contracting Officer before transport of any materials onto National Forest System land.

The Contracting Officer shall have 5 days, excluding weekends and Federal holidays, to review the methods and inspect the materials after the required written documentation is provided by the Purchaser. After satisfactory review and inspection or after such 5 day period, the Purchaser may transport the material onto National Forest System land.

Material or methods appropriate for establishing invasive species of concern free status for the particular invasive species of concern are listed below.

Invasive Species of Concern and Acceptable Methods specific to this project:

Invasive Species of Concern	Acceptable Methods
NA	NA

813.03 Maintenance Requirements

- A. Thoroughly loosen the area to be surfaced to a minimum depth of 1 inch prior to placement of aggregate.
- B. Mixing and Placing

When scheduled coincidentally with work under Section T-811, and included in the SUPPLEMENTAL SPECIFICATIONS, mix surfacing and existing aggregate with water until a uniform mixture is obtained prior to final shaping and compaction.

Otherwise, spread the material on the prepared area in layers no more than 4 inches in depth. When more than one (1) layer is required, shape and compact each layer before the succeeding layer is placed. Upon completion, the surfacing shall reasonably conform to the adjacent cross section and provide smooth transitions in the road profile.

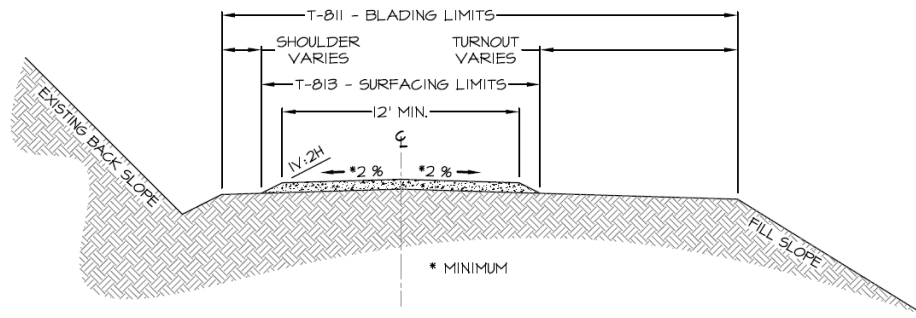


Compaction Methods

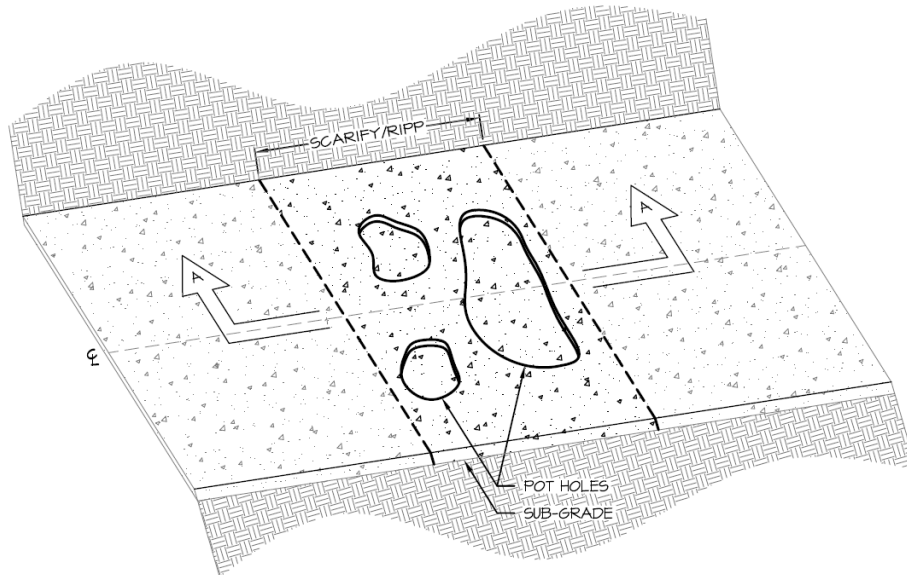
Compaction Method A: Breaking track while operating equipment on the traveled way.

Compaction Method B: 7-10 ton pneumatic, steel, or equivalent vibratory roller, operated to cover the full width two (2) times.

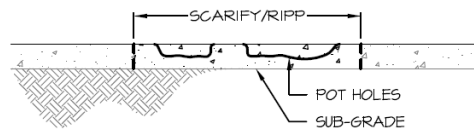
Either Method A or B may be used unless Method B is designated in the ROAD LISTING.



**BLADING & SPOT ROCK**  
TYPICAL  
 Not to Scale



**POT HOLE TREATMENT**  
TYPICAL  
 Not to Scale



**SECTION A - A**  
 Not to Scale

**NOTES:**

1. GRADING - CROWN ROADS WITH A 2% - 3% CROWN. FOR IN-SLOPE/OUT-SLOPE ROADS SLOPE WITH A 2% - 3% CROSS SLOPE OVER THE ENTIRE ROAD WIDTH. COMPACTION METHOD SHALL BE COMPLETED AS SHOWN ON C5.31# - ROAD MAINTENANCE REQUIREMENTS TABLE
2. SURFACING SPOT ROCK - PLACE MATERIAL THE FULL ROAD WIDTH BY END DUMPING TO A MINIMUM DEPTH OF 3".
3. CLEANING DITCHES, WHEN REQUIRED BY REFERENCE, IS COVERED UNDER T-831, T-832, AND T-834.
4. POT HOLES - PRIOR TO GRADING AND SPOT ROCK ACTIVITIES, SCARIFY/RIPP ALL POT HOLES, FULL WIDTH, DOWN TO SUB-GRADE OR FIRM GROUND AS DIRECTED BY CONTRACTING OFFICER.

**T-811 & T-813 TYPICALS (11/14)**

**T - 831 DITCH MAINTENANCE (10/07)**

831.01 Description

This Section provides for routine maintenance of various types of ditches to provide a waterway which is unobstructed, as shown on the ROAD LISTING or DESIGNATED ON THE GROUND.

831.02 Maintenance Requirements

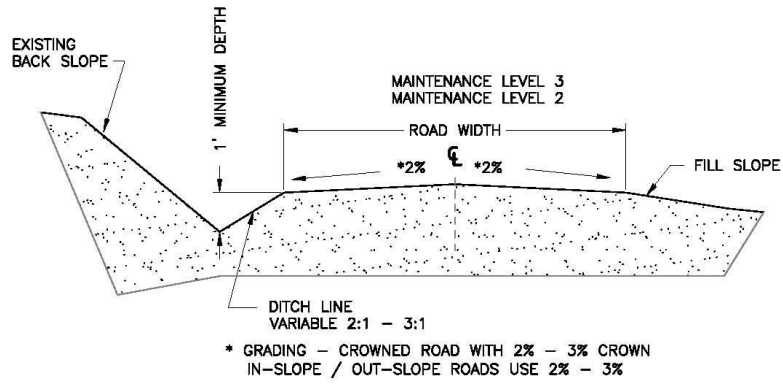
- A. Maintain ditches by removing rock, soil, wood, and other materials. Maintained ditches shall function to meet the intent of the original design.
- B. Undercutting back slopes during removal operations is not permitted.
- C. Suitable material up to 4 inches in greatest dimension removed from the ditches may be blended into existing native road surface and shoulder or placed in designated berm.
- D. 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.
- E. Haul material in excess of 831.02 D or subject to 831.02 E to a designated waste area under Section T-832. Remove excess materials temporarily stored on the ditch slope or edge of the shoulder daily.
- F. Remove limbs and wood chunks in excess of 12 inches in length or 3 inches in diameter from ditches and place outside the roadway.
- G. Clean paved surfaces of all materials resulting from ditch maintenance work.

Shape lead-off ditches to drain away from the traveled way.

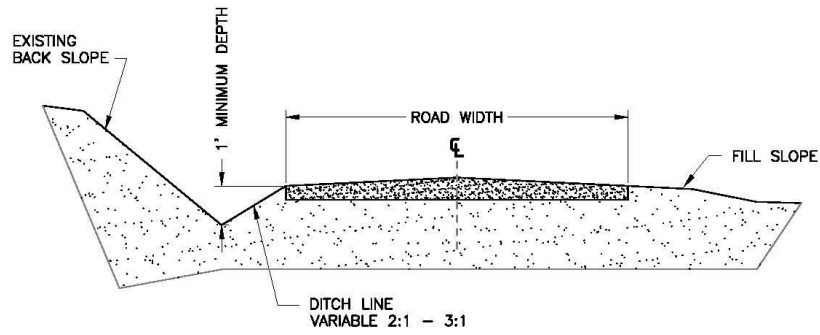
Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
NA

**DRAWING T-811 BLADING & T-831 DITCH MAINTENANCE**



FOR AGGREGATE / CINDER / PIT RUN AND NATIVE SURFACED ROADS



PAVED ROADS AND CHIP SEAL SURFACED ROADS

**T-811 BLADING & T-831 DITCH MAINTENANCE**

**T - 832 REMOVE AND END HAUL MATERIALS (10/07)**

## 832.01 Description

Work consists of loading, hauling, and placing of slide, slough, or excess materials such as rock, soil, vegetation, and other materials to designated disposal sites.

## 832.02 Maintenance Requirements

- A. Remove, end haul, and dispose of excess materials generated by work under other Sections of this contract.
- B. Remove the slide and slough materials in the area extending approximately 6 feet vertically above the road surface and not more than 3 feet down slope from the roadbed. Dispose of material at designated sites as SHOWN ON THE DRAWINGS, identified in SUPPLEMENTAL SPECIFICATIONS, or as ordered by the Contracting Officer.  
  
Reshape the slope which generated the slide material as nearly as practical to its original condition by equipment operating from road surface. Reshaping of roadside ditches in slide area shall be in accordance with Section T-831.
- C. When approved by the Contracting Officer, fill slumps by compacting selected materials into roadway depressions. Compaction is by Method 2.
- D. Place all materials in disposal sites as specified in the SUPPLEMENTAL SPECIFICATIONS, as SHOWN ON THE DRAWINGS, or as ordered by the Contracting Officer.
  - 1. Method 1 - Side Casting and End Dumping. Material may be placed by side casting and end dumping. Where materials include large rocks, provide a solid fill by working smaller pieces and fines into voids. Shape the finished surfaces to drain.
  - 2. Method 2 Layer Placement - Step or roughen surfaces on which materials are to be placed prior to placing any material. Place materials in approximately horizontal layers no more than 12 inches thick. Compact each layer by operating hauling and spreading equipment over the full width of each layer.
- E. Repair any damage to existing aggregate or pavement surfaces.

**T - 834 DRAINAGE STRUCTURE MAINTENANCE (10/07)**

834.01 Description

This work consists of cleaning and reconditioning culverts and other drainage structures.

834.02 Maintenance Requirements

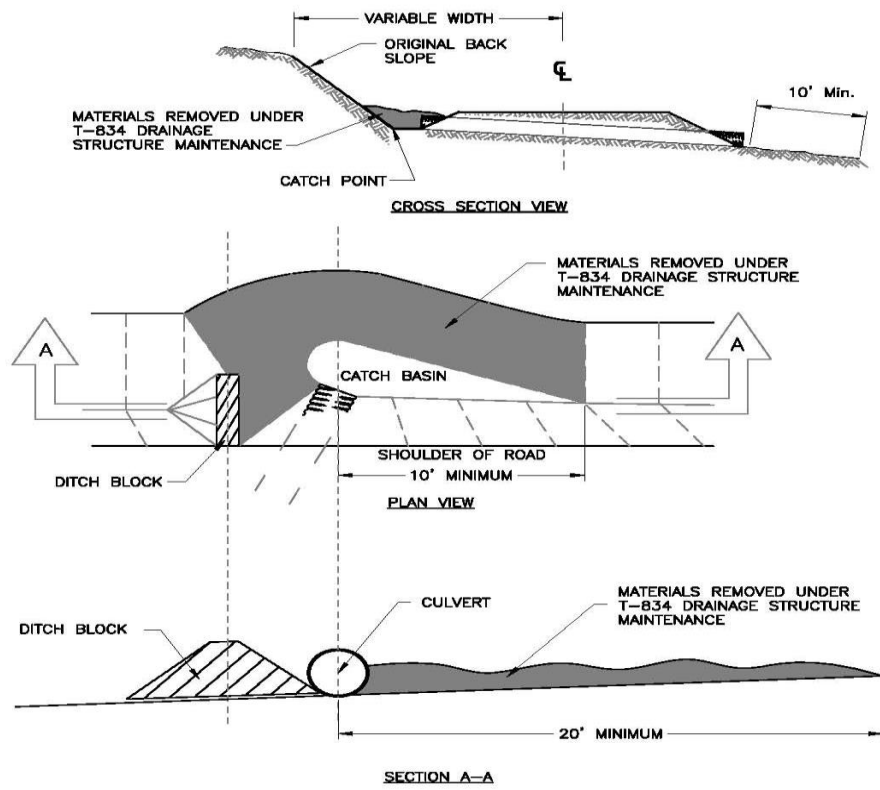
- A. Clean drainage structures, inlet structures, culverts, catch basins, and outlet channels specified in the SUPPLEMENTAL SPECIFICATIONS. Clean catch basins by removing the material within the area SHOWN ON THE DRAWINGS.
- B. Clean the transition from the ditch line to the catch basin a distance of 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 in accordance with Section T-832.
- C. Hydraulic flushing of drainage structures is not allowed unless provided for in the SUPPLEMENTAL SPECIFICATIONS.

Cleaning and reconditioning 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 jacking out 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.

- E. Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
NA

**DRAWING T-834 - CLEANING OF DITCH RELIEF, CATCH BASIN & TRANSITION**



**T-834 CLEANING OF DITCH RELIEF - CATCH BASIN AND TRANSITION**

**T - 835 ROADWAY DRAINAGE MAINTENANCE (05/07)**

835.01 Description

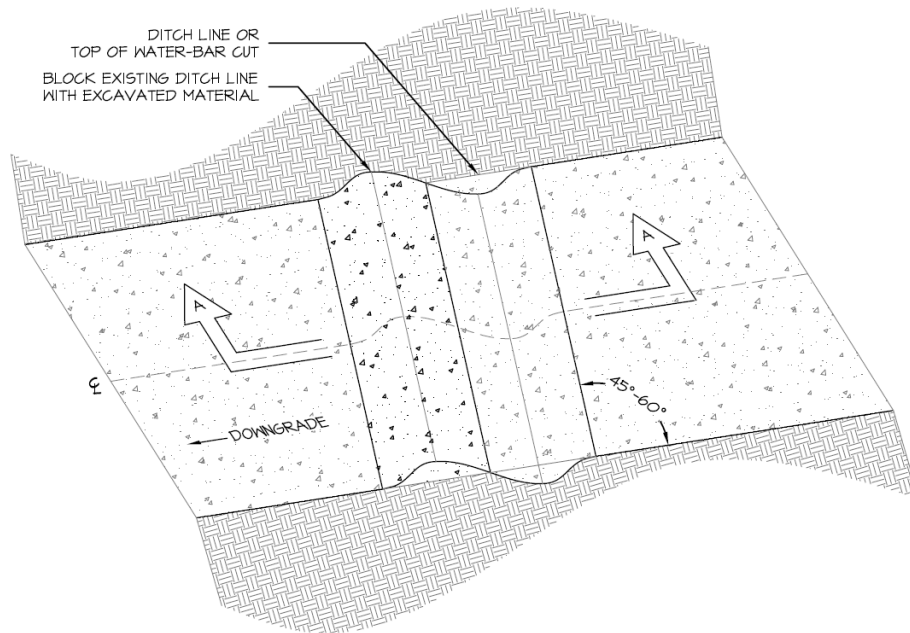
This work consists of providing post haul drainage on roads.

835.02 Maintenance Requirements

A. Drainage

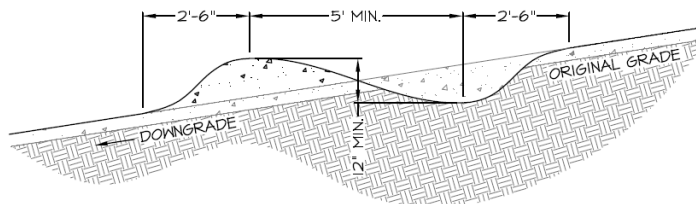
1. Upon completion of work, shape the roadway to provide for the removal of surface water. The roadway need not be passable to vehicles. Repair and reinstall water bars, barriers or berms existing prior to the Purchaser's operation. Areas where water is ponded by existing centerline profile sags in through cuts may be left untreated.
2. Continuous blade shaping of the roadbed is not required under this specification.
3. Work to be done at staked locations shall be as indicated on the stake and/or stated in SUPPLEMENTAL SPECIFICATIONS:
4. Any of the following methods are acceptable for use at eroded or rutted locations:
  - Method A: Out-sloping the roadbed at not less than  $\frac{1}{2}$  inch per yard of width.
  - Method B: In-sloping the roadbed at not less than  $\frac{1}{2}$  inch per yard of width.
  - Method C: Water bar roadbed at locations staked on the ground and construct as SHOWN ON THE DRAWINGS or as included in SUPPLEMENTAL SPECIFICATIONS.
5. Drainage structures located in through fills and natural watercourses shall be fully functional without obstructions, including inlet and outlet channel within 20 feet of the structure.





**WATER-BAR**  
**PERSPECTIVE VIEW**

Not to Scale



**SECTION A - A**

Not to Scale

**NOTES:**

1. CONSTRUCT WATER-BARS AS DIRECTED BY CONTRACTING OFFICER OR AS MARKED ON THE GROUND.
2. INLET OF WATER-BARS SHALL BE TO BOTTOM OF DITCH LINE OR A MINIMUM OF 6" BELOW THE EXISTING ROAD ELEVATION.
3. GRADE OF WATER-BARS SHALL BE OUT-SLOPED A MINIMUM OF 6% OR 2% MORE THAN THE EXISTING ROAD OUT-SLOPE, WHICHEVER IS GREATER.

**T-835 WATER-BAR TYPICALS (11/14)**

**T - 836 MAINTENANCE FOR LIMITED USE (05/07)**

## 836.01 Description

This work consists of making limited use roads passable for joint use by Purchaser and high clearance vehicles, and providing drainage from the traveled way and roadbed.

## 836.02 Maintenance Requirements

## A. Traveled Way

Purchaser may smooth or fill existing cross ditches and water bars and by agreement modify existing road junctions to enable vehicle access. Prior to beginning haul and resumption of haul after an extended stoppage:

1. Remove brush, fallen trees, rocks, and other debris from traveled way, including turnouts, turnarounds, and other locations that interfere with needed maintenance as follows:
  - a. No object extending over 4 inches above the road surface shall remain within the 12 feet usable traveled way and 10 feet turnout widths. Center the usable width on the roadbed or position away from the fill slope.
  - b. Cut and remove standing or down trees, logs, brush, and limbs from within the area described in 1 a. above. Remove all encroaching limbs to a height of 14 feet above the traveled way surface. Scatter material not meeting utilization standards outside and below the roadbed on the fill side. Limb and remove timber which meets utilization standards or deck at agreed locations.
  - c. Place all removed materials away from drainages.
  - d. During use, maintain drainage structures, including dips, ditches and culverts in a useable condition.
2. Clean and recondition drainage facilities in accordance with: Section T-831 and T-834.

## B. Slough and Slides

1. Slough and slides may be left in place, provided surface drainage is provided and at least 12 feet of width is available for vehicle passage.
2. Purchaser may reposition or ramp over slides and slough when the traveled way width is less than 12 feet providing the material is capable of supporting vehicles. Limit out slope to no more than six percent.
3. Reposition slough or slide materials on the roadbed which are not capable of supporting a vehicle to provide the 12 foot width. When directed by the Contracting Officer, slough or slide material will be removed under Section T-832.

## C. Slumps and Washouts

1. Drain the roadbed immediately upgrade of slumps and longitudinal cracks to prevent water from entering slump area.

2. Slumps and longitudinal cracks at the edge of the roadbed shall not be considered a part of the usable width. Usable width may be reduced to 10 feet in the area of the slump.
3. Unless the Contractor Officer agrees to material being placed on slumps, ramp the slumps on both ends into undisturbed roadbed to provide at least 10 feet usable width. Use removed materials to guide vehicles to the ramp location or to aid in draining the area.
4. Washouts may be filled with suitable material.

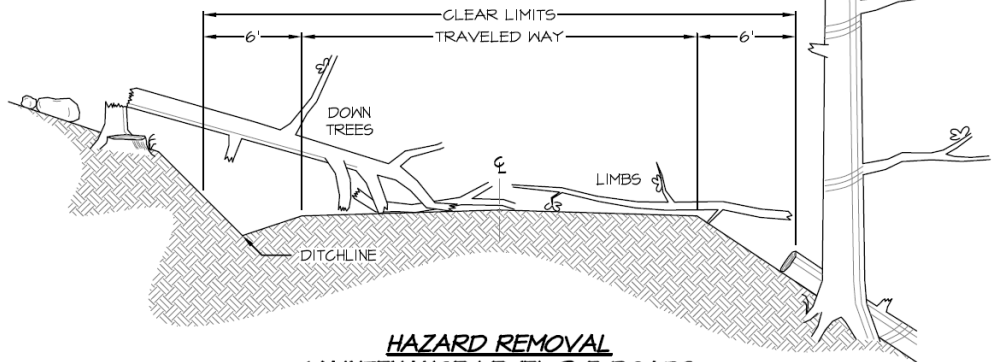
D. Post haul

At the end of hauling or prior to entering into seasonal shutdowns or a period of extended inactivity:

1. Shape the traveled way and disturbed roadbed to provide functional drainage.
2. Reinstall removed cross ditches and water bars and provide any additional drainage structures necessary to offset changes caused through use and maintenance.
3. Leave roads useable for high clearance vehicles. Remove or reshape purchaser modifications at road junctions to leave the entrance as it was before use, or as agreed at the time of improvement.

**NOTES:**

1. OPEN ROAD TO A MINIMUM CLEAR WIDTH AS SHOWN.
2. REPOSITION DOWN TREE SECTIONS PERPENDICULAR TO THE ROAD CENTERLINE SO AS NOT TO ROLL.
3. REMOVE DOWN TREES, ROCKS, LIMBS AND OTHER DEBRIS OVER 3" IN HEIGHT.
4. MAINTAIN DRAINAGE STRUCTURES INCLUDING DIPS, DITCHES AND CULVERTS IN ACCORDANCE WITH T-831, T-832 AND T-834.

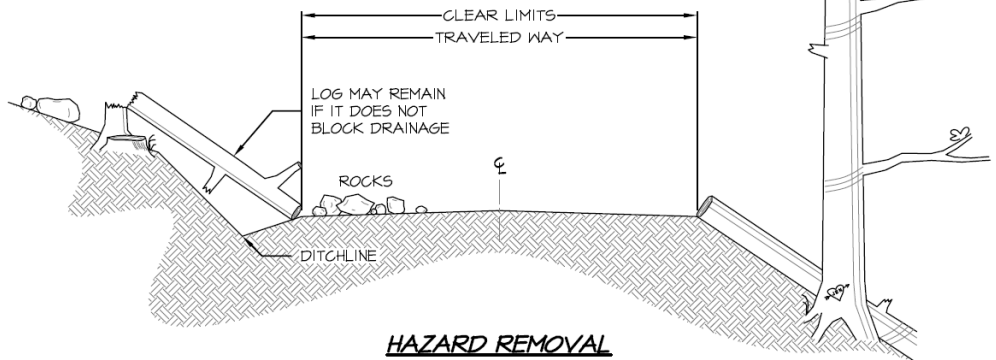


**HAZARD REMOVAL**  
**MAINTENANCE LEVEL 3-5 ROADS**

Not to Scale

**NOTES:**

1. OPEN ROAD TO A 12' MINIMUM CLEAR WIDTH.
2. REPOSITION DOWN TREE SECTIONS PERPENDICULAR TO THE ROAD CENTERLINE SO AS NOT TO ROLL.
3. REMOVE DOWN TREES, ROCKS, LIMBS AND OTHER DEBRIS OVER 3" IN HEIGHT.
4. MAINTAIN DRAINAGE STRUCTURES INCLUDING DIPS, DITCHES AND CULVERTS IN ACCORDANCE WITH T-831, T-832 AND T-834.



**HAZARD REMOVAL**  
**MAINTENANCE LEVEL 1-2 ROADS**

Not to Scale

**T-836, T-838 & T-839 TYPICALS (11/14)**

## 838.01 Description

This work consists of making limited use roads passable for project use by Purchaser and providing drainage from the traveled way and roadbed.

## 838.02 Maintenance Requirements

## A. Traveled Way

Purchaser may smooth or fill existing cross ditches and water bars and as approved by the Contracting Officer modify existing road junctions to enable vehicle access. The Purchaser may perform the following work prior to beginning haul and resumption of haul after an extended stoppage:

1. Remove brush, fallen trees, rocks, and other debris from traveled way, including turnouts, turnarounds, and other locations that interfere with needed maintenance as follows:
  - a. No object extending over 4 inches above the road surface shall remain within the 12 feet usable traveled way. Center the usable width on the roadbed or position away from the fill slope.
  - b. Cut and remove standing or down trees, logs, brush, and limbs from within the area described in 1(a). Remove all encroaching limbs to a height of 14 feet above the traveled way surface. Scatter material not meeting utilization standards outside and below the roadbed on the fill side. Limb and remove timber that meets utilization standards or deck at locations approved by the Contracting Officer.
  - c. Place all removed materials away from drainages.
  - d. During use, maintain drainage structures including dips, ditches and culverts in a usable condition.
2. Clean and recondition drainage facilities in accordance with Section T-831 and T-834.

## B. Slough and Slides

1. Slough and slides may be left in place, provided surface drainage is provided and at least 12 feet of width is available for vehicle passage.
2. Purchaser may reposition or ramp over slides and slough when the traveled way width is less than 12 feet providing the material is capable of supporting vehicles. Limit out slope to no more than six percent.
3. Reposition slough or slide materials, which are not capable of supporting a vehicle, on the roadbed to provide the 12 feet width. When directed by the Contracting Officer, slough or slide material will be removed under Section T-832.

## C. Slumps and Washouts

1. Drain the roadbed immediately upgrade of slumps and longitudinal cracks to prevent water from entering slump area.

2. Slumps and longitudinal cracks at the edge of the roadbed shall not be considered a part of the usable width. Usable width may be reduced to 10 feet in the area of the slump.
3. Unless the Contracting Officer approves material being placed on slumps, ramp the slumps on both ends into undisturbed roadbed to provide at least 10 feet usable width. Use removed materials to guide vehicles to the ramp location or to aid in draining the area.
4. Washouts may be filled with suitable material.

D. Post haul

At the end of hauling or prior to entering into seasonal shutdowns or a period of extended inactivity:

1. Shape the traveled way and disturbed roadbed to provide functional drainage.
2. Reinstall removed cross ditches and water bars and provide any additional drainage structures necessary to offset changes caused through use and maintenance.
3. Leave roads useable for high clearance vehicles. Remove or reshape purchaser modifications at road junctions to leave the entrance as it was before use, or as agreed at the time of improvement.

**T-839 MAINTENANCE FOR PROJECT USE (05/07)**

## 839.01 Description

Work consists of providing minimum access required for Purchaser's Operations and associated Forest Service contract administration and preventing unacceptable resource or road damage.

## 839.02 Maintenance Requirements

A. Purchaser is authorized to perform the following maintenance to provide vehicle passage and drainage:

1. Removing log, earth, and rock barriers and/or improving existing road junctions to enable vehicle access as mutually agreed.
2. Smoothing or filling existing cross ditches and water bars.
3. Installing Purchaser-furnished culverts or other temporary drainage structures for shallow stream crossings as approved by the Contracting Officer.
4. Removing brush, fallen trees, rocks, and other materials from the traveled way and other locations that interfere with needed maintenance:
  - a. Place all removed materials away from drainages.
  - b. Limb and remove timber which meets utilization standards or deck at locations approved by the Contracting Officer. Scatter other woody—materials, including limbs, off of and below the roadbed without creating concentrations.
5. Clean and recondition drainage structures in accordance with Section T-831 and Section T-834.
6. Reposition or ramp over slough and slides to provide adequate width of traveled way material.
7. Provide traveled way drainage above slumps and seal cracks in slump area. Ramp the slumps on both ends into undisturbed roadbed to provide usable width unless otherwise ordered by the Contracting Officer.

B. During use, the traveled way shall not channel water along the road. Prior to seasonal periods of anticipated rains and runoff, perform the following work:

1. Shape the traveled way and roadbed to drain.
2. Reinstall removed cross ditches and water bars and provide any additional drainage structures necessary to offset changes through use and maintenance.
3. Perform work outlined in 839.02 A (5), (6), and (7).

4. During periods of non use, replace original barrier or provide and maintain standard MUTCD, Type 3, barricades unless alternate type barriers are approved by the Contracting Officer.

839.03 Post Haul Requirements

- A. Upon completion of project use perform such work as needed to reasonably conform to the character of the existing road prior to Purchaser's maintenance for project use, unless otherwise provided in the SUPPLEMENTAL SPECIFICATIONS or the Road Listing. Work shall be in addition to requirements of 839.02 B and in accordance with 839.03 B and C.
- B. Roads designated in the Road Listing to be blocked shall conform to the requirements of Section T-835. Unless otherwise approved by the Contracting Officer, remove Purchaser-installed temporary structures from National Forest System land. Associated commercially-obtained materials shall remain the property of the Purchaser.
- C. Remove or reshape Purchaser improvements at road junctions, as approved by the Contracting Officer at the time of improvement.



**T - 891 WATER SUPPLY AND WATERING (10/07)**

## 891.01 Description

This work consists of providing facilities to furnish an adequate water supply, hauling and applying water.

## 891.02 Materials

If the Purchaser elects to provide water from other than designated sources, the Purchaser is responsible to obtain the right to use the water, including any cost for royalties involved.

Suitable and adequate water sources available for Purchaser's use under this contract are designated as follows:

<u>Map</u>	<u>Location</u>	<u>Location</u>	<u>Use</u>
<u>Key No.</u>	<u>Road</u>	<u>Milepost</u>	<u>Restrictions</u>
W2515	1986000	MP 1.50	Screen openings on foot
W2506	1986000	MP 2.38	valve shall not exceed 3/32 or 0.0938 - inches.

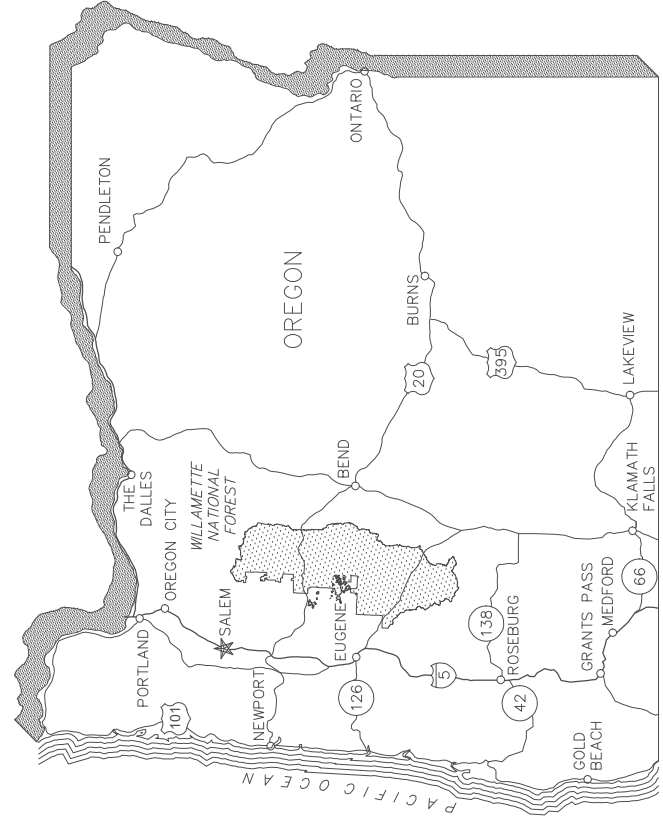
## 891.03 Equipment

- A. Positive control of water application is required. Equipment shall provide uniform application of water without ponding or washing.
- B. An air gap or positive anti-siphon device shall be provided between the water source and the vehicle being loaded if the vehicle has been used for other than water haul, if the source is a domestic potable water supply, or the water is used for tank mixing with any other materials.
- C. The designated water sources may require some work prior to their use. Such work may include cleaning ponded areas, installing temporary weirs or sandbags, pipe repair, pump installation or other items appropriate to the Purchaser's operations. Flowing streams may be temporarily sandbagged or a weir placed to pond water, provided a minimum flow of 10 cu. ft/sec is maintained. Obtain approval from the Contracting Officer on improvements for sandbags or weirs prior to placement.

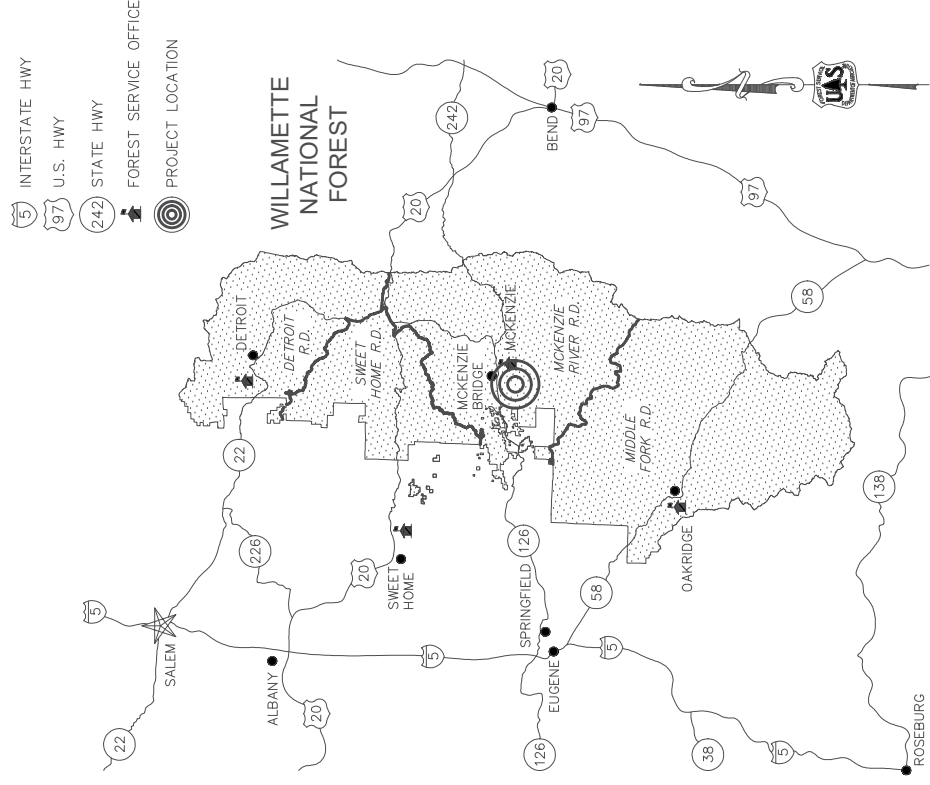
State Timber Sale Contract  
No. SW-341-2020-GF8919-01  
GM GNA

EXHIBIT E

SEE THE FOLLOWING PAGES FOR DETAILS



**STATE MAP**



**PROJECT LOCATION MAP**



**United States Department of Agriculture  
Forest Service**

**OREGON  
LANE COUNTY  
R06 PACIFIC NORTHWEST REGION  
WILLAMETTE NATIONAL FOREST  
MCKENZIE RIVER RANGER DISTRICT**

# SPECIFIED ROADS FOR GNA GM TIMBER SALE

ROAD #	ROAD NAME	LENGTH	TYPE OF WORK
1900	AUFDERHEIDE DRIVE	0.50	RECONSTRUCTION
1986	RIDER CREEK	2.62	RECONSTRUCTION
1986125		0.47	RECONSTRUCTION
1986138		0.10	RECONSTRUCTION

TRAVEL DIRECTIONS:  
FROM SPRINGFIELD OREGON: TRAVEL EAST ON STATE HIGHWAY 126 TO APPROXIMATELY MILE POST 45, TURN RIGHT ONTO FOREST SERVICE ROAD 19 (AUFDERHEIDE DRIVE) AND TRAVEL FOR APPROXIMATELY 3 MILES TO BEGINNING OF PROJECT ON FOREST SERVICE ROAD 19. CONTINUE TO MILE POST 49.65 TO INTERSECTION WITH FOREST SERVICE ROAD 1985, TURN RIGHT AND TRAVEL 1.3 MILES TO INTERSECTION WITH FOREST SERVICE ROAD 1986, TURN RIGHT AND TRAVEL 3.25 MILES TO BEGINNING OF PROJECT.

**INDEX OF SHEETS**

SHEET	SHEET TITLE
1	TITLE SHEET
2	VICINITY MAP
3	GENERAL NOTES
4 - 6	ESTIMATE OF QUANTITIES
7 - 10	RECONSTRUCTION SUMMARIES
11	DRAINAGE LISTINGS AND ASPHALT DETAILS
12	ROAD STRUCTURE DETAILS
13	DRAINAGE TYPICALS
14	DEWATERING TYPICALS
15	SOIL EROSION & POLLUTION CONTROL TYPICALS
16	CLEARING AND GRUBBING AND LINEAR GRADING TYPICALS
17	DISPOSAL AREA TYPICALS

**KYLE YEE**

Digitally signed by KYLE YEE  
Date: 2020.01.07 16:07:30 -08'00'

DESIGNED BY:  
KYLE YEE

DATE

**RAMON ALONSO**

Digitally signed by RAMON ALONSO  
Date: 2020.01.13 09:13:29 -08'00'

REVIEWED BY:  
RAMON ALONSO

DATE

**HELMUT  
KREIDLER**

Digitally signed by HELMUT  
KREIDLER  
Date: 2020.01.13 11:38:28 -08'00'

REVIEWED BY (DEVELOPMENT ENGINEER):

DATE

**BRANDON  
GREEN**

Digitally signed by BRANDON  
GREEN  
Date: 2020.01.13 13:25:14  
-08'00'

RECOMMENDED BY (ZONE ENGINEER):  
BRANDON GREEN

DATE

**WALTER HISLOP**

Digitally signed by WALTER  
HISLOP  
Date: 2020.01.13 13:28:49 -08'00'

APPROVED BY (FOREST ENGINEER):  
WALT HISLOP

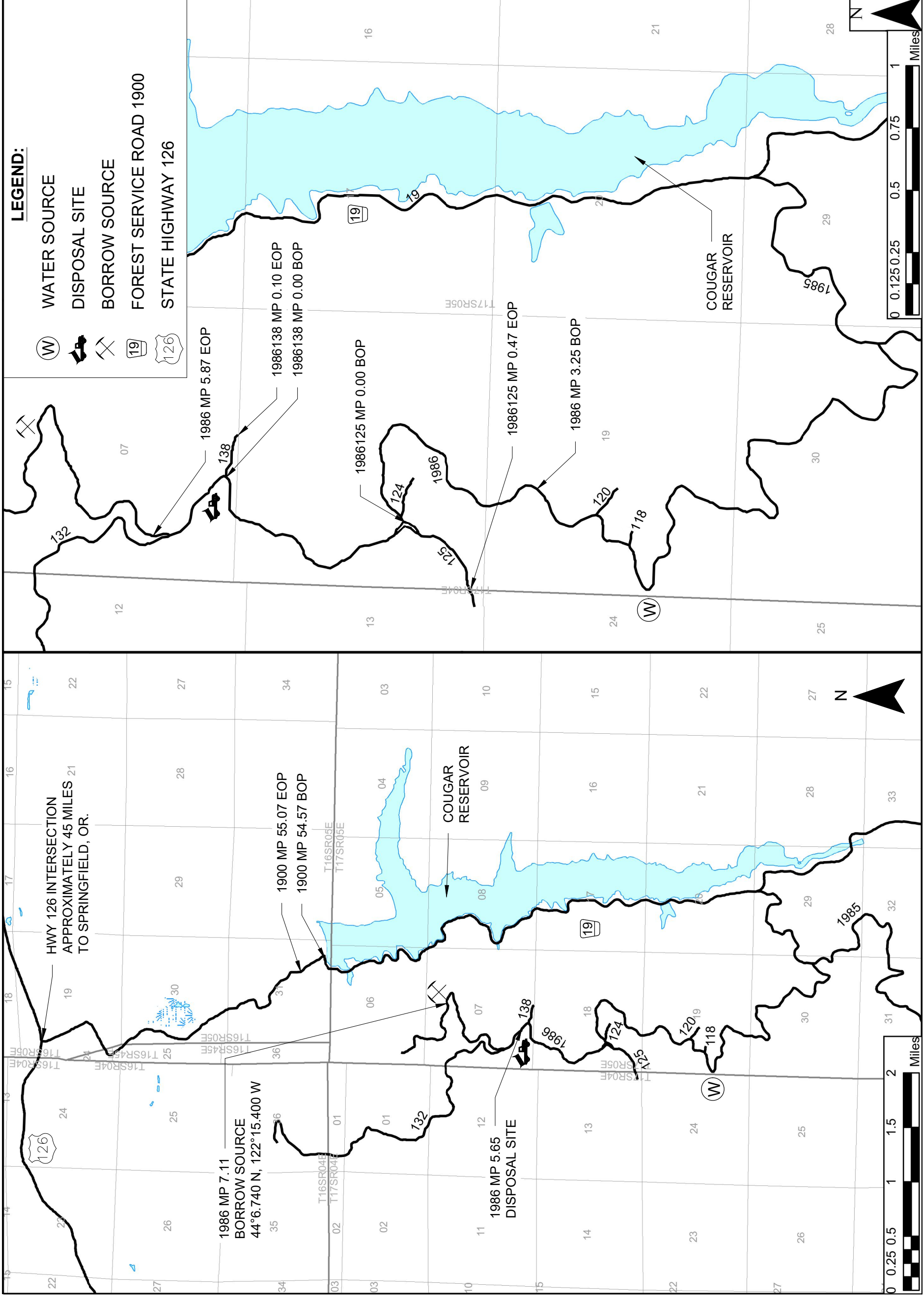
DATE

**DARREN CROSS**

Digitally signed by DARREN  
CROSS  
Date: 2020.01.14 15:52:22 -08'00'

APPROVED BY (DISTRICT RANGER):  
DARREN CROSS

DATE



**LEGEND:**

- (W) WATER SOURCE
- (Truck) DISPOSAL SITE
- (Truck) BORROW SOURCE
- (19) FOREST SERVICE ROAD 1900
- (126) STATE HIGHWAY 126

**USDA**  
United States Department of Agriculture  
Forest Service

**R06**  
PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

4			
3			
2			
1			
NO.	REVISION / ISSUE	DATE	

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**VICINITY MAP**

DATE	01/15/2020	ARCHIVE NO.	
DESIGNER	K. YEE	DRAWING SHEET NO.	
DRAWN	K. YEE		
CHECKED	R. ALONSO		
PROJECT NO.		SHEET 2	OF 17

## GENERAL NOTES:

1. PRIOR TO ANY EXCAVATION, CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES, PUBLIC AND PRIVATE. DAMAGES RESULTING FROM OPERATIONS ARE RESPONSIBILITY OF CONTRACTOR TO FIX.
2. REPAIR ANY DAMAGE TO THE EXISTING ROAD SYSTEM DUE TO CONTRACTOR'S OPERATIONS, INSIDE OR OUTSIDE THE WORK AREA, AT THE CONTRACTOR'S EXPENSE, PRIOR TO FINAL ACCEPTANCE.
3. REMOVE ALL BERMS, EXISTING OR CREATED, TO ALLOW DRAINAGE OF WATER FROM THE TRAVELED WAY, UNLESS OTHERWISE DESIGNATED TO REMAIN BY THE CO.
4. STORAGE OF ALL EQUIPMENT ON GOVERNMENT LANDS WILL BE AT THE CONTRACTOR'S RISK AND AT A LOCATION APPROVED BY THE CO.
5. DO NOT UNDERCUT BACKSLOPES WHEN CLEANING AND/OR RECONSTRUCTING DITCHLINES.
6. SALVAGE EXISTING AGGREGATE DURING CULVERT REPLACEMENT; USE AS BEDDING OR BACKFILL MATERIAL.
7. RECONDITION OR RECONSTRUCT TURNOUTS AND CURVE WIDENING THE SAME AS THE BASIC ROADBED. QUANTITIES LISTED IN THE ESTIMATE OF QUANTITIES INCLUDE TURNOUTS AND CURVE WIDENING.
8. SEE FSSS 107.02 **PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE** AND TIMBER SALE PROVISIONS FOR RESTRICTIONS/MITIGATIONS RELATED TO THIS PROJECT.
9. CONTRACTING OFFICER APPROVAL IS REQUIRED BUT NOT LIMITED TO, PRIOR TO PLACEMENT OF BEDDING OR LEVELING COURSE OF ANY STRUCTURE INCLUDING CULVERTS THAT MEET THE CONDITIONS IN SPECIFICATION 209.10, AND AGGREGATE PLACEMENT. MINIMUM 72 HOUR NOTICE.
10. DESIGNATED DISPOSAL SITES ARE IDENTIFIED ON RECONSTRUCTION SUMMARY SHEETS. LAYER PLACE SMOOTH, AND SHAPE TO DRAIN EXCESS OR UNSUITABLE EXCAVATION MATERIALS. ADDITIONAL DISPOSAL SITES MAY BE IDENTIFIED DURING CONSTRUCTION IF THE NEED ARISES. NO OTHER DISPOSAL SITES WILL BE USED, UNLESS DESIGNATED IN ADVANCE BY THE CONTRACTING OFFICER. COST FOR DISPOSAL SITE SHAPING IS INDIRECT TO THE LISTED PAY ITEMS UNDER SECTIONS 204 AND 303.
11. MAINTAIN ALL CONSTRUCTION STAKING ON THE PROJECT UNTIL FINAL INSPECTION AND ACCEPTANCE.
12. SET CULVERT REFERENCE STAKES PRIOR TO EXCAVATION AND REMOVAL OF ALL CULVERTS SHOWN ON THE DRAINAGE LISTING SHEET AS "# MATCH EXISTING" INSTALLATION. SET A CULVERT REFERENCE STAKE ON THE CENTERLINE OF THE CULVERT 10 FEET FROM EACH END OR BEYOND THE CLEARING LIMIT, WHICHEVER IS GREATER. RECORD THE FOLLOWING ON CULVERT REFERENCE STAKES: MILE POINT, ACTUAL STAKE DISTANCE FROM CULVERT INLET AND OUTLET AND EXISTING CULVERT DIAMETER.
13. PROVIDE CONSTRUCTION TOLERANCE CLASS A FOR ROAD 19, AND CLASS D FOR ALL OTHER ROADS.

## EROSION AND SEDIMENT CONTROL NOTES:

1. REPLACE CULVERTS WHEN STREAM CHANNELS ARE DRY, OR DURING INSTREAM WORK PERIOD JULY 1 - AUGUST 15. DEWATERING WILL BE DELETED IF THERE IS NO WATER IN THE STREAM WHEN THE WORK IS DONE.
2. INITIATE STABILIZATION MEASURES AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER WORK HAS CEASED.
3. INSPECT ALL SEDIMENT AND EROSION CONTROL DEVICES DAILY, OR MORE OFTEN WHEN NEEDED (SUCH AS DURING RAINFALL EVENTS). REPAIR OR REPLACE DAMAGED OR INEFFECTIVE DEVICES, OR ADD ADDITIONAL DEVICES, IF NEEDED, TO CONTAIN SEDIMENT AND PROTECT THE WATERS OF THE STATE.
4. REMOVE SEDIMENT FROM ANY EROSION CONTROL DEVICES WHEN SEDIMENT DEPTH EXCEEDS 6 INCHES.
5. SHAPE TO DRAIN ALL DISTURBED AREAS PRIOR TO MULCHING.
6. REMOVE NON-BIODEGRADABLE TEMPORARY SEDIMENT CONTROL MATERIALS WITHIN 7 DAYS AFTER FINAL ACCEPTANCE.
7. SPREAD WEED-FREE STRAW OVER DISTURBED SOIL AT ALL CULVERT INSTALLATIONS, DISPOSAL AREAS, AND OTHER EXPOSED SOIL, EXCLUDING DITCHES. COVER AREAS COMPLETELY.

## ABBREVIATIONS:

1. CO: CONTRACTING OFFICER
2. CMP: CORRUGATED METAL PIPE
3. BOP: BEGINNING OF PROJECT
4. EOP: END OF PROJECT



United States Department of Agriculture  
Forest Service

R06

PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

△			
△			
△			
△			
NO.	REVISION / ISSUE	DATE	

PROJECT NAME

**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE

**GENERAL NOTES**

DATE	ARCHIVE NO.
01/15/2020	
DESIGNER	DRAWING SHEET NO.
K. YEE	
DRAWN	
K. YEE	
CHECKED	
R. ALONSO	
PROJECT NO.	SHEET 3 OF 17



United States Department of Agriculture  
Forest Service

R06

PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

ITEM NUMBER	DESCRIPTION	UNIT	QUANTITIES	REMARKS
15101	MOBILIZATION	LUMP SUM	ALL	INCLUDES EQUIPMENT WASHING, TEMPORARY TRAFFIC CONTROL (FLAGGERS REQUIRED FOR ALL WORK ON ROAD 1900), AND FIRE PROTECTION MEASURES FOR ENTIRE PROJECT.
32450	CRUSHED AGGREGATE SURFACING, COMPACTION METHOD B	CUBIC YARD*	50	COMMERCIAL SOURCE. FURNISH FOREST SERVICE GRADING F OR ODOT 1" MINUS DENSE GRADED AGGREGATE.
40401	MINOR HOT ASPHALT CONCRETE	TON	900.00	COMMERCIAL SOURCE. ODOT SPEC 1/2" DENSE GRADATION, LEVEL II HMAC, ASPHALT GRADE PG 64-22. SEAL EDGES WITH EMULSIFIED ASPHALT AND BLOT WITH FINE SAND. 20 TONS TO BE USED AS PRE-LEVELING, AREAS TO BE IDENTIFIED BY CONTRACTING OFFICER.
62509	MULCHING, DRY METHOD	LUMP SUM	ALL	COMMERCIAL SOURCE, CERTIFIED WEED FREE. INCLUDES ALL DISTURBED AREAS FOR THIS ENTIRE PROJECT.

\*DENOTES CONTRACT QUANTITY

NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**1900  
ESTIMATE OF QUANTITIES**

DATE	01/15/2020
ARCHIVE NO.	
DESIGNER	K. YEE
DRAWING SHEET NO.	
DRAWN	K. YEE
CHECKED	R. ALONSO
PROJECT NO.	
SHEET	4 OF 17



United States Department of Agriculture  
Forest Service

R06

PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS	
△ 4	
△ 3	
△ 2	
△ 1	
NO.	REVISION / ISSUE
	DATE

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

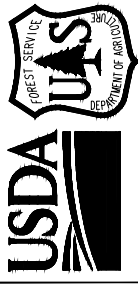
MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**1986  
ESTIMATE OF QUANTITIES**

DATE 01/15/2020	ARCHIVE NO.
DESIGNER K. YEE	DRAWING SHEET NO.
DRAWN K. YEE	
CHECKED R. ALONSO	
PROJECT NO.	SHEET 5 OF 17

ROAD NUMBER: 1986	SEGMENT: 3.25 - 5.87	PROJECT LENGTH: 2.62					
15757A	EROSION CONTROL AND POLLUTION PREVENTION	EACH	2	FOR CULVERT DEWATERING.			
15757B	STRAW WATTLES	EACH	4	PLACEMENT OF WATTLES ABOVE CULVERT INLETS AT LOCATIONS STAKED BY CONTRACTING OFFICER.			
20103	CLEARING AND GRUBBING, DISPOSAL OF TOPS AND LIMBS (f), LOGS (f), STUMPS (f)	MILE	2.62	SCATTER EXISTING WOODY DEBRIS OR BLOWDOWN (WITHIN THE ROADWAY) OUTSIDE THE CLEARING LIMITS OR AS SPECIFIED BY THE CONTRACTING OFFICER.			
20253	REMOVAL OF INDIVIDUAL TREES, MISCELLANEOUS: DISPOSAL OF TOPS AND LIMBS (f), LOGS (f)	EACH	14	FELL AND LEAVE.			
20358	REMOVAL OF CORRUGATED METAL PIPE, DISPOSAL METHOD (a)	EACH	5				
20416	WASTE	CUBIC YARD*	50	HAUL AND PLACE MATERIAL AT DESIGNATED DISPOSAL SITES.			
20419	DRAINAGE EXCAVATION, TYPE CULVERT INLET DITCH	FOOT*	40	PLACE MULCH ON BERM AND SIDE SLOPES.			
20462	UNCLASSIFIED BORROW, COMPACTION METHOD E	CUBIC YARD*	20	OBTAIN FROM 1986 MP 7.11 BORROW SOURCE. TO BE USED WHEN UNSUITABLE OR SHORTAGE OF MATERIAL IS ENCOUNTERED, QUANTITY NOT USED WILL BE DELETED FROM CONTRACT.			
25101	PLACED RIP RAP, CLASS 4	CUBIC YARD*	1	OBTAIN FROM 1986 MP 7.11 BORROW SOURCE. SORTING OF MATERIAL IS INDIRECT TO PAY ITEM.			
30304	ROAD RECONDITIONING, DITCH	MILE	0.65				
30359	ROADWAY RECONDITIONING, COMPACTION METHOD E	MILE	2.62				
32222	PIT RUN MAXIMUM SIZE 3", COMPACTION METHOD B	CUBIC YARD*	20	OBTAIN FROM 1986 MP 7.11 BORROW SOURCE. SORTING OF MATERIAL IS INDIRECT TO PAY ITEM.			
32450	CRUSHED AGGREGATE SURFACING, COMPACTION METHOD B	CUBIC YARD*	590	COMMERCIAL SOURCE. FURNISH FOREST SERVICE GRADING FOR ODOT 1" MINUS DENSE GRAGED AGGREGATE. QUANTITY SHOWN IS IN PLACE AND COMPACTED.			
60276A	18-INCH CORRUGATED ALUMINIZED STEEL PIPE, 0.064-INCH THICKNESS, METHOD B	FOOT	128	COMMERCIAL SOURCE. INCLUDES BANDS AND NECESSARY HARDWARE.			
60276B	24-INCH CORRUGATED ALUMINIZED STEEL PIPE, 0.064-INCH THICKNESS, METHOD B	FOOT	116	COMMERCIAL SOURCE. INCLUDES BANDS, GASKETS, AND NECESSARY HARDWARE.			
60708	CLEANING CULVERTS IN PLACE	EACH	1	REMOVE AND DISPOSE OF ALL FOREIGN MATERIAL WITHIN THE BARREL OF THE CULVERT BY ANY METHOD THAT DOES NOT DAMAGE THE CULVERT.			
60710	RECONDITION DRAINAGE STRUCTURES, JACK OPEN CULVERT OUTLET	EACH	2	STRAIGHTEN AND REFORM CIRCULAR OPENING TO ORIGINAL SHAPE.			

\*DENOTES CONTRACT QUANTITY



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PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

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PROJECT NAME

**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE

**1986125 AND 1986138  
ESTIMATE OF QUANTITIES**

DATE  
01/15/2020

ARCHIVE NO.

DESIGNER  
K. YEE

DRAWING SHEET NO.

DRAWN  
K. YEE

CHECKED  
R. ALONSO

PROJECT NO.

SHEET 6 OF 17

**ROAD NUMBER: 1986125**  
**SEGMENT: 0.00 - 0.47**  
**PROJECT LENGTH: 0.47**

ITEM	DESCRIPTION	UNIT	QUANTITIES	REMARKS
15757A	EROSION CONTROL AND POLLUTION PREVENTION	EACH	1	FOR CULVERT DEWATERING.
15757B	STRAW WATTLES	EACH	2	PLACEMENT OF WATTLES ABOVE CULVERT INLETS AT LOCATIONS STAKED BY CONTRACTING OFFICER.
20103	CLEARING AND GRUBBING, DISPOSAL OF TOPS AND LIMBS (f), LOGS (f), STUMPS (f)	MILE	0.47	SCATTER EXISTING WOODY DEBRIS OR BLOWDOWN (WITHIN THE ROADWAY) OUTSIDE THE CLEARING LIMITS OR AS SPECIFIED BY THE CONTRACTING OFFICER.
20253	REMOVAL OF INDIVIDUAL TREES, MISCELLANEOUS: DISPOSAL OF TOPS AND LIMBS (f), LOGS (f)	EACH	5	FELL AND LEAVE.
20358	REMOVAL OF CORRUGATED METAL PIPE, DISPOSAL METHOD (a)	EACH	3	
20462	UNCLASSIFIED BORROW, COMPACTION METHOD E	CUBIC YARD*	20	OBTAIN FROM 1986 MP 7.11 BORROW SOURCE. TO BE USED WHEN UNSUITABLE OR SHORTAGE OF MATERIAL IS ENCOUNTERED, QUANTITY NOT USED WILL BE DELETED FROM CONTRACT.
30304	ROAD RECONDITIONING, DITCH	MILE	0.10	
30359	ROADWAY RECONDITIONING, COMPACTION METHOD E	MILE	0.47	
32450	CRUSHED AGGREGATE SURFACING, COMPACTION METHOD B	CUBIC YARD*	50	COMMERCIAL SOURCE. FURNISH FOREST SERVICE GRADING F OR ODOT 1" MINUS DENSE GRADED AGGREGATE. QUANTITY SHOWN IS IN PLACE AND COMPACTED.
60276A	18-INCH CORRUGATED ALUMINIZED STEEL PIPE, 0.064-INCH THICKNESS, METHOD B	FOOT	60	COMMERCIAL SOURCE. INCLUDES BANDS AND NECESSARY HARDWARE.
60276B	24-INCH CORRUGATED ALUMINIZED STEEL PIPE, 0.064-INCH THICKNESS, METHOD B	FOOT	50	COMMERCIAL SOURCE. INCLUDES BANDS, GASKETS, AND NECESSARY HARDWARE.

\*DENOTES CONTRACT QUANTITY

**ROAD NUMBER: 1986138**  
**SEGMENT: 0.00 - 0.10**  
**PROJECT LENGTH: 0.10**

ITEM	DESCRIPTION	UNIT	QUANTITIES	REMARKS
21201	LINEAR GRADING	MILE	0.10	
32222	PIT RUN MAXIMUM SIZE 3", COMPACTION METHOD B	CUBIC YARD*	130	OBTAIN FROM 1986 MP 7.11 BORROW SOURCE. SORTING OF MATERIAL INDIRECT TO PAY ITEM.

\*DENOTES CONTRACT QUANTITY





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PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

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NO.	REVISION / ISSUE	DATE	

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**1900  
RECONSTRUCTION  
SUMMARY**

DATE	01/15/2020	ARCHIVE NO.	
DESIGNER	K. YEE	DRAWING SHEET NO.	
DRAWN	K. YEE		
CHECKED	R. ALONSO		
PROJECT NO.		SHEET 7	OF 17

MILE POST	ITEM NUMBER	QUANTITY	UNIT	ROAD 1900 RECONSTRUCTION SUMMARY	AS-BUILT NOTES
54.57				BEGINNING OF PROJECT.	
	32450	50	CUBIC YARD*	PLACE AGGREGATE FOR SHOULDER ROCK AS STAKED BY CO.	
	40401	900.00	TON	BEGIN ASPHALT OVERLAY. 2" DEPTH. FEATHER EDGES INTO EXISTING JUNCTIONS AND PARKING AREAS AND SEAL.	
55.07				END ASPHALT OVERLAY.	
				END OF PROJECT.	



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	DATE

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**1986  
RECONSTRUCTION  
SUMMARY**

DATE	01/15/2020
ARCHIVE NO.	
DESIGNER	K. YEE
DRAWN	K. YEE
CHECKED	R. ALONSO
PROJECT NO.	
SHEET 8 OF 17	

MILE POST	ITEM NUMBER	QUANTITY	UNIT	ROAD 1986 RECONSTRUCTION SUMMARY	AS-BUILT NOTES
3.25	20103	2.62	MILE	BEGINNING OF PROJECT. BEGIN CLEARING AND GRUBBING.	
	30359	2.62	MILE	BEGIN RECONDITIONING ROADWAY. SCARIFY A MINIMUM OF 1" BELOW THE DEPTH OF ALL EXISTING POTHLES, CORRUGATIONS OR SURFACE IRREGULARITIES. GRUBBING AND DISPOSAL OF ALL STUMPS AND ROOT MASSES WITHIN THE ROADBED AND IN THE DITCH IS REQUIRED UNLESS OTHERWISE NOTED IN THE WORK DESCRIPTION. ONLY CLEAN DITCHES IN AREAS IDENTIFIED IN RECONSTRUCTION SUMMARIES UNDER ITEM 30304. HAUL MATERIAL FROM THE CLEANING OF DITCHES, INLETS, AND OUTLETS, AND SLOUGH AND SLIDE REMOVAL TO DESIGNATED DISPOSAL SITES. PLACE SPOT ROCK AT LOCATIONS MARKED BY CONTRACTING OFFICER.	
	32450	500	CUBIC YARD*		
3.43	20358	1	EACH	REPLACE EXISTING CULVERT. REMOVE EXISTING CULVERT.	
	60276A	36	FOOT	INSTALL 18-INCH CMP AT SAME SKEW, LOWER OUTLET TO GROUND (APPROXIMATELY 1').	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
3.55	15757A	1	EACH	REPLACE EXISTING CULVERT. PERFORM EROSION CONTROL.	
	20358	1	EACH	REMOVE EXISTING CULVERT.	
	60276B	66	FOOT	INSTALL 24-INCH CMP AT SAME GRADE AND SKEW.	
	20419	25	FOOT*	RECONSTRUCT INLET CHANNEL 25' UPSTREAM FROM INLET OF EXISTING CMP.	
	15757B	2	EACH	PLACE WATTLES AT LOCATIONS AS STAKED BY CO.	
	32450	20	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
3.57	20419	15	FOOT*	RECONSTRUCT INLET CHANNEL 15' UPSTREAM FROM INLET OF EXISTING CMP.	
3.61	20358	1	EACH	REPLACE EXISTING CULVERT. REMOVE EXISTING CULVERT.	
	60276A	46	FOOT	INSTALL 18-INCH CMP AT SAME GRADE AND SKEW.	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
	30304	0.13	MILE	BEGIN DITCH RECONDITIONING, LEFT.	
3.65	20416	50	CUBIC YARD*	WASTE: REMOVE CUTSLOPE RAVEL.	
3.74				END DITCH RECONDITIONING.	
3.80	20358	1	EACH	REPLACE EXISTING CULVERT. REMOVE EXISTING CULVERT.	
	60276A	46	FOOT	INSTALL 18-INCH CMP AT SAME GRADE AND SKEW.	
	25101	1	CUBIC YARD*	CONSTRUCT OUTLET ENERGY DISSIPATOR.	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
3.87	60710	1	EACH	REPAIR (JACK OPEN) CULVERT OUTLET; STRAIGHTEN AND REFORM CIRCULAR OPENING.	
3.93	30304	0.08	MILE	BEGIN DITCH RECONDITIONING, LEFT.	
4.01				END DITCH RECONDITIONING.	
4.03	30304	0.04	MILE	BEGIN DITCH RECONDITIONING, LEFT.	
4.07				END DITCH RECONDITIONING.	
4.19				REFERENCE: MP 4 SIGN.	





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	DATE

PROJECT NAME  
**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**1986125 AND 1986138  
RECONSTRUCTION  
SUMMARY**

DATE	01/15/2020
ARCHIVE NO.	
DESIGNER	K. YEE
DRAWN	K. YEE
CHECKED	R. ALONSO
PROJECT NO.	
DRAWING SHEET NO.	
SHEET 10 OF 17	

MILE POST	ITEM NUMBER	QUANTITY	UNIT	ROAD 1986125 RECONSTRUCTION SUMMARY	AS-BUILT NOTES
0.00	20103	0.47	MILE	BEGINNING OF PROJECT. INTERSECTION WITH FOREST SERVICE ROAD 1986. BEGIN CLEARING AND GRUBBING.	
	30359	0.47	MILE	BEGIN RECONDITIONING ROADWAY. SCARIFY A MINIMUM OF 1" BELOW THE DEPTH OF ALL EXISTING POTHLES, CORRUGATIONS OR SURFACE IRREGULARITIES. GRUBBING AND DISPOSAL OF ALL STUMPS AND ROOT MASSES WITHIN THE ROADBED AND IN THE DITCH IS REQUIRED UNLESS OTHERWISE NOTED IN THE WORK DESCRIPTION. ONLY CLEAN DITCHES IN AREAS IDENTIFIED IN RECONSTRUCTION SUMMARIES UNDER ITEM 30304. HAUL MATERIAL FROM THE CLEANING OF DITCHES, INLETS, AND OUTLETS, AND SLOUGH AND SLIDE REMOVAL TO DESIGNATED DISPOSAL SITES.	
	32450	20	CUBIC YARD*	PLACE SPOT ROCK AT LOCATIONS MARKED BY CONTRACTING OFFICER.	
0.07				REFERENCE, INTERSECTION WITH Y JUNCTION OF 1986125.	
0.14				REPLACE EXISTING CULVERT.	
	15757A	1	EACH	PERFORM EROSION CONTROL.	
	20358	1	EACH	REMOVE EXISTING CULVERT.	
	60276B	50	FOOT	INSTALL 24-INCH CMP AT SAME GRADE, SHIFT OUTLET 5' TOWARDS BOP.	
	15757B	2	EACH	PLACE WATTLES AT LOCATIONS AS STAKED BY CO.	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
0.28				REPLACE EXISTING CULVERT.	
	20358	1	EACH	REMOVE EXISTING CULVERT.	
	60276A	30	FOOT	INSTALL 18-INCH CMP AT SAME GRADE AND SKEW, LOWER ENTIRE CMP 1'.	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
	30304	0.10	MILE	BEGIN DITCH RECONDITIONING, RIGHT.	
0.38				REPLACE EXISTING CULVERT.	
	20358	1	EACH	REMOVE EXISTING CULVERT.	
	60276A	30	FOOT	INSTALL 18-INCH CMP AT SAME GRADE AND SKEW, LOWER ENTIRE CMP 1'.	
	32450	10	CUBIC YARD*	PLACE AGGREGATE SURFACING.	
				END DITCH RECONDITIONING.	
0.47				REFERENCE: PRIVATE BOUNDARY GATE.	
				END OF PROJECT.	
				END ALL RECONSTRUCTION.	
MILE POST	ITEM NUMBER	QUANTITY	UNIT	DANGER TREE REMOVAL LIST	
	20253	5	EACH	REMOVE 5 DANGER TREES, TO BE FIELD IDENTIFIED.	

MILE POST	ITEM NUMBER	QUANTITY	UNIT	ROAD 1986138 RECONSTRUCTION SUMMARY	AS-BUILT NOTES
0.00				BEGINNING OF PROJECT. INTERSECTION WITH FOREST SERVICE ROAD 1986.	
	21201	0.10	MILE	BEGIN LINEAR GRADING, 3% OUTSLOPED.	
	32222	130	CUBIC YARD*	PLACE PIT-RUN 6" DEPTH.	
0.10				END OF PROJECT.	
				END ALL RECONSTRUCTION.	



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PROJECT NAME

**GNA GM  
TIMBER SALE**

**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE

**DRAINAGE LISTINGS  
AND ASPHALT DETAILS**

DATE  
01/15/2020

ARCHIVE NO.

DESIGNER  
K. YEE

DRAWING SHEET NO.

DRAWN  
K. YEE

CHECKED  
R. ALONSO

PROJECT NO.

SHEET 11 OF 17

**DRAINAGE LISTING**

ROAD NUMBER	DESIGNED		AS BUILT			INSTALLATION		DEWATER CULVERT	CLEAN EXISTING CULVERT	REPAIR EXISTING CULVERT	CONSTRUCT ENERGY DISSIPATOR (CY*)	AGGREGATE		REMARKS	
	MILE POST	DIAMETER (INCH)	PIPE LENGTH (FT)	OUTLET PIPE FULL CIRCLE (FT)	MILE POST	DIAMETER	PIPE LENGTH (FT)					OUTLET PIPE FULL CIRCLE (FT)	TYPE		SKEW (°)
1986															
	3.43	18	36										8	10	LOWER CULVERT OUTLET TO GROUND.
	3.55	24	66										8	20	
	3.57											25			
	3.61	18	46									15			
	3.80	18	46								1		8	10	
	3.87									✓			8	10	REPAIR OUTLET.
	4.23									✓					REPAIR OUTLET.
	4.48														CLEAN OUTLET.
	4.78	24	50					✓					8	20	SHIFT OUTLET 25' TOWARDS BOP.
1986125															
	0.14	24	50										8	10	SHIFT OUTLET 5' TOWARDS BOP.
	0.28	18	30												LOWER 1' ENTIRE CULVERT, MATCH EXISTING GRADE.
	0.38	18	30												LOWER 1' ENTIRE CULVERT, MATCH EXISTING GRADE.

# DENOTES SKEW, GRADE, AND TYPE SHALL MATCH REMOVED INSTALLATION UNLESS OTHERWISE NOTED.  
SOME INSTALLATIONS OF CULVERTS MAY REQUIRE ADDITIONAL EXCAVATION BELOW EXISTING GRADE LINE. (INDIRECT TO CORRESPONDING CULVERT INSTALLATION.)

**ASPHALT REPAIR TABLE**

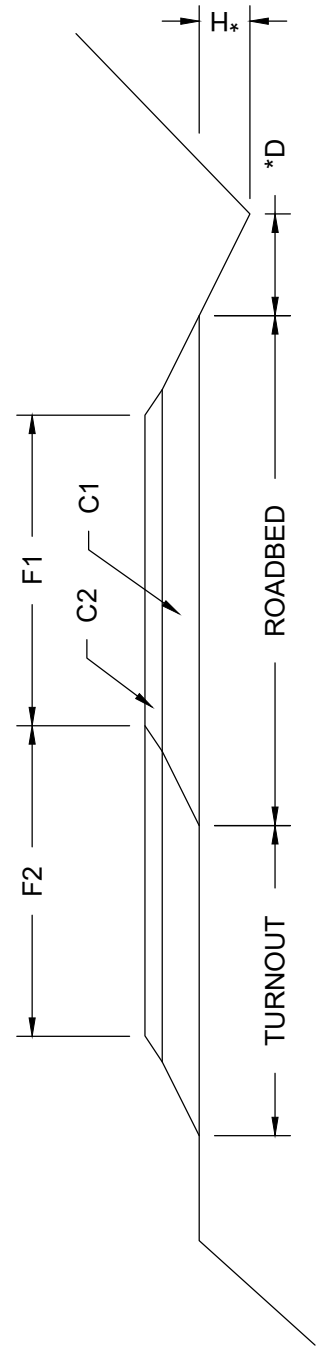
MILE POST	REPAIR TYPE	AVG. ASPHALT DIMENSIONS		CRUSHED AGGREGATE		HOT A.C. PLANT MIX		REMARKS
		LENGTH (FT)	AVG. WIDTH (FT)	DEPTH (INCHES)	TOTAL (CY*)	DEPTH (INCHES)	TOTAL (TONS)	
54.57 - 55.07	OVERLAY	2640	24			2	900.00	INCLUDES TONNAGE FOR WIDENING AT INTERSECTION WITH PARKING AREAS AND FOREST SERVICE ROAD 1993; AND 20 TONS FOR PRE-LEVELING.
<b>TOTALS:</b>				NA	50	NA	900.00	

LENGTH AND WIDTH DIMENSIONS ARE "NOMINAL". FIELD DIMENSIONS MAY VARY.  
ALL SITES REQUIRE 2 FT SHOULDER ROCK UNLESS DIRECTED OTHERWISE BY CONTRACTING OFFICER.

ROAD NUMBER	BEGINNING MILE POST	ENDING MILE POST	CONSTRUCTION TOLERANCE	OUTSLOPED INSLOPED CROWNED	ROADBED WIDTH (FT)	DITCH DIMENSIONS (FT)		PAVEMENT STRUCTURE						REMARKS	
						D	H	TRAVELED WAY WIDTH (FT)	TURN OUT WIDTH (FT)	GRADATION		COMPACTED DEPTH (IN)			SLOPE RATIO
				%				F1	F2	C1	C2	C1	C2	AGG	V:H
1900	54.57	55.07	A	3C	28*	2	1	24*	-	-	HMAC	-	2	1:3	FOR ASPHALT OVERLAY.
1986	3.25	5.87	D	3C	13*	2	1	12*	10	-	F	-	3	1:2	FOR ROADWAY RECONDITIONING.
1986	3.25	5.87	D	3C	13*	2	1	12*	10	F	-	8	-	1:2	FOR CULVERT INSTALLATION SITES.
1986125	0.00	0.47	D	3C	13*	2	1	12*	10	-	F	-	3	1:2	FOR ROADWAY RECONDITIONING.
1986125	0.00	0.47	D	3C	13*	2	1	12*	10	F	-	8	-	1:2	FOR CULVERT INSTALLATION SITES.
1986138	0.00	0.10	D	30	13*	-	-	12*	-	P	-	6	-	1:2	FOR LINEAR GRADING AND PIT RUN PLACEMENT.

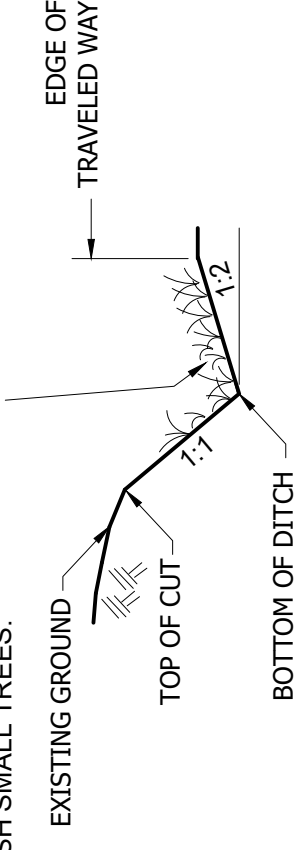
\*DIMENSIONS MAY BE ADJUSTED BY THE CONTRACTING OFFICER TO FIT FIELD CONDITIONS. MATCH EXISTING WIDTHS AT CULVERT LOCATIONS, CURVE WIDENING, AND TURNOUTS.

**TYPICAL SECTION FOR ROAD RECONSTRUCTION**

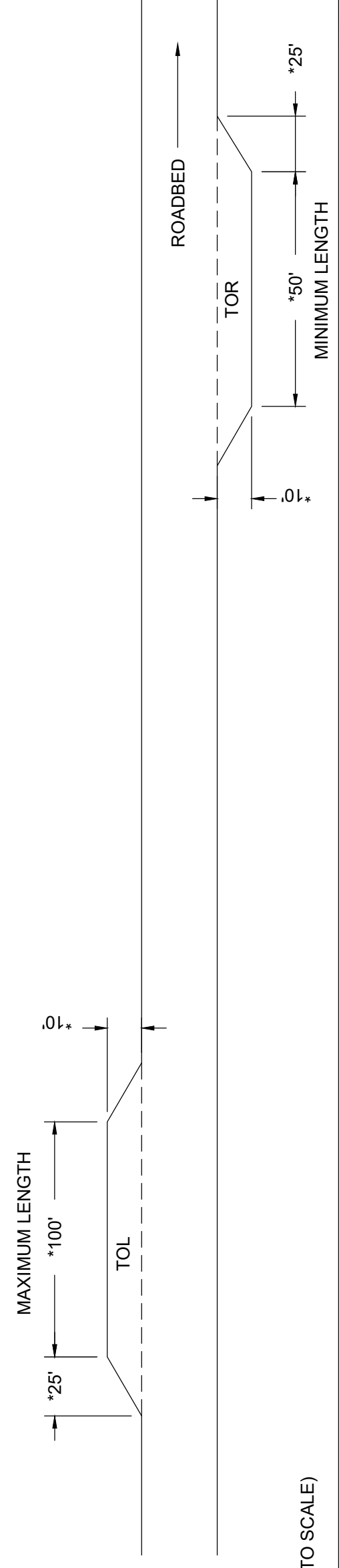


**ROADWAY DITCH**

RETAIN LOW GROWING VEGETATION, SUCH AS GRASS AND FORBS, UNLESS IT OBSTRUCTS THE STRUCTURE AND INTERFERES WITH PROPER FUNCTION OR ENCROACHES INTO ROADBED. GRUB AND BRUSH SMALL TREES.



**TYPICAL PLAN VIEW FOR TURNOUT RECONSTRUCTION**



(NOT TO SCALE)

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United States Department of Agriculture  
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PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

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PROJECT NAME  
**GNA GM  
TIMBER SALE**

WILLAMETTE  
NATIONAL FOREST

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**ROAD STRUCTURE  
DETAILS**

DATE	01/15/2020
DESIGNER	K. YEE
DRAWN	K. YEE
CHECKED	R. ALONSO
PROJECT NO.	
SHEET	12 OF 17



United States Department of Agriculture  
Forest Service  
R06  
PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

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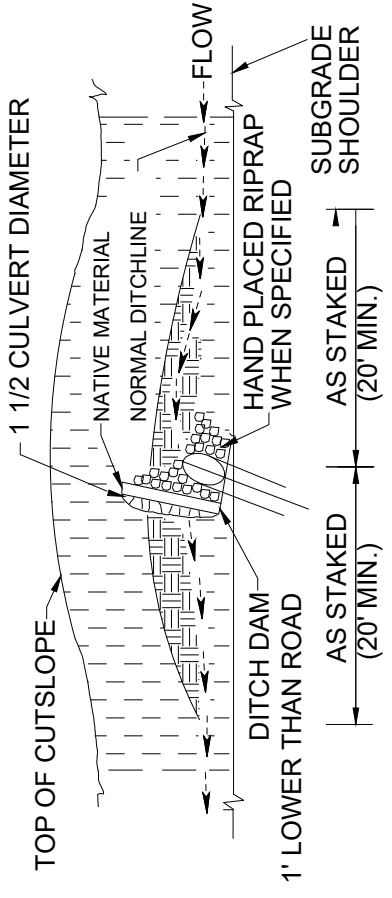
PROJECT NAME  
**GNA GM  
TIMBER SALE**

WILLAMETTE  
NATIONAL FOREST

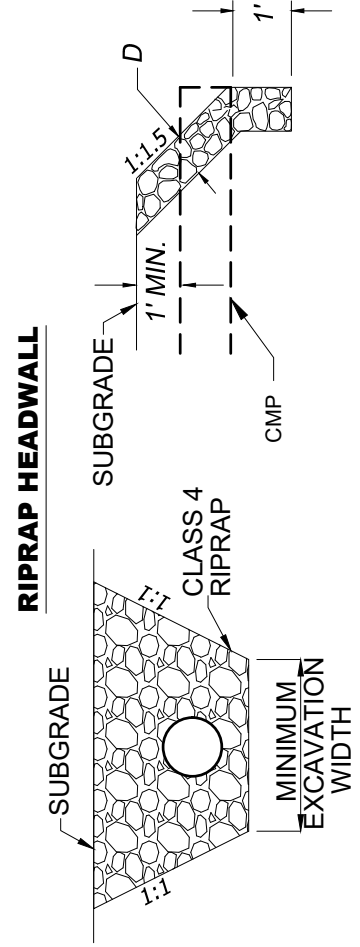
MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE  
**DRAINAGE TYPICALS**

DATE	ARCHIVE NO.
01/15/2020	
DESIGNER	DRAWING SHEET NO.
K. YEE	
DRAWN	
K. YEE	
CHECKED	PROJECT NO.
R. ALONSO	
	SHEET 13 OF 17

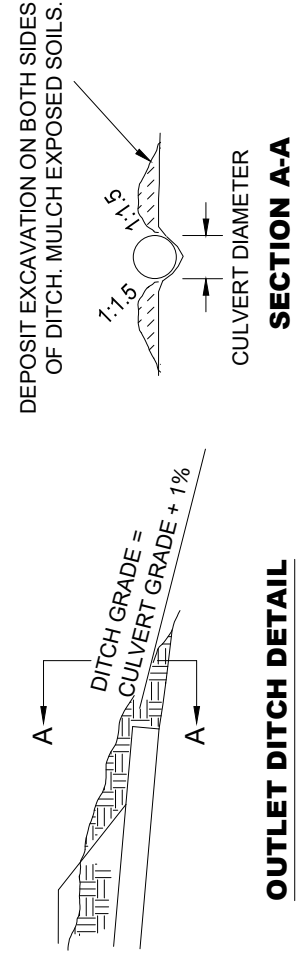


**CATCH BASIN DETAIL**



**FRONT ELEVATION**

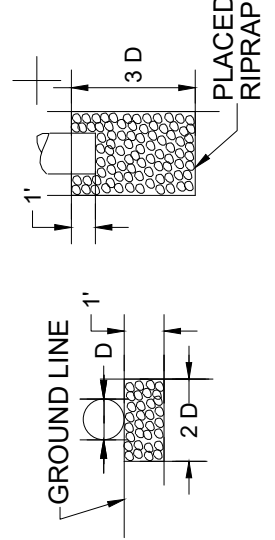
**SIDE ELEVATION**



**OUTLET DITCH DETAIL**

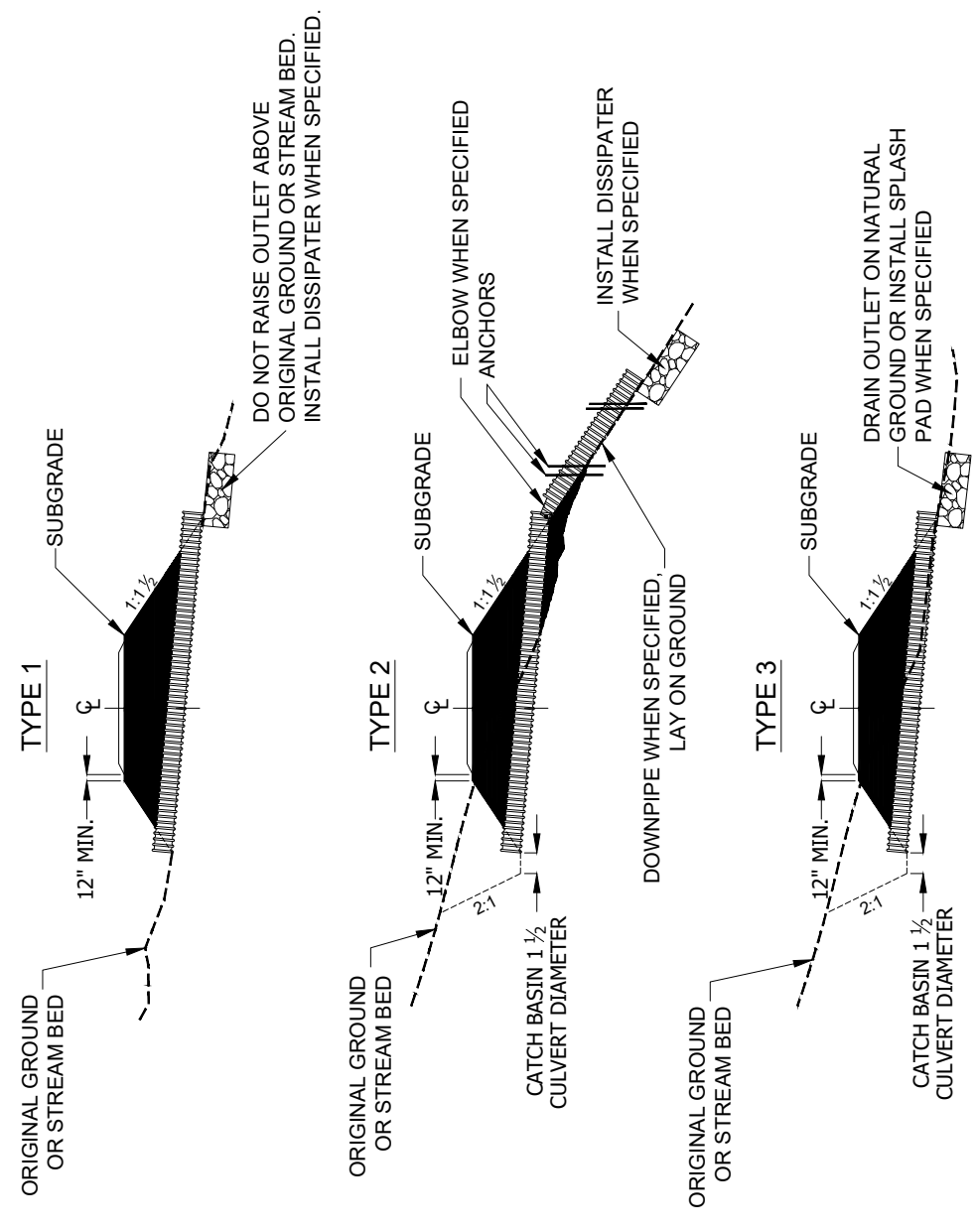
**SECTION A-A**

**ENERGY DISSIPATER DETAIL**

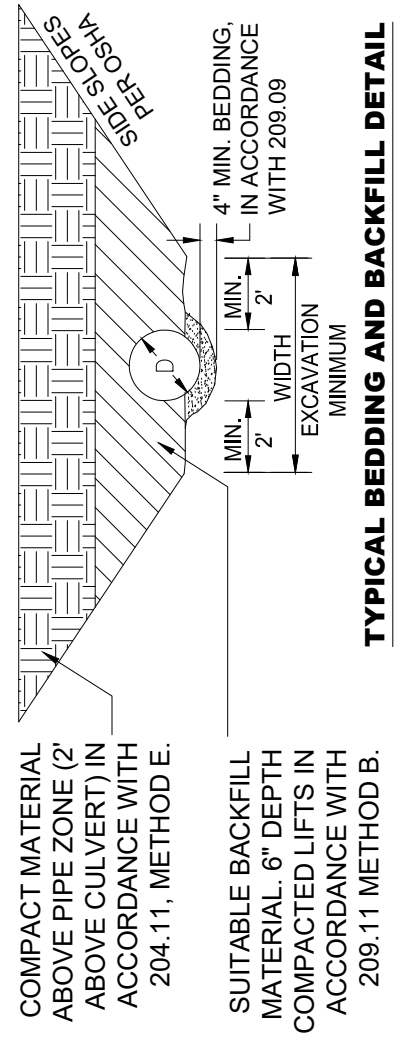


- NOTES:**
1. LEAVE SURFACE PROTRUDING WITH RIPRAP FOR VELOCITY BREAK

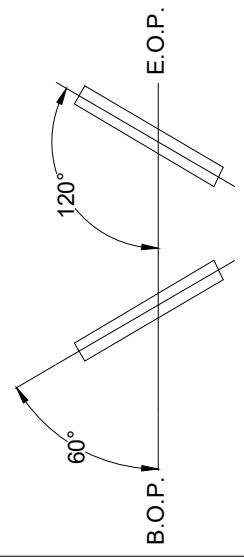
**CULVERT INSTALLATION TYPES**



- NOTES:**
1. ALL DRAWINGS NOT TO SCALE
  2. INSTALL HELICAL CORRUGATED LOCK SEAM ON CULVERT INLET/OUTLET BELOW THE HORIZONTAL CENTERLINE. SOME INSTALLATIONS OF CULVERTS MAY REQUIRE ADDITIONAL EXCAVATION BELOW GRADE LINE.
  3. ALL CULVERT INSTALLATIONS REQUIRE 12" MINIMUM COVER TO SUBGRADE.



**TYPICAL BEDDING AND BACKFILL DETAIL**



**SKEW DIAGRAM**



United States Department of Agriculture  
Forest Service

R06  
PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS		
NO.	REVISION / ISSUE	DATE

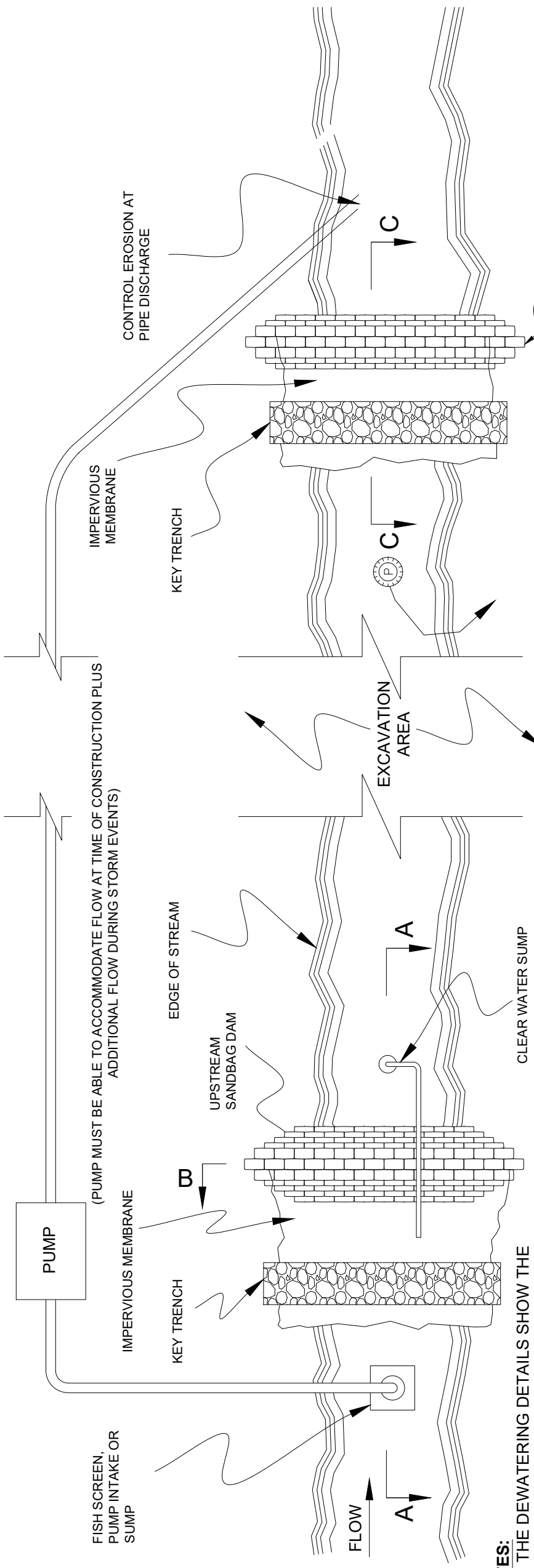
PROJECT NAME  
**GNA GM  
TIMBER SALE**

WILLAMETTE  
NATIONAL FOREST

MCKENZIE RIVER RANGER DISTRICT

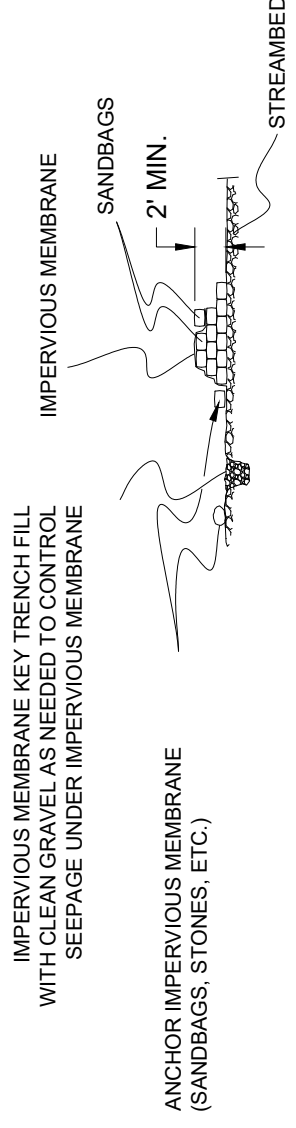
DRAWING TITLE  
**DEWATERING TYPICALS**

DATE	01/15/2020
DESIGNER	K. YEE
DRAWN	K. YEE
CHECKED	R. ALONSO
PROJECT NO.	
ARCHIVE NO.	
DRAWING SHEET NO.	
SHEET	14 OF 17

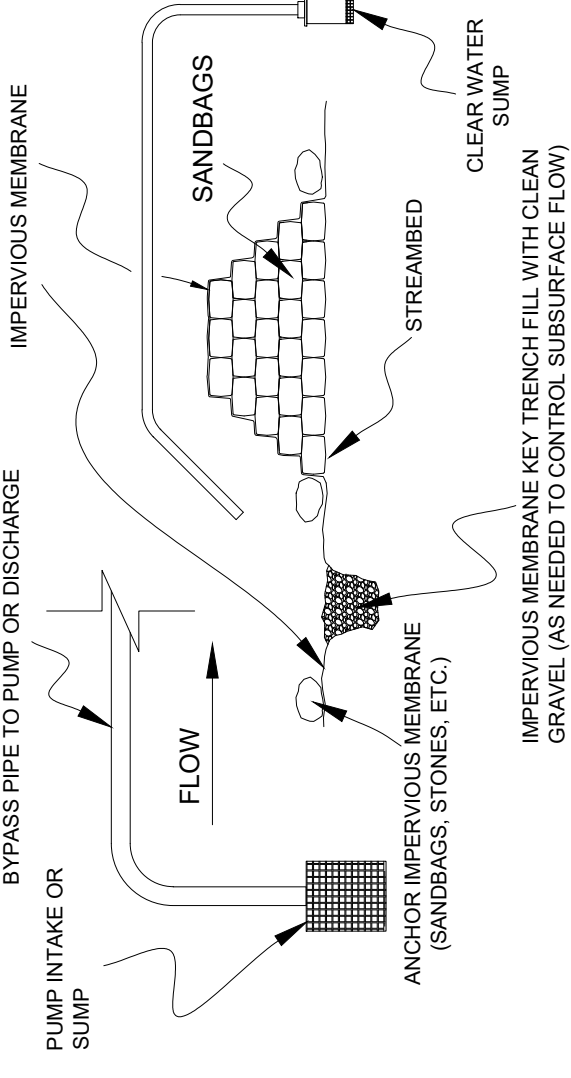


**BYPASS TYPICAL PLAN VIEW**  
(NOT TO SCALE)

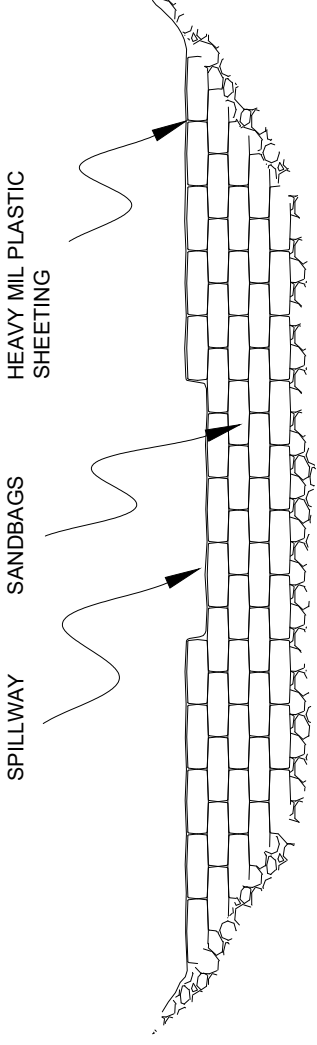
- NOTES:**
1. THE DEWATERING DETAILS SHOW THE MINIMUM ACCEPTABLE CRITERIA. MAINTAIN CLEAN WATER DOWNSTREAM OF THE PROJECT FOR THE DURATION OF THE PROJECT.
  2. MAINTAIN PUMPING CAPACITY UNTIL THE STREAM IS FLOWING IN THE INSTALLED CULVERT.



**SECTION C-C  
DOWNSTREAM SANDBAG BYPASS DAM DETAILS**  
(NOT TO SCALE)



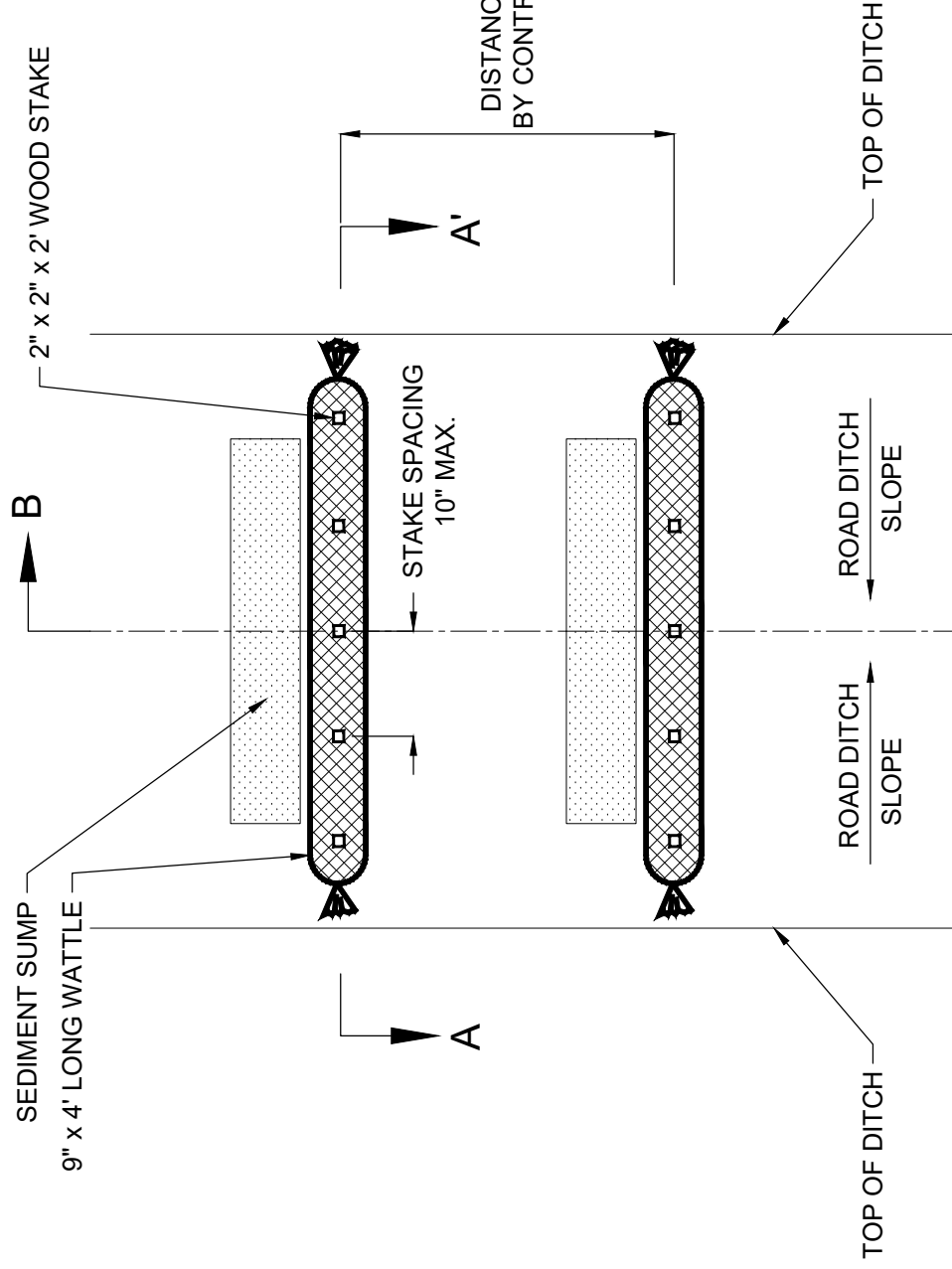
**SECTION A-A  
UPSTREAM SANDBAG BYPASS DAM DETAILS**  
(NOT TO SCALE)



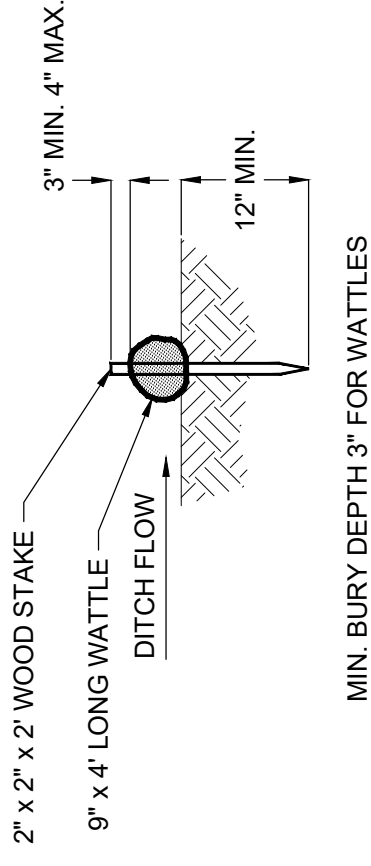
**SECTION B-B**  
(NOT TO SCALE)



**PLAN VIEW**



**STAKING REQUIREMENTS**



MIN. BURY DEPTH 3" FOR WATTLES

**USDA**  
FOREST SERVICE  
**USFS**  
DEPARTMENT OF AGRICULTURE

United States Department of Agriculture  
Forest Service

**R06**  
PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

4			
3			
2			
1			
NO.	REVISION / ISSUE	DATE	

PROJECT NAME  
**GNA GM  
TIMBER SALE**

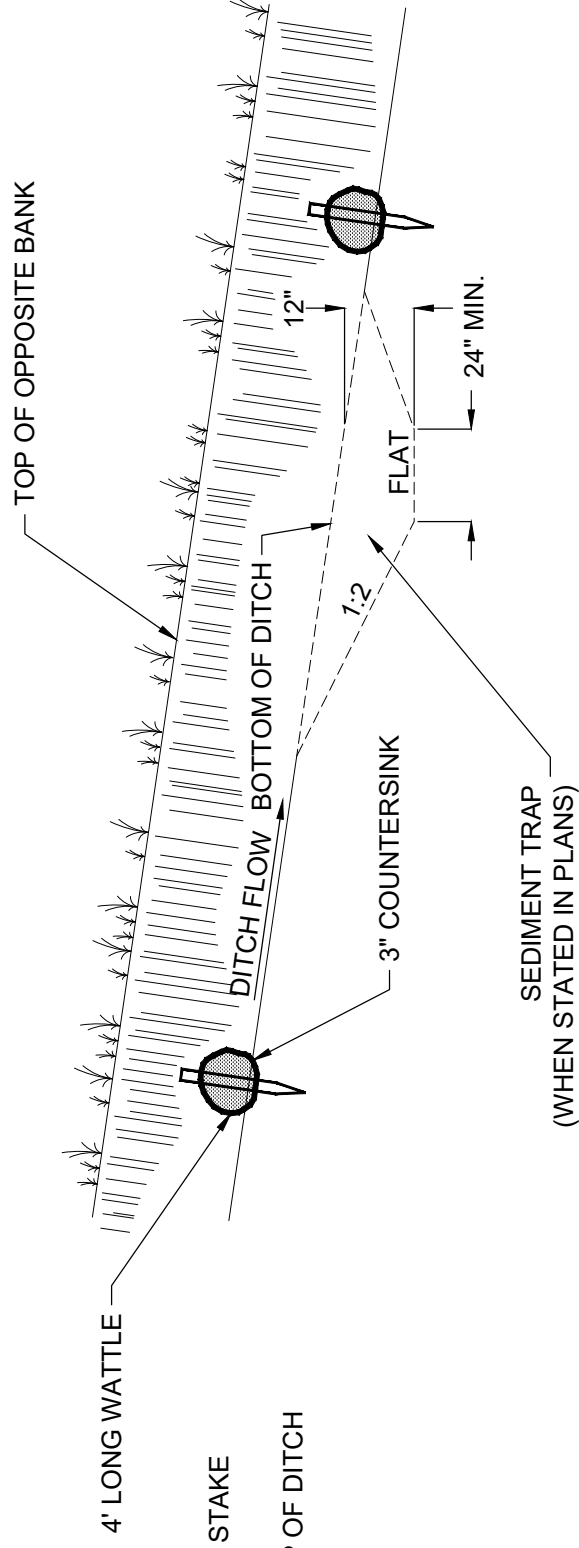
**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

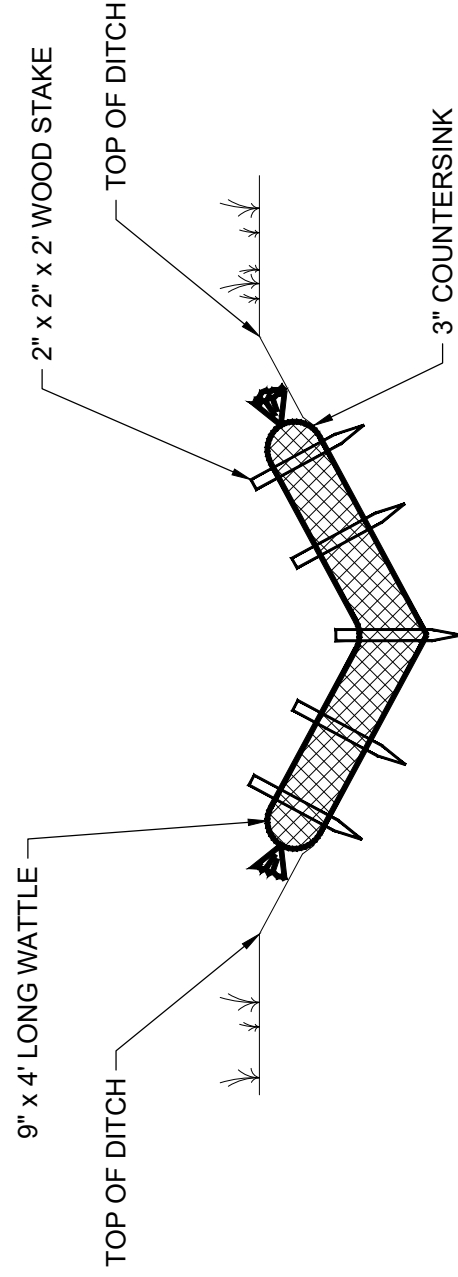
DRAWING TITLE  
**SOIL EROSION &  
POLLUTION CONTROL  
TYPICALS**

DATE 01/15/2020	ARCHIVE NO.
DESIGNER K. YEE	DRAWING SHEET NO.
DRAWN K. YEE	
CHECKED R. ALONSO	
PROJECT NO.	SHEET 15 OF 17

**SECTION B-B'**



**SECTION A-A'**







United States Department of Agriculture  
Forest Service

R06

PACIFIC NORTHWEST REGION

STAMPS, LOGOS, AND SEALS

4			
3			
2			
1			
NO.	REVISION / ISSUE	DATE	

PROJECT NAME

**GNA GM  
TIMBER SALE**

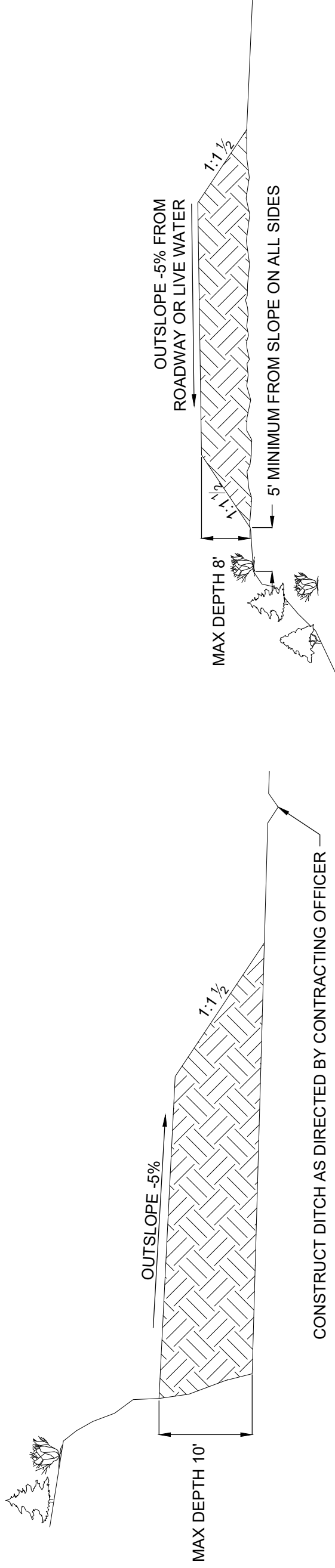
**WILLAMETTE  
NATIONAL FOREST**

MCKENZIE RIVER RANGER DISTRICT

DRAWING TITLE

**DISPOSAL AREA  
TYPICALS**

DATE	01/15/2020	ARCHIVE NO.	
DESIGNER	K. YEE	DRAWING SHEET NO.	
DRAWN	K. YEE		
CHECKED	R. ALONSO		
PROJECT NO.		SHEET 17	OF 17



**TYPICAL DISPOSAL AREA WITH VERTICAL FACE**

**TYPICAL DISPOSAL AREA IN AN OPEN AREA**

**NOTES:**

1. DRAWING NOT TO SCALE.
2. DISPOSAL AREA LIMITS TO BE STAKED BY THE CONTRACTING OFFICER.
3. MULCH THE DISPOSAL AREA.
4. LAYER PLACE DISPOSAL MATERIAL, COMPACTION METHOD C.

## FP-03 SPECIFICATION LIST

All specifications not included in the specification listing, but included by reference, are applicable. "X" denotes applicable standard and/or supplemental specification. The supplementals shown on the specification list are physically attached.

### Standard Specifications

Section	Date	Title	1900	1986	1986125	1986138
101-109	2003	General Requirements	X	X	X	X
151	2003	Mobilization	X	X	X	X
156	2003	Public Traffic	X	X	X	X
157	2003	Soil Erosion Control		X	X	
201	2003	Clearing and Grubbing		X	X	
202	2003	Additional Clearing and Grubbing		X	X	
203	2003	Removal of Structures and Obstructions		X	X	
204	2003	Excavation and Embankment		X	X	
212	2003	Linear Grading				X
251	2003	Riprap		X		
303	2003	Road Reconditioning		X	X	
404	2003	Minor Hot Asphalt Concrete	X			
602	2003	Culverts and Drains		X	X	
607	2003	Cleaning, Reconditioning, and Repairing Existing Drainage Structures		X		
625	2003	Turf Establishment	X	X	X	X

### Supplemental Specifications

Section	Date	Title	1900	1986	1986125	1986138
Preface	03/15/04	Preface	X	X	X	X
101.00	03/24/09	Terms, Format, and Definitions	X	X	X	X
101.01	01/22/09	Meaning of Terms	X	X	X	X
101.04	11/06/07	Definitions	X	X	X	X
102.00	02/16/05	Bid, Award, and Execution of Contract	X	X	X	X
103.00	02/16/05	Scope of Work	X	X	X	X
104.00	06/16/06	Deletions	X	X	X	X
104.03	01/22/09	Specifications and Drawings	X	X	X	X
104.06	02/17/05	Use of Roads by Contractor	X	X	X	X
105.02	01/18/07	Government Provided Sources	X	X	X	X
105.02	03/08/07	Contractor Provided Sources	X	X	X	X
105.02	02/17/05	Government provided sources	X	X	X	X
105.05	05/12/04	Use of Material Found in the Work	X	X	X	X
106.01	07/31/07	Conformity with Contract Requirements	X	X	X	X
106.07	05/11/04	Delete	X	X	X	X
107.02	02/17/05	Protection and Restoration of Property and Landscape	X	X	X	X

### Supplemental Specifications Continued

Section	Date	Title	1900	1986	1986125	1986138
107.05	05/11/04	Responsibility for Damage Claims	X	X	X	X
107.06	06/16/06	Contractor's Responsibility for Work.	X	X	X	X
107.08	03/29/05	Sanitation, Health, and Safety	X	X	X	X
107.09	06/16/06	Legal Relationship of the Parties	X	X	X	X
108.00	02/16/05	Delete	X	X	X	X
109.00	02/17/05	Deletions	X	X	X	X
109.02	06/16/06	Measurement Terms and Definitions	X	X	X	X
155.00	05/11/04	Delete	X	X	X	X
156.00	04/24/08	Public Traffic	X	X	X	X
157.03	02/24/05	General	X	X	X	X
170.00	03/26/07	Complete Specification	X	X	X	X
201.00	08/05/09	Deletions		X	X	X
201.01	02/18/05	Description		X	X	
201.04	02/22/05	Clearing		X	X	
201.04	03/03/05	Clearing		X	X	
201.06	02/18/05	Disposal		X	X	
203.01	02/25/05	Description		X	X	
203.05	02/18/05	Disposing of Material		X	X	
203.05	03/26/07	Disposing of Material		X	X	
204.00	02/11/08	Complete Specification		X	X	
209.07	07/12/07	Dewatering		X	X	
209.10	05/01/07	Backfill		X	X	
212.00	05/19/05	Complete Specification				X
251.03	08/05/09	General		X		
303.01	03/02/05	Work		X	X	
303.04	11/26/08	Shoulder Reconditioning		X	X	
303.05	03/26/07	Roadbed Reconditioning		X	X	
303.06	04/04/07	Aggregate Surface Reconditioning		X	X	
322.00	10/14/11	Minor Aggregate Courses (Complete Spec.)		X		X
324.00	08/28/08	Minor Aggregate, Commercial Source	X	X	X	
404.00	03/25/09	Minor Hot Asphalt Concrete	X			
602.03	09/06/05	General		X	X	
602.03	10/02/08	General		X	X	
602.03	03/17/10	General		X	X	
607.04	03/02/05	Cleaning Culverts in Place		X		
607.06	03/26/07	Reconditioning Drainage Structures		X		
625.08	01/29/09	Turf Establishment	X	X	X	X
703.05	08/14/09	Aggregate	X	X	X	
704.02	04/24/08	Bedding Material		X	X	
704.03	03/26/07	Backfill Material		X	X	
705.02	04/29/08	Riprap Rock		X		

# FP-03 SUPPLEMENTAL SPECIFICATIONS

## GNA GM TIMBER SALE

## Preface

Preface\_wo\_03\_15\_2004\_m

Delete all but the first paragraph and add the following:

The Forest Service, US Department of Agriculture has adopted FP-03 for construction of National Forest System Roads.

## 101 - Terms, Format, and Definitions

101.01\_0618\_us\_03\_24\_2009

### 101.01 Meaning of Terms

Delete all references to the TAR (Transportation Acquisition Regulations) in the specifications.

### 101.03 Abbreviations.

Add the following to (a) Acronyms:

AFPA	American Forest and Paper Association
MSHA	Mine Safety and Health Administration
NIST	<a href="#">National Institute of Standards and Technology</a>
NESC	National Electrical Safety Cod
WCLIB	West Coast Lumber Inspection Bureau
WSDOT	Washington State Department of Transportation
DOE	Washington State Department of Ecology
NEC	National Electric Code, including State Supplements
IPC	International Plumbing Code, including state Supplements
PCV	Polyvinyl Chloride Conduit
GRC	Galvanized rigid Conduit
IMC	Intermediate Metal Conduit
EMT	Electric Metallic Tubing
PUD	Public Utility District
ASSE	American Society of Sanitary Engineers



Add the following to (b) SI symbols:

mp	Milepost
ppm	Part Per Million

101.04 Definitions.

Delete the following definitions and substitute the following:

**Bid Schedule**--The Schedule of Items.

**Bridge**--No definition.

**Contractor**--The individual or legal entity contracting with the Government for performance of prescribed work. In a timber sale contract, the contractor is the "purchaser".

**Culvert**--No definition.

**Right-of-Way**--A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following:

**Adjustment in Contract Price**--"Equitable adjustment," as used in the Federal Acquisition Regulations, or "construction cost adjustment," as used in the Timber Sale Contract, as applicable.

**Change**--"Change" means "change order" as used in the Federal Acquisition Regulations, or "design change" as used in the Timber Sale Contract.

**Design Quantity**--"Design quantity" is a Forest Service method of measurement from the FS-96 *Forest Service Specifications for the Construction of Roads and Bridges*. Under these FP specifications this term is replaced by the term "Contract Quantities".

**Forest Service**--The United States of America, acting through the Forest Service, U.S. Department of Agriculture.

**Neat Line**--A line defining the proposed or specified limits of an excavation or structure.

**Pioneer Road**--Temporary construction access built along the route of the project.

**Purchaser**--The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through agents, employees, or subcontractors.

**Protected Streamcourse**--A drainage shown on the plans or timber sale area map that requires designated mitigation measures.

**Road Order**--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

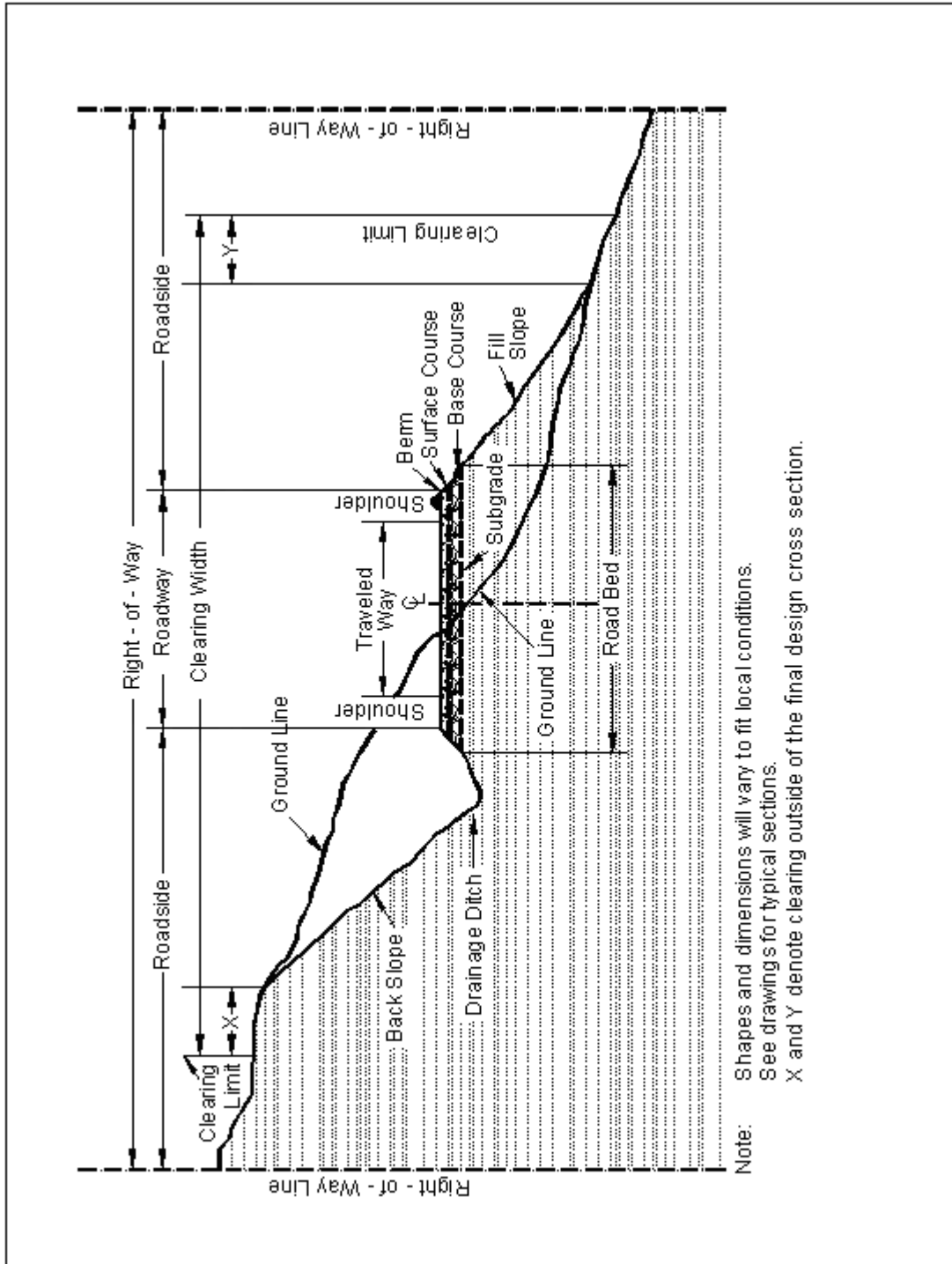
**Schedule of Items**--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, unit price, and amount.

**Supplemental Specifications** -Additions and revisions to the standard specifications applicable to an individual project.

**Utilization Standards**--The minimum size and percent soundness of trees described in the specifications to determine merchantable timber.

Add Figure 101-1—Illustration of road structure terms:

Figure 101-1—Illustration of road structure terms.



Note: Shapes and dimensions will vary to fit local conditions.  
 See drawings for typical sections.  
 X and Y denote clearing outside of the final design cross section.

### **101.01 Meaning of Terms**

Delete all references to the FAR (Federal Acquisition Regulations) in the specifications.

### **101.04 Definitions.**

Delete the following definitions:

Contract Modification

Day

Notice to Proceed

Solicitation

## **102 - Bid, Award, and Execution of Contract**

102.00\_nat\_us\_02\_16\_2005

### **102 Bid, Award, and Execution of Contract**

Delete Section 102 in its entirety.

## 103 - Scope of Work

103.00\_nat\_us\_02\_16\_2005

### Deletions

Delete all but subsection 103.01 Intent of Contract.

## 104 - Control of Work

104.00\_nat\_us\_06\_16\_2006

### Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03\_nat\_us\_01\_22\_2009

### **104.03 Specifications and Drawings.**

Delete 104.03.

104.06\_nat\_us\_02\_17\_2005

Add the following subsection:

### **104.06 Use of Roads by Contractor**

The Contractor is authorized to use roads under the jurisdiction of the Forest Service for all activities necessary to complete this contract, subject to the limitations and authorizations designated in the Road Order(s) or described in the contract, when such use will not damage the roads or national forest resources, and when traffic can be accommodated safely.

## 105 - Control of Material

105.02\_nat\_us\_01\_18\_2007

### 105.02 Material Sources.

#### 105.02(a) Government-provided sources.

Add the following:

Comply with the requirements of 30 CFR 56, subparts B and H. Use all suitable material for aggregate regardless of size unless otherwise designated. When required, re-establish vegetation in disturbed areas according to section 625.

105.02\_nat\_us\_03\_08\_2007

### 105.02 Material Sources.

#### 105.02(a) Contractor-provided sources.

Add the following:

All material (e.g., soil, gravel, sand, borrow, aggregate, etc.) transported onto National Forest System land or incorporated into the work will be weed-free. The Contracting Officer may request written documentation of methods used to determine the weed-free status of any and all materials furnished by the contractor. Contractor-provided expertise and methods to establish weed-free status must be appropriate for the weeds of concern in the local area. The following applies to this contract:

105.02\_nat\_us\_02\_17\_2005

#### 105.02(a) Government Provided Sources.

(a) Government-provided sources. Add the following:

Government-provided sources for this project are identified as follows:

(1) Government-provided mandatory sources.

Material for use under pay items 20462, 25101, and 32222 can be obtained from designated borrow source at Forest Service Road 1986 mile post 7.11. Reshape site to drain prior to final acceptance.

(2) Government-provided optional sources.

N/A



**105.05 Use of Material Found in the Work.**

Delete 105.05 (a) and (b) and the last sentence of the second paragraph and substitute the following:

Materials produced or processed from Government lands in excess of the quantities required for performance of this contract are the property of the Government. The Government is not obligated to make reimbursement for the cost of producing these materials.

## 106 - Acceptance of Work

106.01\_nat\_us\_07\_31\_2007

### 106.01 Conformity with Contract Requirements.

Delete Subsection 106.01 and substitute the following:

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. **If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:**

- (1) Sampling method;
- (2) Number of samples;
- (3) Sample transport;
- (4) Test procedures;
- (5) Testing laboratories;
- (6) Reporting;
- (7) Estimated time and costs; and
- (8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.

The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

**(b) Alternatives to removing and replacing non-conforming work.** As an alternative to removal and replacement, the Contractor may submit a written request to:

- (1) Have the work accepted at a reduced price; or

**(2)** Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

106.07\_nat\_us\_05\_11\_2004

### **106.07 Delete**

Delete subsection 106.07.

## 107 - Legal Relations and Responsibility to the Public

107.02\_nat\_us\_02\_17\_2005

### 107.02 Protection and Restoration of Property and Landscape.

Add the following:

All culvert installations/replacements with flowing water are considered stream channels. Perform work in streams from July 1<sup>st</sup> through August 15<sup>th</sup>. Construction or maintenance of roads will not be done when soils are saturated or run-off occurs, to minimize erosion and sedimentation.

107.05\_nat\_us\_05\_11\_2004

### 107.05 Responsibility for Damage Claims.

Delete the entire subsection.

107.06\_nat\_us\_06\_16\_2006

### 107.06 Contractor's Responsibility for Work.

Delete the following from the first paragraph.

“except as provided in Subsection 106.07”.

107.08\_nat\_us\_03\_29\_2005

### 107.08 Sanitation, Health, and Safety

Delete the entire subsection.

107.09\_nat\_us\_06\_16\_2006

### 107.09 Legal Relationship of the Parties.

Delete the entire subsection.

## 108 - Prosecution and Progress

108.00\_nat\_us\_02\_16\_2005

### 108 Delete.

Delete Section 108 in its entirety.

## 109 - Measurement and Payment

109.00\_nat\_us\_02\_17\_2005

### 109 Deletions

Delete the following entire subsections:

**109.06 Pricing of Adjustments.**

**109.07 Eliminated Work.**

**109.08 Progress Payments.**

**109.09 Final Payment.**

109.02\_nat\_us\_06\_16\_2006

### 109.02 Measurement Terms and Definitions.

#### **(b) Contract quantity.**

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

“(b) Cubic yard” to “(c) Cubic yard”.

Add the following definition:

**(p) Thousand Board Feet (Mbf).** 1,000 board feet based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job. For glued laminated timber, 1,000 board feet based on actual width, thickness, and length of each piece actually incorporated in the job.

## 155 - Schedules for Construction Contracts

155.00\_nat\_us\_05\_11\_2004

### 155 Delete.

Delete Section 155 in its entirety.



## 156 - Public Traffic

156.00\_0618\_us\_04\_24\_2008

Delete Section 156 in its entirety and replace with the following:

### Description

**156.01** This work consists of controlling and protecting public traffic adjacent to and within the project.

### Material

**156.02** Conform to the MUTCD and the following Sections and Subsections:

Construction sign panels	633
Retro-reflective sheeting	718.01
Temporary concrete barrier	618
Temporary plastic fence	710.11
Temporary traffic control devices	718.22

**156.03 General.** Unless otherwise provided for in Table 156-1, keep existing roads open to all traffic during road improvement work, and maintain them in a condition that will adequately accommodate traffic. Delays may not exceed **30** minutes at any one time followed by an open period of no less than **5** minutes.

Perform no work that interferes or conflicts with traffic or existing access to the roadway surface until a traffic control plan has been approved. Post construction signs and traffic control devices in conformance with MUTCD. All required signs will be in place and approved prior to beginning work on project.

If the Contractor agrees in writing to allow public traffic to use a new road being constructed prior to completion, it will be considered an existing road for traffic control purposes.

**156.04 Temporary Traffic Control.** Install and maintain temporary traffic control devices adjacent to and within the project as required by the approved traffic control plan and the MUTCD. Install and maintain traffic control devices as follows:

- (a) Furnish and install traffic control devices before the start of construction operations.
- (b) All detours outside of clearing limits will be approved in writing by the Contracting Officer as part of the traffic control plan.
- (c) Install only those traffic control devices needed for each stage or phase.

- (d) Relocate temporary traffic control devices as necessary.
- (e) Remove devices that no longer apply to the existing conditions.
- (f) Immediately replace any device that is lost, stolen, destroyed, or inoperative.
- (g) Keep temporary traffic control devices clean.
- (h) Remove all temporary traffic control devices upon contract completion or when approved.
- (i) When required, use flaggers certified by the American Traffic Safety Services Association, the National Safety Council, the International Municipal Signal Association, a state agency, or other acceptable organization. Perform the work described under MUTCD Part 6. Use type III, VII, VIII, or IX retroreflective sheeting on flagger paddles. Do not use flags. Flaggers must wear high visibility safety apparel as required by MUTCD 6E.02.

**156.05 Temporary Closures.** Road segments may be closed as shown in Table 156-1. The maximum consecutive days of closure shall be followed by a minimum number of consecutive days open to traffic as shown. Maintain traffic control devices during closure period(s). Appropriate barricades and signs will be erected and maintained as shown in the traffic control plan or as otherwise designated.

Prior to closing roads during construction, give written notice to the Contracting Officer at least 10 days in advance.

**Table 156-1**

**Temporary Road Closures**

Road Number	From Terminus	To Terminus	Maximum Consecutive Days of Closure	Minimum Consecutive Days Open
N/A	N/A	N/A	N/A	N/A

**156.06 Acceptance.** Public traffic work will be evaluated under Subsection 106.02. Traffic control devices and services will be evaluated under Section 635.

**Measurement and Payment**

**156.07** See Subsection 109.05.

Measure traffic control under Section 635.

## 157 - Soil Erosion Control

157.03\_nat\_us\_02\_24\_2005

### 157.03 General

Delete the entire subsection and replace with the following:

Prior to the start of construction, submit a written plan that provides permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction. Do not begin work until the necessary controls for that particular phase of work have been implemented. Do not modify the type, size, or location of any control. An alternate erosion control plan with all necessary permits may be submitted 30 days before intended use.

Incorporate all permanent erosion control features into the project at the earliest practicable time, as outlined in the approved plan.

When erosion control measures are not functioning as intended, immediately take corrective action.

## 170 - Develop Water Supply and Watering

170.00\_0618\_us\_03\_26\_2007

### Description

**170.01** This work consists of developing an acceptable water supply, furnishing, hauling, and applying water.

### Materials

**170.02** Conform to the following subsection.

Water	725.01.
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### Construction Requirements

**170.03 Development of Supply & Access.** Develop water supplies and access to the water supplies as required. Use designated water sources or other approved water sources. Before using non-designated water sources, obtain all necessary permissions, water rights, and permits.

#### **170.04 Equipment.**

**(a) Water tanks.** Provide mobile watering equipment with watertight tanks of known capacity. Provide for positive control of water application from the driver's position.

**(b) Juvenile fish protection.** All draft hoses being used to withdraw water from any live flowing stream or pond will utilize one of the following methods of screening.

**(1) Perforated plate:** Screen opening shall not exceed 3/32 or 0.0938-inches.

**(2) Profile bar screen:** The narrowest dimension in the screen openings shall not exceed 0.0689-inches in the narrowest direction.

**(3) Woven wire screen:** Screen openings shall not exceed 3/32 or 0.0938-inches in the narrow direction.

All methods shall be cleaned frequently with either wire brushing, flushing or other acceptable method.

**170.05 Application.** Apply water uniformly without ponding or washing.

**170.06 Acceptance.** Developing water supplies and watering will be evaluated under Subsections 106.02 and 106.04.

### Measurement and Payment

**170.07** See Subsection 109.05.

Do not measure develop water supply and watering for payment.

## 201 - Clearing and Grubbing

201.00\_nat\_us\_08\_05\_2009

### 201.02 Material:

Delete Tree wound dressing material reference.

### 201.03 General.

Delete the last sentence.

### 201.04 Clearing.

Delete the last sentence of (d).

201.01\_nat\_us\_02\_18\_2005

### 201.01 Description

Replace with the following

This work consists of clearing and grubbing within clearing limits and other designated areas.

201.04\_nat\_us\_02\_22\_2005

### 201.04 Clearing. (c)

Delete paragraph (c) and replace with the following:

(c) In areas outside the excavation, embankment, and slope rounding limits, cut stumps to within 12 inches or one-third of the stump diameter of the ground, whichever is higher, measured on the side adjacent to the highest ground. For timber sales, stump heights will meet the requirements of the Timber Sale contract.

### 201.04 Clearing.

Delete subsection (d) and replace with the following:

(d) Do not cut vegetation less than 3 feet tall and less than 3 inches in diameter, that is within the clearing limits but beyond the roadway and not in a decking area, and that does not interfere with sight distance along the road.

Add the following:

(e) Trim branches of remaining trees or shrubs to give a clear height of 14 feet above the roadbed unless otherwise indicated. Trim tree limbs as near flush with the trunk as practicable.

(f) Remove brush from log decks. Deck logs so that logs are piled parallel to one another; can be removed by standard log loading equipment; will not damage

standing trees; will not interfere with drainage, and will not roll. Keep logs in log decks free of brush and soil.

201.04\_nat\_us\_03\_03\_2005

### Construction Requirements

#### 201.04 Clearing.

Add the following:

Utilization standards for merchantable timber are listed below. Fall and buck merchantable material into lengths not to exceed 40 feet. Pieces (logs) meet utilization standards when such pieces would have met Utilization Standards if bucking lengths were varied to include such material.

#### Minimum Utilization Standards

Length	Diameter (Inside Bark) at Small End	<u>40%</u> Net Scale in % of Gross Scale
<u>8 feet</u>	<u>6 inches</u>	

201.06\_nat\_us\_02\_18\_2005

#### 201.06 Disposal.

Delete the first sentence of this subsection and substitute the following:

Dispose of merchantable timber designated for removal according to the provisions of the timber sale contract.

## 203 - Removal of Structures and Obstructions

203.01\_nat\_us\_02\_25\_2005

### 203.01 Description.

Delete and replace with the following:

This work consists of disposing of construction slash and debris, salvaging, removing, and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.

203.05\_nat\_us\_02\_18\_2005

### 203.05 Disposing of Material.

Add the following:

**(e) Windrowing Construction Slash.** Place construction slash outside the roadway in neat, compacted windrows approximately parallel to and along the toeline of embankment slopes. Do not permit the top of the windrows to extend above subgrade. Use construction equipment to matt down all material in a windrow to form a compact and uniform pile. Construct breaks of at least 15 feet at least every 200 feet in a windrow. Do not place windrows against trees. Obtain approval for pioneer roads. A pioneer road may be constructed to provide an area for placement of windrows, provided the excavated material is kept within the clearing limits and does not adversely affect the road construction.

**(f) Scattering.** Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

**(g) Chipping or Grinding.** Use an approved chipping machine to grind slash and stumps greater than 3 inches in diameter and longer than 3 feet. Deposit chips or ground woody material on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

**(h) Debris Mat.** Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat upon which construction equipment is operated. Place stumps upside down and blend stumps into the mat.

**(i) Decking Firewood Material.** Remove brush from decks. Limb and deck logs that do not meet Utilization Standards according to Subsection 201.04 as directed by the CO. Cut logs to lengths less than 30 feet. Ensure that logs stacks are stable and free of brush and soil.

**(j) Removal to designated locations.** Remove construction slash to designated locations.

**(k) Piling.** Pile construction slash in designated areas. Place and construct piles so that if the piles are burned, the burning will not damage remaining trees. Keep piles free of dirt from stumps. Cut unmerchantable logs into lengths of less than 20 feet.

**(l) Placing Slash on Embankment Slopes.** Place construction slash on completed embankment slopes to reduce soil erosion. Place construction slash as flat as practicable on the completed slope. Do not place slash closer than 2 feet below subgrade. Priority for use of available slash is for: (1) through fills; (2) insides of curves; and (3) ditch relief outlets.

**(m) Hydrological Sensitive Placement.** Where required use this method in combination with other designated methods to dispose of material to reduce erosion and to aid in re-vegetation:

1. Place windrow segments on contours, wrap in type I geotextile.
2. Place logs as log erosion barriers on contours. Place logs so that 80% of their length is on the ground surface.
3. Scatter slash on bare or disturbed areas within or outside the clearing limits as directed.
4. Scatter chips or ground woody material on bare or disturbed areas within or outside the clearing limits as directed.

Place stumps in swales or on sites to form planting pockets. Place windrow segments on contours, wrap in type I geotextile.

203.05\_0618\_us\_03\_26\_2007

## 203.05 Disposing of Material

**(a) Remove from project.**

Delete the last two sentences



## 204 - Excavation and Embankment

204.00\_0618\_us\_02\_11\_2008

Delete Section 204 in its entirety and replace with the following.

### Description

**204.01** This work consists of excavating material, constructing embankments and drainage excavation. This includes furnishing, hauling, stockpiling, placing, disposing, sloping, shaping, compacting, and finishing sand, earthen, and rocky material.

#### **204.02 Definitions.**

**(a) Excavation.** Excavation consists of the following:

**(1) Roadway excavation.** All material excavated from within the right-of-way or easement areas, except subexcavation covered in (2) below and structure excavation covered in Sections 208 and 209. Roadway excavation includes all material encountered regardless of its nature or characteristics.

**(2) Subexcavation.** Material excavated from below subgrade elevation in cut sections or from below the original groundline in embankment sections. Subexcavation does not include the work required by Subsections 204.05, 204.06(b), and 204.06(c).

**(3) Borrow excavation.** Material used for embankment construction that is obtained from outside the roadway prism. Borrow excavation includes unclassified borrow, select borrow, and select topping.

**(b) Embankment construction.** Embankment construction consists of placing and compacting roadway or borrow excavation. This work includes:

- (1)** Preparing foundation for embankment;
- (2)** Constructing roadway embankments;
- (3)** Benching for side-hill embankments;
- (4)** Constructing dikes, ramps, mounds, and berms; and
- (5)** Backfilling subexcavated areas, holes, pits, and other depressions.

**(c) Conserved topsoil.** Excavated material conserved from the roadway excavation and embankment foundation areas that is suitable for growth of grass, cover crops, or native vegetation.

**(d) Waste.** Excess and unsuitable roadway excavation and subexcavation that cannot be used.

### Material

**204.03** Conform to the following Subsections:

Backfill material	704.03
Select borrow	704.07
Select topping	704.08
Topping	704.05
Unclassified borrow	704.06
Water	725.01

### Construction Requirements

**204.04 Preparation for Roadway Excavation and Embankment Construction.**

Clear the area of vegetation and obstructions according to Sections 201 and 203.

**204.05 Reserved.**

**204.06 Roadway Excavation.** Excavate as follows:

**(a) General.** Do not disturb material and vegetation outside the construction limits.

Incorporate only suitable material into embankments. Replace any shortage of suitable material caused by premature disposal of roadway excavation

At the end of each day's operations, shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

Retrieve material deposited outside of the clearing limits as directed by the CO.

**(b) Rock cuts.** Blast rock according to Section 205. Excavate rock cuts to 6 inches below subgrade within the roadbed limits. Backfill to subgrade with topping or with other suitable material. Compact the material according to Subsection 204.11 When blasting rock, use blasting methods according to Subsection 205.08.

**(c) Earth cuts.** Scarify earth cuts to 6 inches below subgrade within the roadbed limits. Compact the scarified material according to Subsection 204.11.

**(d) Pioneer Roads.** Road pioneering, slash disposal, and grubbing of stumps may proceed concurrently with excavation. Conduct excavation and placement operations so material to be treated under Section 201 will not be incorporated into the roadway unless specified in the slash treatment method. Maintain drainage during pioneering operations.

Remove snow and ice in advance of the work and deposit beyond the roadway limits in a manner that will not waste material or generate sediment. Do not incorporate snow and ice into embankments. Place snow or ice in a manner to prevent resource damage.

**(e) Drainage Excavation.** Drainage excavation includes construction of all ditches, minor channel changes, drainage dips, catchbasins, surface water

deflectors, and other minor drainage structures. Compact by Method (f) unless otherwise shown on the plans. Excavate on a uniform grade between control points.

**204.07 Subexcavation.** Excavate material to the limits as designated. Take cross-sections according to Section 152. Prevent unsuitable material from becoming mixed with the backfill. Dispose of unsuitable material according to Subsection 204.14. Backfill the subexcavation with topping, or other suitable material. Compact the material according to Subsection 204.11.

**204.08 Borrow Excavation.** Use all suitable roadway excavation in embankment construction. Do not use borrow excavation when it results in excess roadway excavation. Deduct excess borrow excavation from the appropriate borrow excavation quantity.

Obtain borrow source acceptance according to Subsection 105.02. Develop and restore borrow sources according to Subsection 105.03. Do not excavate beyond the established limits. When applicable, shape the borrow source to permit accurate measurements when excavation is complete.

**204.09 Preparing Foundation for Embankment Construction.** Prepare foundation for embankment construction as follows:

**(a) Embankment less than 4 feet high over natural ground.** Unless otherwise designated by the CO, remove topsoil. Break up the ground surface to a minimum depth of 6 inches by plowing or scarifying. Compact the ground surface according to Subsection 204.11.

**(b) Embankments over an existing asphalt, concrete, or gravel road surface.** Scarify gravel roads to a minimum depth of 6 inches. Scarify or pulverize asphalt and concrete roads to 6 inches below the pavement. Reduce all particles to a maximum size of 6 inches and produce a uniform material. Compact the surface according to Subsection 204.11.

**(c) Embankment across ground not capable of supporting equipment.** Dump successive loads of embankment material in a uniformly distributed layer to construct the lower portion of the embankment. Limit the layer thickness to the minimum depth necessary to support the equipment.

**(d) Embankment on an existing slope steeper than 1V:3H.** Cut horizontal benches in the existing slope to a sufficient width to accommodate placement and compaction operations and equipment. Bench the slope as the embankment is placed and compacted in layers. Begin each bench at the intersection of the original ground and the vertical cut of the previous bench.

**204.10 Embankment Construction.** Incorporate only suitable roadway excavation material into the embankment. When the supply of suitable roadway excavation is exhausted, furnish unclassified borrow to complete the embankment. Obtain written approval before beginning construction of embankments over 6 feet high at subgrade centerline. Construct embankments as follows:

**(a) General.** At the end of each day's operations, shape to drain and compact the embankment surface to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

During all stages of construction, route and distribute hauling and leveling equipment over the width and length of each layer of material.

Compact embankment side slopes flatter than 1V:1.75H with a tamping type roller or by walking with a dozer. For slopes 1V:1.75H or steeper, compact the slopes as construction of the embankment progresses.

Where placing embankment on one side of abutments, wing walls, piers, or culvert headwalls, compact the material using methods that prevent excessive pressure against the structure.

Where placing embankment material on both sides of a concrete wall or box structure, conduct operations so compacted embankment material is at the same elevation on both sides of the structure.

Where structural pilings are placed in embankment locations, limit the maximum particle size to 4 inches.

**(b) Embankment within the roadway prism.** Place embankment material in horizontal layers not exceeding 12 inches in compacted thickness. Incorporate oversize boulders or rock fragments into the 12-inch layers by reducing them in size or placing them individually as required by (c) below. Compact each layer according to Subsection 204.11 before placing the next layer.

Material composed predominately of boulders or rock fragments too large for 12-inch layers may be placed in layers up to 24 inches thick. Incorporate oversize boulders or rock fragments into the 24-inch layer by reducing them in size or placing them individually according to (c) below. Place sufficient earth and smaller rocks to fill the voids. Compact each layer according to Subsection 204.11 before placing the next layer.

**(c) Individual rock fragments and boulders.** Place individual rock fragments and boulders greater than 24 inches in diameter as follows:

- (1) Reduce rock to less than 48 inches in the largest dimension.
- (2) Distribute rock within the embankment to prevent nesting.
- (3) Place layers of embankment material around each rock to a depth not greater than that permitted by (b) above. Fill all the voids between rocks.
- (4) Compact each layer according to Subsection 204.11 before placing the next layer.

**(d) Embankment outside of roadway prism.** Where placing embankment outside the staked roadway prism, place material in horizontal layers not exceeding 24 inches in compacted thickness. Compact each layer according to Subsection 204.11.

**204.11 Compaction.** Compact the embankment using one of the following methods as specified:

**(a) Compaction A.** Use AASHTO T 27 to determine the amount of material retained on a Number 4 sieve. If there is more than 80 percent retained on the No. 4 sieve use procedure (1). If there is 50 to 80 percent retained on the No. 4 sieve use procedure (2). If there is less than 50 percent retained on the No. 4 sieve use procedure (3).

**(1)** Adjust the moisture content to a level suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width with one of the following and until there is no visible evidence of further consolidation.

(a) Four roller passes of a vibratory roller having a minimum dynamic force of 40,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

(b) Eight roller passes of a 20-ton compression-type roller.

(c) Eight roller passes of a vibratory roller having a minimum dynamic force of 30,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

Increase the compactive effort for layers deeper than 12 inches as follows:

- For each additional 6 inches or fraction thereof, increase the number of roller passes in (a) above by four passes.
- For each additional 6 inches or fraction thereof, increase the number of roller passes in (b) and (c) above, by eight passes.

**(2)** Use AASHTO T 99 to determine the optimum moisture content of the portion of the material passing a No. 4 sieve. Multiply this number by the percentage of material passing a No. 4 sieve, and add 2 percent to determine the optimum moisture content of the material. Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width according to (1) above.

**(3)** Classify the material according to AASHTO M 145. For material classified A-1 or A-2-4, determine the maximum density according to AASHTO T 180, method D. For other material classifications, determine the optimum moisture content and maximum density according to AASHTO T 99, method C.

Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type or vibratory rollers. Compact each layer of material full width to at least 95 percent of the maximum density. Determine the in-place density and moisture content according to AASHTO T 310 or other approved test procedures. When required, use AASHTO T 224 to correct for coarse particles.

**(b) Compaction B.** Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until there is no visible evidence of further consolidation or, if when a sheepsfoot roller is used, the roller “walks out” of the layer. Make at least three complete passes.

**(c) Compaction C.** Place material by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each embankment layer before placing the next layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Construct a solid embankment with adequate compaction by working smaller rock and fines in with the larger rocks to fill the voids, and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

**(d) Compaction D.** Hauling and Spreading Equipment. Adjust the moisture content to a level suitable for compaction. Compact the material by operating equipment over the full width of the roadway.

**(e) Compaction E.** Roller Compaction. Adjust the moisture content to a level suitable for compaction. Operate Rollers over the full width of each layer until visual displacement ceases, but not fewer than three complete passes. Use rollers that meet the following requirements:

**(1)** Steel wheeled rollers, other than vibratory, capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.

**(2)** Vibratory steel wheeled rollers equipped with amplitude and frequency controls with a minimum weight of 6 tons, specifically designed to compact the material on which it is used.

**(3)** Pneumatic-tired rollers with smooth tread tires of equal size that will provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 psi.

**(4)** Sheepsfoot, tamping, or grid rollers capable of exerting a force of 250 lbs/inch of width of roller drum.

**(f) Compaction F.** Mechanical Tamper. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each 6 inch layer with a minimum of three complete passes with a mechanical tamper.

**204.12 Ditches.** Slope, grade, and shape ditches. Remove all projecting roots, stumps, rock, or similar matter. Maintain all ditches in an open condition and free from leaves, sticks, and other debris.

Form furrow ditches by plowing or using other acceptable methods to produce a continuous furrow. Place all excavated material on the downhill side so the bottom of the ditch is approximately 18 inches below the crest of the loose material. Clean the ditch using a hand shovel, ditcher, or other suitable method. Shape to provide drainage without overflow.

**204.13 Sloping, Shaping, and Finishing.** Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish as follows:

**(a) Sloping.** Leave all earth slopes with uniform roughened surfaces, except as described in (b) below, with no noticeable break as viewed from the road. Except in solid rock, round tops and bottoms of all slopes including the slopes of drainage ditches. Round material overlaying solid rock to the extent practical. Scale all rock slopes. Slope rounding is not required on tolerance class D through M roads.

If a slide or slipout occurs on a cut or embankment slope, remove or replace the material, and repair or restore all damage to the work. Bench or key the slope to stabilize the slide. Reshape the cut or embankment slope to an acceptable condition.

**(b) Stepped slopes.** Where required by the contract, construct steps on slopes of  $1\frac{1}{3}V:1H$  to  $1V:2H$ . Construct the steps approximately 18 inches high. Blend the steps into natural ground at the end of the cut. If the slope contains nonrippable rock outcrops, blend steps into the rock. Remove loose material found in transitional area. Except for removing large rocks that may fall, scaling stepped slopes is not required.

**(c) Shaping.** Shape the subgrade to a smooth surface and to the cross-section required. Shape slopes to gradually transition into slope adjustments without noticeable breaks. At the ends of cuts and at intersections of cuts and embankments, adjust slopes in the horizontal and vertical planes to blend into each other or into the natural ground.

**(d) Finishing.** Finish the roadbed to be smooth and uniform, and shaped to conform to the typical sections. Remove unsuitable material from the roadbed and replace it with suitable material. Finish roadbeds to the tolerance class shown in table 204-2. Ensure that the subgrade is visibly moist during shaping and dressing. Scarify to 6 inches below the bottom of low sections, holes, cracks, or depressions and bring back to grade with suitable material. Maintain proper ditch drainage.

For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed.

For unsurfaced roads, use one of the following methods to finish the roadbed:

**(1) Method A.** Remove all material larger than 6 inches from the top 6 inches of the roadbed and replace with suitable material.

**(2) Method B.** Use a vibratory grid roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until there is no visible evidence of further consolidation.

**(3) Method C.** For roads designated as Construction Tolerance Class K, L, or M, finish the roadbed by spreading the excavation. Eliminate rock berms.

**204.14 Disposal of Unsuitable or Excess Material.** Dispose of unsuitable or excess material at designated sites or legally off of the project.

When there is a pay item for waste, shape and compact the waste material in its final location according to Subsection 204.11 (c) Compaction C. Do not mix clearing or other material not subject to payment with the waste material. When there is not a pay item for waste, shape and compact the waste material in its final location according to Subsection 204.11 (c) Compaction C.

**204.15 Acceptance.** See Table 204-1 for sampling and testing requirements.

Material for embankment and conserved topsoil will be evaluated under Subsections 106.02 and 106.04.

Excavation and embankment construction will be evaluated under Subsections 106.02 and 106.04.

Clearing and removal of obstructions will be evaluated under Sections 201 and 203.

### **Measurement**

**204.16** Measure the Section 204 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

**(a) Roadway excavation.** Measure roadway excavation in its original position as follows:

**(1)** Include the following volumes in roadway excavation:

(a) Roadway prism excavation;

(b) Rock material excavated and removed from below subgrade in cut sections;

(c) Unsuitable material below subgrade and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;

(d) Ditches, except furrow ditches measured under a separate bid item;

(e) Topsoil;

(f) Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;

(g) Loose scattered rocks removed and placed as required within the roadway;



(h) Conserved material taken from stockpiles and used in Section 204 work;  
and

(i) Slide and slipout material not attributable to the Contractor's method of operation.

**(2)** Do not include the following in roadway excavation:

(a) Overburden and other spoil material from borrow sources;

(b) Overbreakage from the backslope in rock excavation;

(c) Water or other liquid material;

(d) Material used for purposes other than required;

(e) Roadbed material scarified in place and not removed;

(f) Material excavated when stepping cut slopes;

(g) Material excavated when rounding cut slopes;

(h) Preparing foundations for embankment construction;

(i) Material excavated when benching for embankments;

(j) Slide or slipout material attributable to the Contractor's method of operation;

(k) Conserved material taken from stockpiles constructed at the option of the Contractor; and

(l) Material excavated outside the established slope limits.

**(3)** When both roadway excavation and embankment construction pay items are shown in the bid schedule, measure the following as roadway excavation only:

(a) Unsuitable material below subgrade in cuts and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;

(b) Slide and slipout material not attributable to the Contractor's method of operations; and

(c) Drainage ditches, channel changes, and diversion ditches.

**(b) Unclassified borrow, select borrow, and select topping.** When measuring by the cubic yard measure in its original position. If borrow excavation is measured by the cubic yard in place, take initial cross-sections of the ground surface after stripping overburden. Upon completion of excavation and after the borrow source waste material is returned to the source, retake cross-sections before replacing the overburden.

Do not measure borrow excavation used in place of excess roadway excavation.

**(c) Embankment construction.** Measure embankment construction in its final position. Do not make deductions from the embankment construction quantity for the volume of minor structures.

**(1)** Include the following volumes in embankment construction:

- (a) Roadway embankments;
- (b) Material used to backfill subexcavated areas, holes, pits, and other depressions;
- (c) Material used to restore obliterated roadbeds to original contours; and
- (d) Material used for dikes, ramps, mounds, and berms.

**(2)** Do not include the following in embankment construction:

- (a) Preparing foundations for embankment construction;
- (b) Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed; and
- (c) Material used to round fill slopes.

**(d) Rounding cut slopes.** Measure rounding cut slopes horizontally along the centerline of the roadway if a pay item for slope rounding is included in the bid schedule. If a pay item for slope rounding is not included in the bid schedule slope rounding will be considered subsidiary to excavation.

**(e) Waste.** Measure waste by the cubic yard in its final position. Take initial cross-sections of the ground surface after stripping over burden. Upon completion of the waste placement, retake cross-sections before replacing overburden.

**(f) Slope scaling.** Measure slope scaling by the cubic yard in the hauling vehicle.

### **Payment**

**204.17** The accepted quantities will be paid at the contract price per unit of measurement for the Section 204 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 204-1  
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Topping (704.05) & unclassified borrow (704.06)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Processed material before incorporating in work	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd <sup>2</sup> but not less than 1 per layer	In-place	—	Before placing next layer
Select borrow (704.07) & Select topping (704.08)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type but not less than 1 for each day of production	Processed material before incorporating	Yes, when requested	Before using in work
		Gradation	—	AASHTO T 27	"	"	"	"
		Liquid limit	—	AASHTO T 89	"	"	"	"
		Moisture-density	—	AASHTO T 180, method D <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd <sup>2</sup> but not less than 1 per layer	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor

Table 204-1 (continued)  
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Earth embankment (204.11, Compaction A)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Source of Material	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D <sup>(1)</sup> or T 99, method C <sup>(1)</sup>	1 per soil type but not less than 1 per 13,000 yd <sup>3</sup>	"	"	"
Top of subgrade (204.11 Compaction A)	Measured and tested for conformance (106.04)	Compaction	—	AASHTO T 310 or other approved procedures	1 per 3500 yd <sup>2</sup> but not less than 1 per layer	In-place	—	Before placing next layer
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 2500 yd <sup>2</sup>	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor.

**Table 204-2  
Construction Tolerances**

	Tolerance Class <sup>(a)</sup>												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Roadbed width (ft)	+0.5	+0.5	+1.0	+1.0	+1.0	+1.0	+1.5	+1.0	+2.0	+2.0	+2.0	+2.0	+2.0
Subgrade elevation (ft)	±0.1	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±2.0	±3.0	±2.0	±3.0	(c)
Centerline alignment (ft)	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±1.5	±2.0	±3.0	±3.0	±5.0	(c)
Slopes, excavation, and embankment	±3	±5	±5	±5	±5	±5	±10	±10	±10	±10	±20	±20	±20

(a) Maximum allowable deviation from construction stakes and drawings.

(b) Maximum allowable deviation from staked slope measured from slope stakes or hinge points.

(c) Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of the grade change is greater than or equal to 10 percent. The centerline grade is not to exceed 20 percent in 100 feet of length.

## 209 Structure Excavation and Backfill

209.07\_0618\_us\_07\_12\_2007

### 209.07 Dewatering.

Delete subsection 209.07 and substitute the following:

**Dewatering.** Where necessary to dewater, dewater according to Subsection 157.09.

209.10\_0618\_us\_05\_01\_2007

### 209.10 Backfill.

#### (a) General.

Add the following:

Replace any pipe that is distorted by more than 5 percent of nominal dimensions, or that is ruptured or broken.

Do not place or backfill pipe that meets any of the following conditions until the excavation and foundation have been approved in writing by the CO:

- Embankment height greater than 6 feet at subgrade centerline.
- Installation in a protected streamcourse.
- Round pipe with a diameter of 48 inches or greater.
- Pipe arches with a span of 50 inches or greater.
- Any box culvert of structure other than pipe culverts.

#### (b) Pipe culverts.

##### (1) Pipe culverts with compacted backfill.

Add the following:

On each side of the pipe, excavate an area at least as wide AS SHOWN ON THE PLANS. Backfill without damaging or displacing the pipe. Complete backfilling of the trench with suitable material.

### 209.11 Compacting.

Delete the subsection and add the following:

Compact backfill using designated compaction method A, B, or C:

**Method A.** Ensure that backfill density exceeds the density of the surrounding embankment.

**Method B.** Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each layer using appropriate compaction equipment until visual displacement ceases. For compaction under sections 252, 254, 255, 257, 258 and 262 compact with a vibratory steel wheeled roller with a mass of at least 8 tons.

**Method C.** Determine optimum moisture content and maximum density according to AASHTO T 99 method C. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact material placed in all layers to at least 95 percent of the maximum density. Determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

**Table 209-1 Sampling and Testing Requirements**

Add the following:

(2) Compaction methods (A) and (B) do not require AASHTO T-99 or T-310 test methods for foundation fill.

## 212 - Linear Grading

212.00\_nat\_us\_05\_19\_2005

Delete the entire specification and replace it with the following:

### Description

**212.01** This work consists of clearing and grubbing, excavation and embankment, and erosion control to construct roadways and associated features.

### Construction Requirements

**212.02 Clearing & Disposal.** Protect construction stakes and construction control markers. Remove or treat all trees, snags, downed timber, brush, and stumps within the clearing limits.

Immediately remove slash deposited in stream courses.

Fell all dead trees that are outside the clearing limits and that lean toward the road and are tall enough to reach the roadbed.

Leave stump heights less than 12 inches or one-third of the stump diameter; whichever is greater, measured on the side adjacent to the highest ground. Leave felled trees outside the clearing limits in place, and treat them no further unless otherwise designated.

Utilization standards for merchantable timber are listed below. Fall and buck merchantable material into lengths not to exceed 40 feet. Pieces (logs) will be considered as meeting utilization standards when such pieces would have met Utilization Standards if bucking lengths were varied to include such material.

### Minimum Utilization Standards

Diameter (Inside Bark)

Length at Small End

8 feet 6 inches 33-1/3 Net Scale in % of Gross 2 Cubic Feet

Do not cut vegetation less than 3 feet in height and less than 3 inches in diameter that is within the clearing limits but beyond the roadway and not in a decking area and that does not interfere with sight distance along the road.

### Merchantable Timber

(f) Remove brush from log decks. Deck logs so that logs are piled parallel to one another; can be removed by standard log loading equipment; will not damage standing trees; will not interfere with drainage, and will not roll. Keep logs in log decks free of brush and soil.



### **Unmerchantable Timber and Large Construction Slash**

**(f) Scattering.** Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

**212.03 Pioneering.** Do not undercut the final back slope during pioneering operations. Deposit material inside the roadbed limits. Do not restrict drainage.

**212.04 Grubbing.** Within the clearing limits remove stumps with less than 6 inches of cover.

**212.05 Excavation & Embankment.** Construct the roadway to the required template. Protect backslopes from being undercut. Embankment may be placed by side casting and end dumping.

Locate and use borrow material, and remove and treat unsuitable or excess material.

Place rocks that are too large to be incorporated in the embankment outside the traveled way on the downhill side so that they will not roll, obstruct drainage, or hinder roadbed use and maintenance.

Leave slopes that are to be seeded in a roughened condition.

Use a crawler tractor with a dozer blade to shape and finish the roadbed. Provide for drainage of surface water, unless otherwise designated. Do not permit individual rocks in the roadbed to protrude more than 4 inches above the subgrade. A motor grader finish is not required.

Do not encroach on stream channels, wetlands, or extend beyond right-of-way or easement limits. Do not make alignment or profile grade adjustments that adversely affect drainage. Construct the roadbed within the following grading tolerances:

(a) Alignment (centerline). Alignment may be shifted a maximum of 10 feet left or right of the planned centerline. Curve radii may be reduced by up to 50 percent. Do not construct curves with radii less than 100 feet. Compound curves are permitted. Traveled way tolerance is (+) 2 feet unless otherwise designated.

(b) Profile grade. Profile grade may be shifted a maximum of 5 feet up or down from the plan elevation provided the new grade tangent does not vary more than 2 percent from the plan grade tangent. Connect revised forward and back grade tangents with a uniform vertical curve consistent with the design.

**212.06 Drainage.** Install culverts and other drainage structures according to Section 602 and Section 209.

**212.07 Erosion Control.** Install erosion control measures and seeding according to the drawings and Section 625.

**212.08 Acceptance.** Linear grading will be evaluated under Subsections 106.02 and 106.04.

Clearing and slash and timber treatment will be evaluated under Sections 201 and 203.

### **Measurement**

**212.09** Measure the Section 212 items listed in the bid schedule according to Subsection 109.02 and the following.

Do not measure changes in the clearing and grubbing quantity caused by alignment adjustments under Subsection 212.04.

### **Payment**

**212.10** The accepted quantities, measured as provided in Subsection 109.02 and above, will be paid at the contract price per unit of measurement for the Section 212 pay item listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

## 251 - Riprap

251.03\_nat\_us\_08\_05\_2009

### Construction Requirements

#### 251.03 General.

Add the following:

Place riprap under or adjacent to structures before placing prefabricated superstructure units or constructing superstructure falsework unless otherwise approved by the CO.

#### 251.08 Measurement.

Add the following:

Payment for excavation and embankment required for placement of riprap is indirectly included in the pay item for riprap.

## 303 - Road Reconditioning

303.01\_nat\_us\_03\_02\_2005

### 303.01 Work.

Delete and add the following:

This work consists of reconditioning ditches, shoulders, roadbeds, cattleguards, asphalt surfaces, and aggregate surfaces.

303.04\_0618\_us\_11\_26\_2008

### 303.04 Shoulder Reconditioning.

Delete and add the following:

Remove all slide material, vegetation and other debris from existing shoulders including shoulders of turnouts and other widened areas. Reshape shoulders and dispose of waste as designated.

303.05\_0618\_us\_03\_26\_2007

### 303.05 Roadbed Reconditioning.

Delete fourth sentence and replace with the following:

Scarify to the depth and width shown on the drawings, remove surface irregularities, and shape to provide a uniform surface.

303.06\_0618\_us\_04\_04\_2007

### 303.06 Aggregate Surface Reconditioning.

Delete and replace with the following:

Repair soft and unstable areas to the full depth of the aggregate surface and according to Subsection 204.07. Scarify to the depth and width shown in the drawings, and remove surface irregularities. Reshape, finish, and compact the entire aggregate surface according to Section 301, Section 321, or Section 322 as applicable.

**Delete Table 303-1 and replace with the following:**

**Table 303-1  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specification	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	
Existing Roadway	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 <sup>(1)</sup>	1 per each mixture or change in material	Processed material before incorporating in work	Yes, when requested	Before using in work	
		Moisture-density Method E	—	R-1 Marshall	"	"	"	"	
		Moisture-density Method F	—	AASHTO T 180 <sup>(1)</sup>	"	"	"	"	"
		Moisture-density Method G	—	R-1 Marshall	"	"	"	"	"
		In-place density & moisture content	—	AASHTO T 310 or other approved procedures	1 per 3000 yd <sup>2</sup>	In-place	—	Before placing next layer	

(1) Minimum of 5 points per proctor.

## 322 - Minor Aggregate Courses

322.00\_nat\_us\_10\_14\_2011

### Description

**322.01** This work consists of constructing one or more courses of aggregate on a prepared surface. Work includes producing aggregate by grid rolling, screening, or crushing methods, or placing pit-run or Government-furnished aggregate.

Surface aggregate grading is designated as shown in Table 703-3.

Subbase and base aggregate grading is designated as shown in Table 703-2.

Screened aggregate grading is designated as shown in Table 703-16.

### Material

**322.02** Conform to the following Subsections:

Aggregate	703.05
Water	725.01

### Construction Requirements

**322.03 General.** Prepare the surface on which the aggregate course is placed according to Section 204 or 303 as applicable.

Request approval of the roadbed in writing before placing aggregate.

Develop, haul, and apply water in accordance to Section 170.

Submit target values within the gradation ranges shown in Table 703-2 or 703-3 for the required grading. After reviewing the proposed target values the CO will determine the final values for the gradation and notify the Contractor in writing.

No quality requirements or gradation other than maximum size will be required for pit run and grid-rolled material. For grid rolling, use all suitable material that can be reduced to maximum size.

After processing on the road, remove all oversize material from the road and dispose of it as directed by the CO.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at approved locations.

**322.04 Mixing and Spreading.** Mix the aggregate and adjust the moisture content to obtain a uniform mixture with a moisture content suitable for the specified compaction method. Spread and shape the mixture on the prepared surface in a uniform layer with no segregation of size, and to a loose depth that will provide the required compacted thickness.

Do not place in layers exceeding 6 inches in compacted thickness for aggregate base and surface courses or twice the maximum particle size for screened aggregate. When more than one layer is necessary, compact each layer according to Subsection 322.05 before placing the next layer. Route hauling and leveling equipment uniformly over the full width.

When placing aggregate over geotextile, place aggregate in a single lift to the full depth specified.

**322.05 Compacting.** Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

**Compaction A.** Operating spreading and hauling equipment over the full width of the travelway.

**Compaction B.** Operate rollers and compact as specified in Subsection 204.11(a)(1).

**Compaction C.** Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11(a)(1).

**Compaction D.** Compact to a density of at least 95 percent of the maximum density, as determined by AASHTO T 99, method C or D.

**Compaction E.** Removed.

**Compaction F.** Compact to a density of at least 95 per-cent of the maximum density, as determined by AASHTO T 180, method C or D.

**Compaction G.** Removed.

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface. When a density

requirement is specified, determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

**322.06 Construction Tolerance.** If grade finishing stakes are required, finish the surface to within  $\pm 0.10$  feet from staked line and grade elevation.

If grade finishing stakes are not required, shape the surface to the required template and check the surface with a 10-foot straightedge. Defective areas are surface deviations in excess of 1/2 inch in 10 feet between any two contacts of the straightedge with the surface.

Correct all defective areas by loosening the material, adding or removing material, reshaping, and compacting.

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is  $\frac{1}{2}$  inch.

Ensure that the compacted width is not consistently above the specified width. The maximum variation from the specified width will not exceed +12 inches at any point.

**322.07 Maintenance.** Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or any combination thereof until placement of the next course. Correct all defects according to Subsection 322.06.

**322.08 Acceptance.** See Table 322-1 or Table 322-2 as applicable, for sampling and testing requirements.

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.04. If the aggregate is obtained from a Government stockpile then the above characteristics will be evaluated under Subsection 106.02. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04. Placement of aggregate courses will be evaluated under Subsections 106.02 and 106.04.

The allowable upper and lower aggregate gradation limits are the Target Value plus or minus the allowable deviations shown in Tables 703-2 and 703-3.

The allowable upper and lower Plasticity index limits for surface courses are stated in 703.05(b).

Preparation of the surface on which the aggregate course is placed will be evaluated under Section 204 or 303 as applicable.



### **Measurement**

**322.09** Measure the Section 322 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure square yard width horizontally to include the top of aggregate width including designed widening. Measure the square yard length horizontally along the centerline of the roadway.

If the measurement for aggregate is by cubic yard using contract quantities then measure aggregate by the cubic yard in-place once compacted, otherwise measurement for aggregate by the cubic yard is measured by the cubic yard in the hauling vehicle.

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

### **Payment**

**322.10** The accepted quantities will be paid at the contract price per unit of measurement for the Section 322 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

**Table 322-1  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality 703.05	Measured and tested for conformance (106.04 & 105)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	"	"	"	"
		Durability index (coarse & fine)	—	AASHTO T 210	"	"	"	"
		Fractured faces	—	ASTM D 5821	"	"	"	"
Subbase, Base, and Surface courses	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

**Table 322-1 (continued)  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specification	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Subbase, Base, and Surface	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 <sup>(1)</sup>	1 per type and source of material	Source of material	Yes, when requested	Before using in work
		Moisture-density Method F	—	AASHTO T 180 <sup>(1)</sup>	"	"	"	"
		In-place density & moisture content	—	AASHTO T 310 or other approved procedures	3 per day	In-place	—	Before placing next layer
			—					

(1) Minimum of 5 points per proctor.

**Table 322-2  
Sampling and Testing Requirements**

<b>Material or Product</b>	<b>Type of Acceptance (Subsection)</b>	<b>Characteristic</b>	<b>Category</b>	<b>Test Methods Specifications</b>	<b>Sampling Frequency</b>	<b>Point of Sampling</b>	<b>Split Sample</b>	<b>Reporting Time</b>
Screened Aggregate	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

## 324 - Minor Aggregate, Commercial Source

324.00\_nat\_us\_08\_28\_2008

### Section 324. – MINOR AGGREGATE COURSES – COMMERCIAL SOURCE

#### Description

**324.01** This work consists of constructing one or more courses of aggregate on a prepared surface. Work includes producing aggregate by crushing methods.

#### Material

**324.02** Conform to the following Subsections:

Aggregate	703.06
Water	725.01

#### Construction Requirements

**324.03 General.** Prepare the surface on which the aggregate course is placed according to Section 204 or 303 as applicable.

Request approval of the roadbed in writing before placing aggregate.

Develop, haul, and apply water in accordance to Section 170.

Submit aggregate gradations for approval by the CO.

After processing on the road, remove all oversize material from the road and dispose of it as directed by the CO.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at approved locations.

**324.04 Mixing and Spreading.** Mix the aggregate and adjust the moisture content to obtain a uniform mixture with moisture content suitable for the specified compaction method. Spread and shape the mixture on the prepared surface in a uniform layer with no segregation of size, and to a loose depth that will provide the required compacted thickness. Place the mixture in a maximum compacted layer thickness of 6 inches.

When more than one layer is necessary, compact each layer according to Subsection 324.05 before placing the next layer. Route hauling and leveling equipment uniformly over the full width.

When placing aggregate over geotextile, place aggregate in a single lift to the full depth specified.

**324.05 Compacting.** Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

**Compaction A.** Operating spreading and hauling equipment over the full width of the travelway.

**Compaction B.** Operate rollers and compact as specified in Subsection 204.11(a)(1).

**Compaction C.** Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11(a)(1).

**Compaction D.** Compact to a density of at least 95 percent of the maximum density, as determined by AASHTO T 99, method C or D.

**Compaction E.** Compact to a density of at least 96 percent of the maximum density, as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

**Compaction F.** Compact to a density of at least 95 percent of the maximum density, as determined by AASHTO T 180, method C or D.

**Compaction G.** Compact to a density of at least 100 percent of the maximum density as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface. When a density requirement is specified, determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

**324.06 Construction Tolerance.** If grade finishing stakes are required, finish the surface to within  $\pm 0.10$  feet from staked line and grade elevation.

If grade finishing stakes are not required, shape the surface to the required template and check the surface with a 10-foot straightedge. Defective areas are surface deviations in excess of 1/2 inch in 10 feet between any two contacts of the straightedge with the surface.

Correct all defective areas by loosening the material, adding or removing material, reshaping, and compacting.

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is ½ inch.

Ensure that the compacted width is not consistently above the specified width. The maximum variation from the specified width will not exceed +12 inches at any point.

**324.07 Maintenance.** Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or any combination thereof until placement of the next course. Correct all defects according to Subsection 324.06.

**324.08 Acceptance.** See Table 324-1 for sampling and testing requirements.

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.03 and 106.04. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.03. Placement of aggregate courses will be evaluated under Subsections 106.02 and 106.04.

Preparation of the surface on which the aggregate course is placed will be evaluated under Section 204 or 303 as applicable.

### **Measurement**

**324.09** Measure the Section 324 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure square yard width horizontally to include the top of aggregate width including designed widening. Measure the square yard length horizontally along the centerline of the roadway.

If the measurement for aggregate is by cubic yard using contract quantities then measure aggregate by the cubic yard in-place once compacted, otherwise measurement for aggregate by the cubic yard is measured by the cubic yard in the hauling vehicle.

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

### **Payment**

**324.10** The accepted quantities will be paid at the contract price per unit of measurement for the Section 324 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

**Table 324-1  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality 703.06	Measured and tested for conformance (106.03 & 105)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	"	"	"	"
		Durability index (coarse & fine)	—	AASHTO T 210	"	"	"	"
		Fractured faces	—	ASTM D 5821	"	"	"	"
Subbase, Base, and Surface courses	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours



**Table 324-1 (continued)  
Sampling and Testing Requirements**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specification	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time	
Subbase, Base, and Surface	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 <sup>(1)</sup>	1 per type and source of material	Source of material	Yes, when requested	Before using in work	
		Moisture-density Method E	—	R-1 Marshall	"	"	"	"	
		Moisture-density Method F	—	AASHTO T 180 <sup>(1)</sup>	"	"	"	"	"
		Moisture-density Method G	—	R-1 Marshall	"	"	"	"	"
		In-place density & moisture content	—	AASHTO T 310 or other approved procedures	3 per day	In-place	—	Before placing next layer	

(1) Minimum of 5 points per proctor.

## 404 - Minor Hot Asphalt Concrete

404.02\_0618\_us\_03\_25\_2009

### 404.02 Composition of Mix (Job-Mix Formula).

Delete the second paragraph and replace with the following:

Submit a job-mix formula and supporting documentation, test results, and calculations for the material to be incorporated into the work. Include copies of laboratory test results and mix design data that demonstrate that the properties of the aggregate, additives, and mixture meet the current requirements and criteria of Federal or state agencies. Ensure that the job-mix formula was performed no more than one year prior to placing the hot asphalt concrete. After reviewing the Contractor's proposed job-mix formula, the CO will determine the final values for the job-mix formula to be used and notify the Contractor in writing.

**404.04 Weather Limitations.** Delete the text of this Subsection and substitute the following:

Place asphalt concrete on a dry, unfrozen surface when the ambient air temperature is at least 45 degrees Fahrenheit and rising.

### 404.06 Placing.

Add the following:

Do not place asphalt until the CO has approved in writing the area where it will be placed.

Delete the last sentence and replace with the following:

Offset the longitudinal joint of one layer at least 6 inches from the joint in the layer immediately below. Make the longitudinal joint in the top layer along the centerline of two-lane roadways or at the lane lines of roadways with more than two lanes. Offset transverse joints in succeeding layers and in adjacent lanes at least 10 feet, where possible.

#### **404.07 Compacting (a).**

Delete and replace with the following:

(a) Roadway paving. Thoroughly and uniformly compact the surface a minimum of three passes with rollers that meet one of the following requirements:

(1) Steel-wheeled rollers, other than vibratory type, capable of exerting a force of not less than 1.5 ton/feet of width of the compression roll or rolls.

(2) Vibratory steel-wheel rollers with a minimum mass of 5 ton, equipped with amplitude and frequency controls, and designed to compact asphalt concrete.

(3) Pneumatic-tire rollers with smooth tread tires of equal size that provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 lbf/in<sup>2</sup>.

Perform initial compaction while the mixture is above 250 °F. Perform finish rolling with steel-wheel rollers and continue until no roller tracks remain.

#### **404.09 Acceptance.**

Add the following to the second paragraph:

See Table 404-1 for sampling and testing requirements.

Table 404-1. Delete and replace with the following:

**Table 404-1. Sampling and Testing Requirements.**

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Sampling Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Asphalt Mixture (404.09)	-	-	-	AASHTO T 168	Three minimum per project and at least one per 500 Cubic yards	Roadway prior to compaction	yes	As soon as sampled

## 602 - Culverts and Drains

602.03\_nat\_us\_09\_06\_2005

### 602.03 General.

Add the following:

Ensure that the final installed alignment of all pipe allows no reverse grades, and does not permit horizontal and vertical alignments to vary from a straight line drawn from center of inlet to center of outlet by more than 2 percent of pipe center length or 1.0 feet, whichever is less.

602.03\_nat\_us\_10\_02\_2008

### 602.03 General.

Delete second paragraph and add the following:

The lengths and locations of individual pipe “as shown on the plans” are approximate. Do not order pipe until culvert locations are designated on the ground and a written list of the correct lengths is approved by the CO.

602.03\_06\_us\_03\_17\_2010

### 602.03 General

Add the following:

Clean and paint damaged coating caused by welding, field cutting, or handling in accordance with AASHTO M 36M and ASTM A 849.

## **607 - Cleaning, Reconditioning, and Repairing Existing Drainage Structures**

607.04\_nat\_us\_03\_02\_2005

### **607.04 Cleaning Culverts in Place.**

Add the following:

If approved by the CO, all or part of the pipe designated to be cleaned in-place may be removed, cleaned, and re-laid in accordance with Section 602. In these cases, furnish all material required to replace damaged pipe and joints and relay the pipe.

607.06\_0618\_us\_03\_26\_2007

### **607.06 Reconditioning Drainage Structures.**

Add the following:

After field cutting, repair damaged coatings in accordance with AASHTO M 36M and ASTM A 849.

## 625 - Turf Establishment

625.08\_0618\_us\_01\_29\_2009

### **625.08 Mulching. (a) Dry method.**

Delete the paragraph and replace with the following:

Apply certified weed free straw mulch as shown on the plans.

## 703 - Aggregate

703.05\_nat\_us\_08\_14\_2009

**Delete 703.05 and replace with the following:**

### **703.05 Subbase, Base, Surface Course, and Screened Aggregate.**

**(a) Subbase or base aggregate.** Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-2
(2) Liquid limit, AASHTO T 89	25 max.
(3) Plastic limit, AASHTO T 90	Nonplastic
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	50% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

**(b) Surface course aggregate.** Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-3
(2) Liquid limit, AASHTO T 89	35 max.
(3) Plastic Index, AASHTO T 90	
a) If the percent passing the No. 200 sieve is less than 12%	2 to 9
b) If the percent passing the No. 200 sieve is greater than 12%	Less than 2
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	75% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Do not furnish material that contains asbestos fibers.



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Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

**(c) Screened aggregate** – Furnish hard, durable particles or fragments of stone, slag, or gravel conforming the following:

- |   |              |
|---|--------------|
| <b>(1)</b> Gradation  | Table 703-16 |
| <b>(2)</b> Plastic Index, AASHTO T 90                           | Less than 9  |
| <b>(3)</b> Los Angeles abrasion, AASHTO T 96                    | 55% max.     |
| <b>(4)</b> Free from organic matter and lumps or balls of clay. |              |

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

**Delete Table 703-2 and replace with the following:**

**Table 703-2  
Target Value Ranges for Subbase and Base Gradation  
Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)**

Sieve Size	Grading Designation				
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)
2½ inch	100				
2 inch	97 – 100	100	100		
1½ inch		97 – 100			
1 inch	65 – 79 (6)		80 – 100 (6)	100	
¾ inch			64 – 94 (6)	86 – 100 (6)	100
½ inch	45 – 59 (7)				
⅜ inch			40 – 69 (6)	51 – 82 (6)	62 – 90 (6)
No. 4	28 – 42 (6)	40 – 60 (8)	31 – 54 (6)	36 – 64 (6)	36 – 74 (6)
No. 40	9 – 17 (4)			12 – 26 (4)	12 – 26 (4)
No. 200	4.0 – 8.0 (3)	4.0 – 12.0 (4)	4.0 – 7.0 (3)	4.0 – 7.0 (3)	4.0 – 7.0 (3)

( ) The value in the parentheses is the allowable deviation (±) from the target values..

**Delete Table 703-3 and replace with the following:**

**Table 703-3  
Target Value Ranges for Surface Gradation**

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)							
	F	G	H	S	T	U	Grading Designation	
1 1/2 inch	100			100				
1 inch	97-100	100		72 – 92 (6)	100			
3/4 inch	76-89 (6)	97 - 100	97 - 100			100		
1/2 inch					71 – 91 (6)			
3/8 inch	56-68 (6)	70 – 80 (6)	80 – 92 (6)	51 – 71 (6)				71 – 90 (6)
No. 4	43-53 (7)	51 – 63 (7)	58 – 70 (7)	36 – 53 (7)	43 – 60 (7)			50 – 68 (7)
No. 8				26 – 40 (6)	30 – 46 (6)			34 – 51 (6)
No. 16	23-32 (6)	28 – 39 (6)	28 – 40 (6)					
No. 40	15-23 (5)	19 – 27 (5)	16 – 26 (5)	14 – 25 (5)	16 – 28 (5)			19 – 30 (5)
No. 200	10.0-16.0 (4)	10.0 – 16.0 (4)	9.0 – 14.0 (4)	8.0 – 15.0 (4)	8.0 – 15.0 (4)			8.0 – 15.0 (4)

( ) The value in the parentheses is the allowable deviation ( $\pm$ ) from the target values. If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

**Add Table 703-16:**

**Table 703-16**

**Gradation Requirements for Screened Aggregate**

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)						
	Grading Designation						
	L	M	N	O	P	Q	R
6 inch	100	100					
4 inch			100	100			
3 inch					100	100	
2 inch							100
No. 4		15-45		15-45		15-45	

## 704 - Soil

704.02\_0618\_us\_04\_24\_2008

### **704.02 Bedding Material.**

Delete the Soil classification, AASHTO M 145 requirement in (b).

704.03\_0618\_us\_03\_26\_2007

### **704.03 Backfill Material.**

Delete the Soil classification, AASHTO M 145 requirement in (a) (2) and (b) (2).

## 705 - Rock

705.02\_0618\_us\_04\_29\_2008

### 705.02 Riprap Rock.

Delete Table 705-1 and replace it with the following:

**Gradation Requirements for Riprap**

<b>Class</b>	<b>Percent of Rock by Mass</b>	<b>Mass (pounds)</b>	<b>Approximate Cubic Dimension<sup>b,c</sup> (inches)</b>
1	20	22 to 33	6 to 8
	30	11 to 22	5 to 6
	40	1.1 to 11	2 to 5
	10 <sup>a</sup>	0 to 1.1	0 to 2
2	20	55 to 110	8 to 10
	30	22 to 55	6 to 8
	40	2.2 to 22	3 to 6
	10 <sup>a</sup>	0 to 2.2	0 to 3
3	20	220 to 330	14 to 16
	30	110 to 220	10 to 14
	40	11 to 110	5 to 10
	10 <sup>a</sup>	0 to 11	0 to 5
4	20	550 to 770	18 to 20
	30	220 to 570	14 to 18
	40	22 to 220	6 to 14
	10 <sup>a</sup>	0 to 22	0 to 6
4a	20	770 to 1353	20 to 24
	30	330 to 770	16 to 20
	40	33 to 330	7 to 16
	10 <sup>a</sup>	0 to 33	0 to 7
5	20	1540 to 2200	26 to 28
	30	770 to 1540	20 to 26
	40	55 to 1100	8 to 20
	10 <sup>a</sup>	0 to 55	0 to 8
6	20	1870 to 3520	28 to 34
	30	1100 to 1870	22 to 28
	40	110 to 1100	10 to 22
	10 <sup>a</sup>	0 to 110	0 to 10
6a	100	1870 to 3520	28 to 34
7	20	4400 to 5940	35 to 39
	30	2200 to 4400	28 to 35
	40	220 to 2200	14 to 28

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	10 <sup>a</sup>	0 to 220	0 to 14
8	20	7000 to 10000	42 to 47
	30	4000 to 7000	35 to 42
	40	400 to 4000	16 to 35
	10 <sup>a</sup>	0 to 400	0 to 16

- (a) Furnish spall and rock fragments graded to provide a stable dense mass.
- (b) The volume of a rock with these cubic dimensions has a mass approximately equal to the specified rock mass.
- (c) Furnish rock with breadth and thickness at least one-third its length.