National Forest Foundation

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nationalforests.org

Request for Proposals
Marshall Hazardous Fuels Reduction and Forest Restoration Project
Coconino National Forest, Arizona

Background and Statement of Work: The Marshall Hazardous Fuels Reduction and Forest Restoration Project consists of approximately 2,193 acres located southeast of Flagstaff, Arizona, roughly between Lake Mary Road and Walnut Canyon National Monument, and includes part of Anderson Mesa. The project area primarily consists of ponderosa pine, as well as minor components of oak and pinyon-juniper woodlands. The Marshall Hazardous Fuels Reduction and Forest Restoration Project aligns with collaborative, landscape-scale restoration efforts such as the Four Forests Restoration Initiative (4FRI), Readiness and Environmental Protection Initiative (REPI), City of Flagstaff, and Coconino County priorities, and is located to strategically to protect military assets and the Lake Mary Watershed. This project is implemented as part of the Record of Decision, and Environmental Assessment: Marshall Fuel Reduction and Forest Restoration Project.

The Marshall Hazardous Fuels Reduction and Forest Restoration Project is located roughly 15 miles southeast of Flagstaff and includes traditional ground-based logging and service work items as shown in the Project Area Map (PAM) in **Appendix D**. This project consists of traditional ground-based logging operations that include product removal, Timber Stand Improvement, road maintenance and decommissioning, full slash removal, and optional firewood processing and haul to tribal communities across Northern Arizona. Mexican Spotted Owl (MSO) and Northern Goshawk (NGO) habitat is present within portions of the project area, and all lands, heritage, range, fuels, and hydrology needs have been addressed.

Information Requested

If interested in submitting a bid for this project, please provide a proposal for the above statement of work by providing:

- technical approach
- work experience
- cost
- capacity for this project
- experience in similar projects

Specific requirements are detailed below.

I. PROJECT OVERVIEW AND REQUIREMENTS

General Specifications

(a) Description of Work – This Request for Proposals is for restoration services related to forest restoration treatments including the following:

1. Cut, skid, process, and deck designated timber 6" DBH and greater across all units (2,193 acres). This will contain a total estimated merchantable volume of 47,610 green tons (9" DBH and greater). Timber 9" DBH and greater shall be purchased and removed from the project area. Additional specifications are listed **Appendix B, E, F, & H.**
    i. Trees are designated by:
        a. Leave Tree Marking (Units 12, 14, 31, 50, 52, 56, 60, 69, 70, and 71),
        b. Cut Tree Marking (Unit 67), and
        c. Designation by Prescription (Units 1-11, 13, 15-20, 24, 25, 27, 29, 30, 32-35, 351, 36, 40, 51, 53, 54, 57, 58, 62, 66, 68, 72, and 73)
2. Timber Stand Improvement (TSI) shall be implemented across all units (2,193 acres) to remove ponderosa pine greater than 6 feet tall and less than 5.9" DBH and Juniper greater than 3 feet tall (**Appendix B, E, and F).**
    i. Cut, skid, process and deck ponderosa pine from 4"- 8.9" DBH and Juniper > 3' tall across units. Ponderosa pine <9" DBH and Juniper >3' tall shall be decked separately and left in the project area to later be provided as firewood to local tribal communities under the Wood for Life Program (WFL) or treated in accordance with Optional Item #5. This will include a total estimated 5,812 cords.
3. Removal of all activity generated material and slash following specifications listed in **Appendix B, E, & F**.
5. **Optional:** Process non-saw wood (ponderosa pine 4" - 8.9" DBH and Juniper > 3' tall) into firewood and haul to agreed upon locations across Northern Arizona, following specifications listed in **Appendix E** and to locations identified in **Appendix I.**
6. Road Maintenance and Decommissioning will be conducted on 9.00 miles of Forest Roads. Contractor shall conduct pre, during, and post haul blading to maintain roads in accordance with **Appendix C.**
7. Contractor shall operate within accordance with all operating restrictions and protection measures included in project appendices.

The Contractor shall identify what they can supply in terms of materials, labor, equipment, supplies, supervision, quality control, and incidentals required to complete the work described. The Contractor shall perform all work in a safe and conscientious manner.

(b) Project Location – The Project Area is located on the Flagstaff Ranger District of the Coconino National Forest in Coconino County, roughly 15 miles southeast of Flagstaff, Arizona. The legal description is: Township 20 North, Range 8 East in Sections: 4-6, 7-9, 16-18, 20-22, 26, 27, 34 and 35 plus Township 20 North, Range 7 East in Sections 1, 10 &13 of the Gila and Salt River Base Meridian.

(c) Work Schedule – Due to project timing restrictions, work will begin as soon as possible following contract finalization and attendance of a pre-operations meeting, but no later

than August 1, 2024. Contractor shall accomplish 1,135 acres (50% acres) of the project area by February 28, 2025**.** Work will continue in accordance with timing restrictions until total project accomplishments are met, but no later than February 28, 2026.

Other Project Requirements and Specifications

(a) Utilities – In many locations there will be no or limited sanitation, water, electrical or housing services available. The Contractor shall make its own arrangements for temporary facilities if needed.

(b) Specifications – Project work shall be accomplished in accordance with the following:

- **Appendix B: Non-Commercial Thinning and Piling and Slash Removal**
- **Appendix C: Road Package**
- **Appendix D: Marshal Project Area Map**
- **Appendix E: Schedule of Items and Specifications**
- **Appendix F: Timber Removal Specifications**
- **Appendix G: Guidelines for Operations**
- **Appendix H: DxP Cutting Guide**
- **Appendix I: Firewood Delivery Locations and Contacts 2024**
- **Appendix J: Federal Flowdown Provisions for 1596021**
- **Appendix K: Federal Flowdown Provisions for 1596070**

Insurance Requirements

Upon selection of the winning bid, the Contractor agrees that it has and shall maintain the following insurance coverage indicated below. The effective date of all coverage shall precede the start of any work.

a. State minimum workers' compensation insurance coverage for its employees, if any.

b. Broad form general liability, property damage, and automotive liability insurance in the minimum amount of $1,000,000 for bodily injury, death, or damage to property of any person and $2,000,000 for bodily injury, death, or damage to property of more than one person. The Contractor shall name NFF an Additional Named Insured and provide NFF with a certificate of insurance evidencing such coverages, prior to the initiation of the Scope of Services.

c. Contractor shall provide professional errors and omissions liability insurance if its Scope of Services includes professional services. Professional services for purposes of this section include, but are not limited to performing: architecture, engineering, landscape architecture, land surveying or planning, geological investigation, interior design/space planning, preparation and signing or stamping of drawings, maps, surveys or construction specifications, consulting, or design and development of computer software, programs or websites by the Contractor or by subcontractors on behalf of the Contractor. The minimum coverage limits required are $1,000,000 for each claim and $1,000,000 annual aggregate.

Prohibited Telecommunications Services and Equipment

The Contractor is responsible for compliance with the prohibition on certain telecommunications and video surveillance services or equipment identified in 2 CFR 200.216.

Payment/Performance Security

Contractor shall post cash, a letter of credit, bond, or other financial security that is easily convertible into cash in a form acceptable to the NFF, in its sole determination, to assure completion of the work required under any subsequent agreement and payment of all amounts lawfully due to all persons supplying or furnishing to the Contractor or Contractor's subcontractors with labor, laborers, materials, rental machinery, tools or equipment used or to perform the work. Contractor may incorporate required associated costs into mobilization costs or other approved expenses.

a. Work that is classified as construction in accordance with the Miller Act or Little Miller Act or if required per conditions of the funding source, payment and performance bonding will be required in the full amount of any Agreement. For the purposes of this Request for Proposal, construction is defined as "any contract greater than $100,000 for the construction, alteration, or repair of any public building or public work where the federal government is the owner", or

b. If Contractor is not self-performing at least 85% of the total contract value or if the cost of materials is in excess of the larger of $100,000 or 50% of the contract total, payment and performance bonding will be required in the full amount of the agreement, or

c. If the value of the agreement is in excess of $250,000, Contractor will be required to post financial security in a form acceptable to the NFF in the amount of 5% of the total agreement value up to $250,000 in total financial security.

American Made Products. The work associated with this RFP is subject to Build America, Buy America Act. P.L. 117-58, Secs 70911-70917, and as such, domestic content procurement preference requires all iron and steel, manufactured products and construction materials used within the scope of this Agreement, be produced in the United States.

Federal Exclusion Verification

The selected Contractor will be required to affirm that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

Federal Flowdown Provisions

Flowdown Requirements: Any Agreement associated with this RFP may is subject to flowdown requirements under associated federal or state funding agreements, which are included as Appendix J and Appendix K.

II. REQUIRED COMPONENTS

Technical Proposal

Please provide a detailed technical approach to the work. **Please note, alternative proposals will be accepted.**

Contractor Qualifications

(a) Past Experience – Please provide a brief explanation of previous work experience with land management agencies.

(b) References – Please provide three professional references that can speak to past performance.

Pricing Schedule

Contractor shall price work according to the schedule below. Prevailing wages are required per conditions of funding sources. **Alternative approaches and bid schedules will be considered.**

	Task/Item	Units	Number Units	Unit Cost	Extended Cost
1.	Cut, Skid, Process, Deck Included Timber 6" DBH and greater, and Remove Included Sawtimber (9"+ DBH)	Acres	2,193		
2.	Road Maintenance*	Miles	27.00		
3.	TSI – Cut, Skid, Process, and Deck (Pine from 6' tall and up to 5.9" DBH, and Juniper >3' tall)	Acres	2,193		
4.	Removal of Slash Off of FS Lands	Acres	2,193		
Optional Service Work					
5.	***Optional:*** Process Non-saw Material into Firewood and Haul to Agreed Upon Locations	Cords	5,812		
				Total Bid	

****Please note: 9.00 miles of Forest roads shall be maintained, including a pre, during, and post haul blade. (9.00 miles x 3 occurrences = 27.00 miles)***

Table 2 – Timber Rates (Scaled Sale) – Please provide a bid to purchase the following.

Unit	Acres	Product	Species	Quantity (Estimated)	Unit of Measure (UOM)	$/UOM	Total Bid
ALL	2,139	*Sawtimber (9"+ DBH)	PIPO	47,610	Tons		

*To meet minimum tree specifications, trees must equal or exceed tree diameter listed in Table 2 and contain at least one minimum piece. Except for timber required to be left, Contractor shall fell, process, and shall remove such trees from project area and present for scaling all pieces that meet minimum standards specified in Appendix F.

III. SUBMISSION, EVALUATION, AND CONTACTS

Contractor Selection Process

This is a request for proposals only and bids furnished are not offers from the National Forest Foundation. This request does not commit the National Forest Foundation to pay any costs incurred in the preparation or submission of the proposal or to contract for supplies or services.

The NFF will use the Evaluation Factors below to review each submitted bid. Based on the outcomes of that selection process, the NFF will notify successful and unsuccessful bidders by **Friday July 19, 2024** and will prepare a separate contract document.

Pre-Bid Site Visit

A Pre-bid tour is scheduled for **Tuesday June 18, 2024**. Contractors are encouraged to attend the pre-bid tour to better understand the scope of work and expectations. **To attend the Pre-Bid Tour**, **Contractors must contact Trevor Seck at tseck@nationalforests.org no later than June 14, 2024 to be placed on the RSVP list.**

Evaluation Factors and Relative Importance

The following criteria will be used in the evaluation of submitted proposals, ordered from highest weighting (level 3) to lowest weighting (level 1).

Level 3 Criteria
- Price / cost
- Equipment and contractor capability
- Timing of when contractor can begin and/or finish the project
- Past performance, references, and USFS feedback

Level 2 Criteria
- Technical proposal / proposed approach to project
- Overall strategic benefits to meeting NFF goals and grant needs, requirements, and timelines

Level 1 Criteria
- Benefits to the local community
- Relationship to local community

Point of Contact

Please submit any questions about the project in writing to the Point of Contact.

Trevor Seck
National Forest Foundation, Arizona Program Forestry Supervisor

tseck@nationalforests.org
530.760.7419

Responses will be shared with known interested parties by email or otherwise posted at https://www.nationalforests.org/rfp.

Bid Submission

Submit bids via email to tseck@nationalforests.org by **July 8, 2024.**

Equal Opportunity Provider

In accordance with Federal law and U.S. Department of Agriculture policy, the National Forest Foundation is prohibited from discriminating on the basis of race, color, national origin, sex, age, religion, political beliefs, or disability.

Appendix B: Non-Commercial Thinning and Piling and Slash Removal

B.1 Non-Commercial Thinning and Piling

The following table describes the requirements for cutting ponderosa pine greater than 6 feet tall and less than 6 inches DBH and juniper greater than 3 feet tall. The definitions below describe the difference between desirable and undesirable trees. All cut trees shall be treated as logging slash and treated according to the specifications outlined in Appendix F.

Unit	TSI Treatment Cutting Guide	
	Ponderosa Pine	Juniper
1	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" DRC, all Rocky Mountain juniper 5-24" DRC, and all alligator juniper 5-12" DRC.
2	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" DRC, all Rocky Mountain juniper 5-24" DRC, and all alligator juniper 5-12" DRC.
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12	Cut all ponderosa.	Cut all juniper <5" DRC, all Rocky Mountain juniper 5-24" DRC, and all alligator juniper 5-12" DRC.
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14	Cut all ponderosa.	Cut all juniper <5" DRC.
15	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" DRC, all Rocky Mountain and Utah juniper 5-24" DRC, and all alligator juniper 5-12" DRC.
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Desirable Leave Tree Characteristics: Sub-merchantable/non-merchantable trees considered desirable have **all** of the following characteristics:

(a) Straight, vertical stem (leaning <15 degrees from vertical axis)

(b) Well-formed crown (wide, full, symmetrical)

(c) Live, single top with vigorous annual terminal growth

(d) Free of animal, insect or disease damage and/or symptoms, including dwarf mistletoe

(e) Absence of physical or mechanical damage

Undesirable Leave Tree Characteristics: Sub-merchantable/non-merchantable considered undesirable have **one or more** of the following characteristics:

(a) Leaning or bent (>15 degrees from vertical axis; often related to prolonged suppression)

(b) Any crook, sweep, or fork in stem

(c) Poor crown form (one-sided, narrow, or sparse)

(d) Multiple, dead, or broken tops

(e) Presence of insects, diseases, or animal damage, including any visible evidence of dwarf mistletoe (i.e., fruiting bodies)

(f) Any physical or mechanical damage

B.2: Removal of Slash from FS Lands (all units)

1. Remove all slash (residue/biomass) from landings. These products shall be transported off the National Forest. Some slash may be left in the Contract Area as erosion control for landings, skid trials, and temporary road closeout by written agreement.

APPENDIX C

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE REGION 3

Coconino National Forest

Coconino County, Arizona

Marshall Supplemental Project Agreement

Road Maintenance Drawings and Specifications

Prepared By: _____

Project Engineer Date

Technical Review By: _____

Project Team Leader Date

Project Satisfactorily Meets

Management Area Direction: _____

District Ranger Date

Reviewed and Approved

For Technical Adequacy: _____

Forest Engineer Date

Project Approval for Inclusion In

Program of Work & Funding Availability: _____

Forest Supervisor Date

MARSHALL SPA
5.0 TRANSPORTATION FACILITIES
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5.4 Road Maintenance

General Notes:

1. All roads specified for surface blading shall conform to timber sale road maintenance standards. Purchaser shall maintain all out-sloped drains and lead out ditches per specifications.

2. Additional drainage features may be required if road haul and conditions should change.

3. Berms of materials or other obstructions caused by maintenance operations shall be removed prior to the end of each day's operations and are not to remain overnight, weekends and holidays. If, due to weather conditions or equipment breakdowns, berms or obstructions cannot be removed, they shall be signed as a hazard and visibly illuminated at night, per the Manual on Uniform Traffic Control Devices (MUTCD) requirements.

4. Contractor's equipment provided for the performance of the work shall be of the appropriate size, type, and number and the Contractor's equipment shall be in good working condition and suitable for the work required. Operators shall be competent and experienced in the operation of the equipment. Equipment shall have safety signing and appurtenances required by OSHA, such as Rollover Protection Structures (ROPS), fire suppression devices, lights and slow-moving vehicle signs. The equipment used for blading shall be a diesel, tandem drive motor patrol of at least 150 horsepower. Grading equipment must be capable of cutting, crowning, and shaping operations necessary to successfully perform the tasks.

ACRONYMS:

AGG	– Aggregate Surfacing
AASHTO	– American Association of State and Highway Transportation Officials
CWFS	– Cooperative Work Forest Service
FRD	– Flagstaff Ranger District
FSH	– Forest Service Handbook
FSR	– Forest System Road
IMP	– Improved Surfacing
ML	– Maintenance Level
MP	– Mile Post
MUTCD	– Manual on Uniform Traffic Control Devices
MVUM	– Motor Vehicle Use Map
NAT	– Native Surfacing
OSHA	– Occupational Safety and Health Administration
PAV	– Pavement
ROPS	– Rollover Protection Structure
SRR	– Surfacing Rock Repair
SPA	– Supplemental Project Agreement

ROAD LENGTH TABULATION - MAINTENANCE				
ROAD NO.	MAINTENANCE LEVEL	TERMINUS TO TERMINUS		MILES
FSR 128	3	FSR 129	FSR 128B	0.43
FSR 128B	2	FSR 128	MP 4.93	4.93
FSR 9478	2	FSR 9486R	MP 0.17	0.17
FSR 9478C	2	FSR 128B	MP 0.20	0.20
FSR 9478X	2	FSR 9478Y	MP 0.23	0.23
FSR 9478Y	2	COC-3	MP 0.26	0.26
FSR 9481Q	2	FSR 128B	MP 1.79	1.79
FSR 9486R	2	FSR 128B	MP 0.58	0.58
FSR 9486Q	2	FSR 128	MP 0.36	0.36
FSR 9487T	2	COC-3	MP 0.05	0.05
			Total	9.00

Road Maintenance Requirements Summary

Road	Termini		Miles	Road ML	Applicable Pre-Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P	P		P		P		T-803 ends and T-804 begins at MP 4.38
FSR 9478	FSR 9486R	MP 0.17	0.17	2	P							
FSR 9478C	FSR 128B	MP 0.20	0.20	2	P							
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P			P				
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2		P						
FSR 9486R	FSR 128B	MP 0.58	0.58	2	P			P				
FSR 9486Q	FSR 128	MP 0.36	0.36	2		P						
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

Road	Termini		Miles	Road ML	Applicable During Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P							T-803 only to MP 1.57
FSR 9478	FSR 9486R	MP 0.17	0.17	2								
FSR 9478C	FSR 128B	MP 0.20	0.20	2								
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P							
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2								
FSR 9486R	FSR 128B	MP 0.58	0.58	2								
FSR 9486Q	FSR 128	MP 0.36	0.36	2								
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

Road	Termini		Miles	Road ML	Applicable Post-Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P							
FSR 9478	FSR 9486R	MP 0.17	0.17	2							P	
FSR 9478C	FSR 128B	MP 0.20	0.20	2	P							
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P							
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2							P	
FSR 9486R	FSR 128B	MP 0.58	0.58	2	P							
FSR 9486Q	FSR 128	MP 0.36	0.36	2							P	
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

USDA - FOREST SERVICE																									
$0.26/CCF-mile for AGG CWFS Deposits								TIMBER SALE:	Marshall																
$0.18/CCF-mile for PAV CWFS Deposits								DISTRICT:	FRD																
$0.16/CCF-mile for IMP CWFS Deposits								ROAD MAINTENANCE APPRAISAL																	
								(REF: FSH 2409.18)																	
TIMBER SALE		Marshall						VOLUME:	15702																
				CWFS-FS MTC ($)					PURCHASER MAINTENANCE DOLLARS																	
ROAD NUMBER	MILES	SURFACE TYPE	VOLUME CCF	SURFACE	SRR @ 26/CCF-MILE	SUBTOTAL	OVER FACTOR@1.21	TOTAL CWFS $	T-801	T802	T-803	T-804	T-805	T-806	T-807 & T-808	T-809	T-810	T-811	T-812	T-813	TOTAL PURCHASER MTC	TOTAL MTCE $			
128	0.43	AGG	14700		$ 3,822.00	$ 1,643.46	$ 345.13	$ 1,988.59			$ 709.50	$ -		$ -				$ -			$ 709.50	$ 2,698.09			
128B	4.93	NAT			$ -	$ -	$ -	$ -			$ 4,752.00	$ 660.00		$ 12,554.67				$ -			$ 17,966.67	$ 17,966.67			
9478	0.17	NAT			$ -	$ -	$ -	$ -			$ 180.00	$ -		$ -				$ 626.50			$ 806.50	$ 806.50			
9478C	0.20	NAT			$ -	$ -	$ -	$ -			$ 207.00	$ -		$ -				$ -			$ 207.00	$ 207.00			
9478X	0.23	NAT			$ -	$ -	$ -	$ -			$ 310.50	$ -		$ 312.58				$ -			$ 623.08	$ 623.08			
9478Y	0.26	NAT			$ -	$ -	$ -	$ -			$ 351.00	$ -		$ -				$ -			$ 351.00	$ 351.00			
9481Q	1.79	NAT			$ -	$ -	$ -	$ -			$ -	$ 2,148.00		$ -				$ 1,355.50			$ 3,503.50	$ 3,503.50			
9486R	0.58	NAT			$ -	$ -	$ -	$ -			$ 522.00	$ -		$ 6,570.67				$ -			$ 7,092.67	$ 7,092.67			
9486Q	0.36	NAT			$ -	$ -	$ -	$ -			$ -	$ 432.00		$ -				$ 712.00			$ 1,144.00	$ 1,144.00			
9487T	0.05	NAT			$ -	$ -	$ -	$ -			$ 67.50	$ -		$ -				$ -			$ 67.50	$ 67.50			
						Total CWFS		$ 1,988.59																	
																					$ 32,471.41	$ 34,460.00			
PREPARED	Utley							(1) CWFS MTC				0.13		$/CCF											
APPROVED								(2) TOTAL				2.07		$/CCF											
								(3) TOTAL + CWFS MTC				2.19		$/CCF							R3-FS-2400-110				

Road Work Descriptions
For
Marshall SPA

NOTES:

1. In addition to the Specifications noted below, Road Maintenance Specification T-GEN is required for all road work on the Road Package. The T-GEN Specification addresses Equipment Specifications, Noxious Weeds, Traffic Control, and Bridge Maintenance.

2. All road maintenance work shall be done in accordance with attached Best Management Practices for Road Maintenance.

3. Maintenance Specification T-806 SURFACE REPAIR shall be performed using commercial material source.

4. Maintenance Specification T-811 CLOSING ROADS shall be performed post haul by first blading and shaping the length of the road to be closed. Entrance treatments should be applied at designated junctions by spreading slash to the end of the line of site from the road entrance.

Road # **128** **Maintenance Level 3**

Traveled-Way 14’ minimum, or existing width Road Length 0.43 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 129 on the right. Begin T-803 MAINTENANCE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.43.
0.02	Protect in place existing gate and cattle guard.
0.22	Maintain existing 18” squash culvert.
0.33	Maintain existing 18” squash culvert.
0.43	Maintain existing junction with FSR 128B on the left. End T-803 MAINTENANCE BLADING pre, during-, and post-haul.

Road # **128B** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 4.93 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 128. Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth) and T-803 MAINTENANCE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 4.93.
0.07	End T-806 SURFACE REPAIR with 6” lift.

0.09	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.12	End T-806 SURFACE REPAIR with 6” lift.
0.14	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.16	End T-806 SURFACE REPAIR with 6” lift.
0.19	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.20	End T-806 SURFACE REPAIR with 3” lift.
0.29	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.31	End T-806 SURFACE REPAIR with 3” lift.
0.34	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.39	End T-806 SURFACE REPAIR with 6” lift.
0.41	Maintain existing lead out on the right. Suitable material to be brought back onto the road.
0.44	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.59	End T-806 SURFACE REPAIR with 3” lift.
0.70	Maintain existing lead out on the right. Suitable material to be brought back onto the road.
0.79	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.96	End T-806 SURFACE REPAIR with 3” lift.
1.25	Protect in place existing cattle guard.
1.51	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
1.57	Junction with FSR 9486R on the right. End T-803 MAINTENANCE BLADING during-haul.
1.65	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
1.69	End T-806 SURFACE REPAIR with 6” lift.
1.94	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
1.97	End T-806 SURFACE REPAIR with 6” lift.
1.99	Maintain existing lead out on the left. Suitable material to be brought back onto the road.

2.11	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
2.22	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
2.31	Junction with FSR 9481Q on the right.
2.50	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
3.13	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
3.23	End T-806 SURFACE REPAIR with 6” lift.
3.88	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
3.90	End T-806 SURFACE REPAIR with 6” lift.
4.24	Junction with FSR 9478C on the right.
4.38	End T-803 MAINTENANCE BLADING and begin T-804 OPENING ROADS pre-haul.
4.93	End T-804 OPENING ROADS pre-haul and T-803 MAINTENANCE BLADING post-haul.

Road # **9478** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 0.17 mi.

Mile Post	Work Description
0.00	Junction with FSR 9486R. Begin T-803 SURFACE BLADING pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 9486R, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.17.
0.17	End T-803 SURFACE BLADING pre-haul and T-811 CLOSING ROADS post-haul.

Road # **9478C** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 0.20 mi.

Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-803 SURFACE BLADING pre- and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.20.
0.20	End T-803 SURFACE BLADING pre- and post-haul.

Road #	**9478X**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.23 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 9478Y. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.23.
0.01	Protect in place existing gate.
0.07	Caution: powerline overhead.
0.08	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.09	End T-806 SURFACE REPAIR with 3” lift.
0.16	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.17	End T-806 SURFACE REPAIR with 3” lift.
0.23	End T-803 SURFACE BLADING pre-, during-, and post-haul.

Road #	**9478Y**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.26 mi.

Mile Post	Work Description
0.00	Maintain existing junction with COC-3. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.26.
0.04	Maintain existing junction with FSR 9478X on the right.
0.06	Caution: powerline overhead.
0.26	Private property boundary. End T-803 SURFACE BLADING pre-, during-, and post-haul.

Road #	**9481Q**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 1.79 mi.

Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 128B, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 1.79.
1.79	End T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul.

Road #	**9486R**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.58 mi.

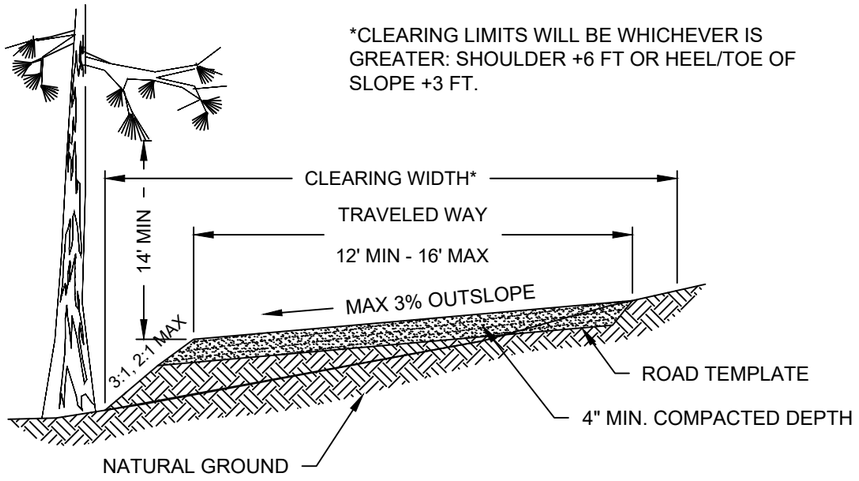
Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-803 SURFACE BLADING pre- and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.58.
0.01	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 12” lift (compacted depth).
0.17	End T-806 SURFACE REPAIR with 12” lift.
0.25	Junction with FSR 9478 on the right.
0.58	End T-803 SURFACE BLADING pre- and post-haul.

Road #	**9486Q**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.36 mi.

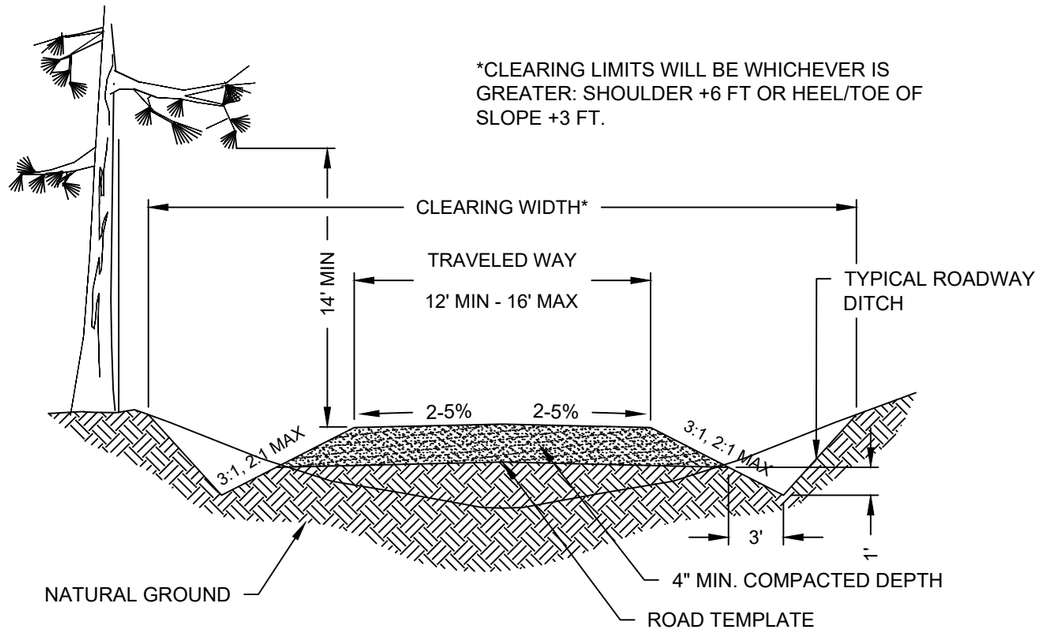
Mile Post	Work Description
0.00	Junction with FSR 128. Begin T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 128, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.36.
0.36	End T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul.

Road #	**9487T**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.05 mi.

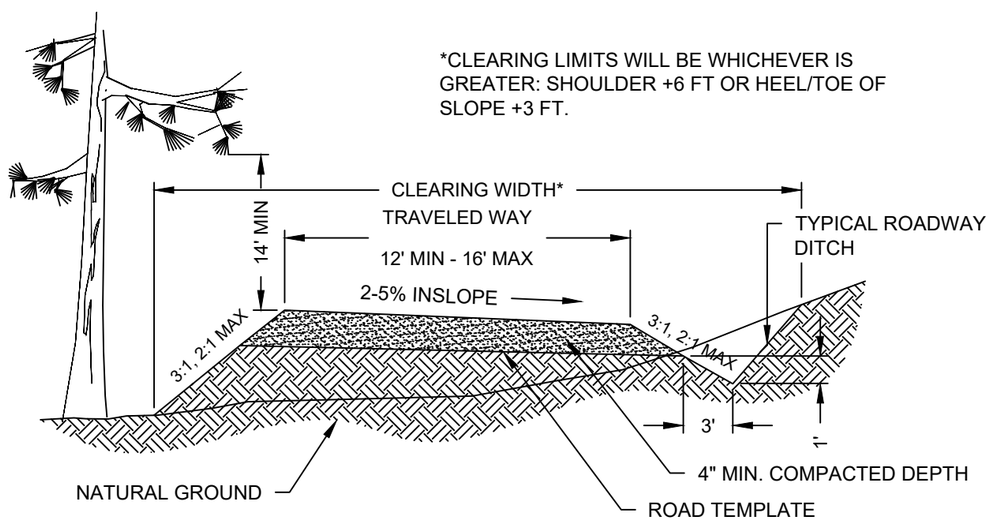
Mile Post	Work Description
0.00	Maintain existing junction with COC-3. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.05.
0.05	Powerline overhead. End T-803 SURFACE BLADING pre-, during-, and post-haul.



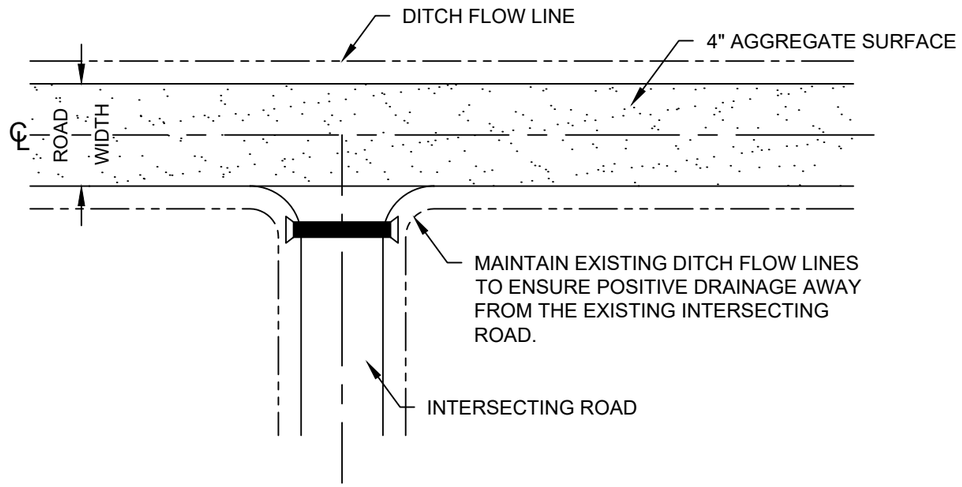
TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING AND WITHOUT ROADWAY DITCH



TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING, CROWN, AND ROADWAY DITCH



TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING AND ROADWAY DITCH



INTERSECTION GRADING AND SHAPING

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

TYPICAL ROADWAY DETAILS

DATE
09/20/2023

ARCHIVE NO.

DESIGNER
S. UTLEY

DRAWN
S. UTLEY

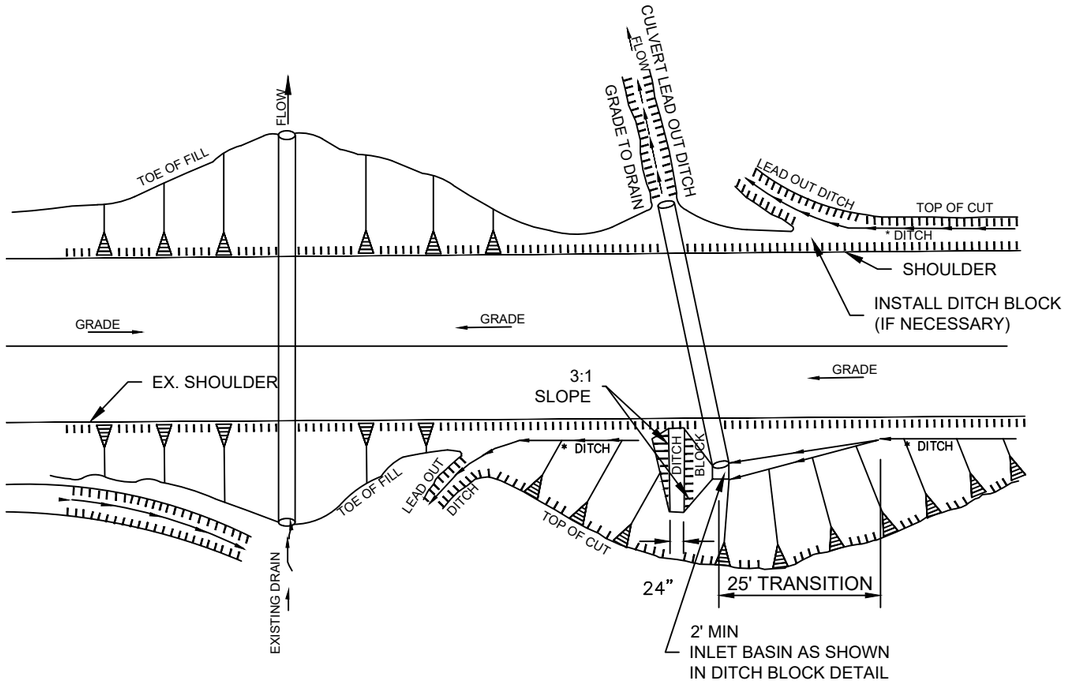
CHECKED
T. CONNOLLY

PROJECT NO.

DWG SHEET NO.
C-01

SHEET **1** OF **3**

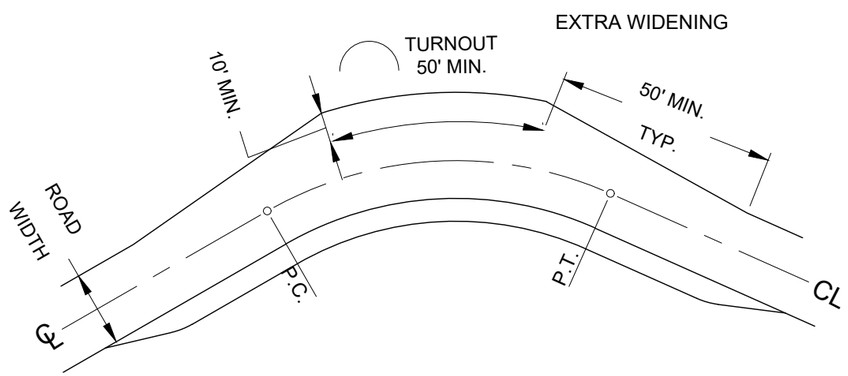
9/20/23 09:36 SAMUELUTLEY2 C:\USERS\SAMUELUTLEY2\BOX\7700 TRAVEL MGMT COC\7720 – TRANSPORTATION SYSTEM DEVELOPMENT\ROAD PRECONSTRUCTION\TIMBER\FRD\2023\MARSHALL\CAD\TYPICAL DRAWINGS.DWG;



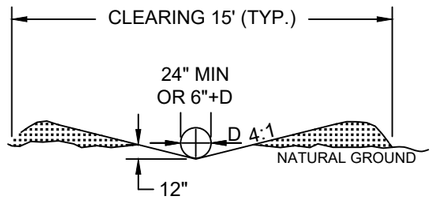
SAMPLE DITCH TYPICAL

NOTES:

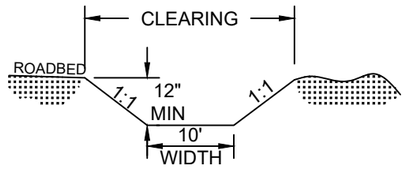
1. THE SLOPE OF LEAD OUT DITCHES SHALL BE CONSTRUCTED TO A MINIMUM OF -2% SLOPE WITHIN THE PREVIOUSLY EXISTING DISTURBED SOIL.
2. DITCH BLOCK WILL NOT BE REQUIRED WHEN INLET BASIN IS IN A SAG.
3. DITCH BLOCK ELEVATION SHALL BE 4" LOWER THAN THE ADJACENT SUBGRADE ELEVATION.



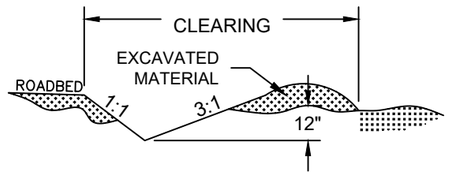
TURNOUT AND CURVE WIDENING



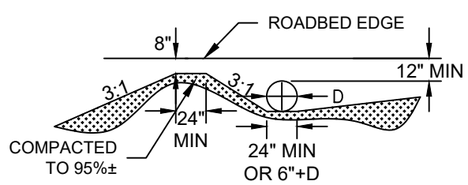
CULVERT LEAD OUT DITCH



FLAT BOTTOM DITCH



LEAD OUT DITCH



DITCH BLOCK

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

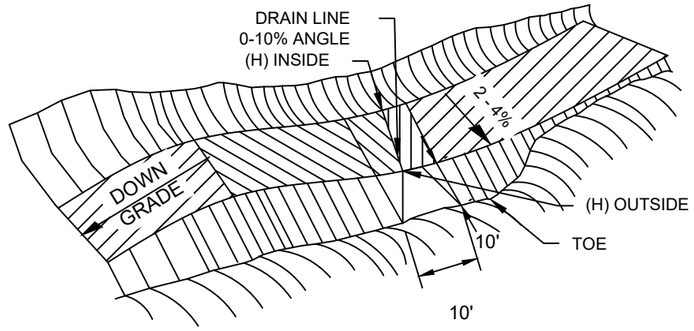
TYPICAL DITCH AND TURNOUT DETAILS

DATE: 09/20/2023	
ARCHIVE NO.	
DESIGNER: S. UTLEY	DWG SHEET NO.: C-02
DRAWN: S. UTLEY	
CHECKED: T. CONNOLLY	SHEET 2 OF 3
PROJECT NO.	

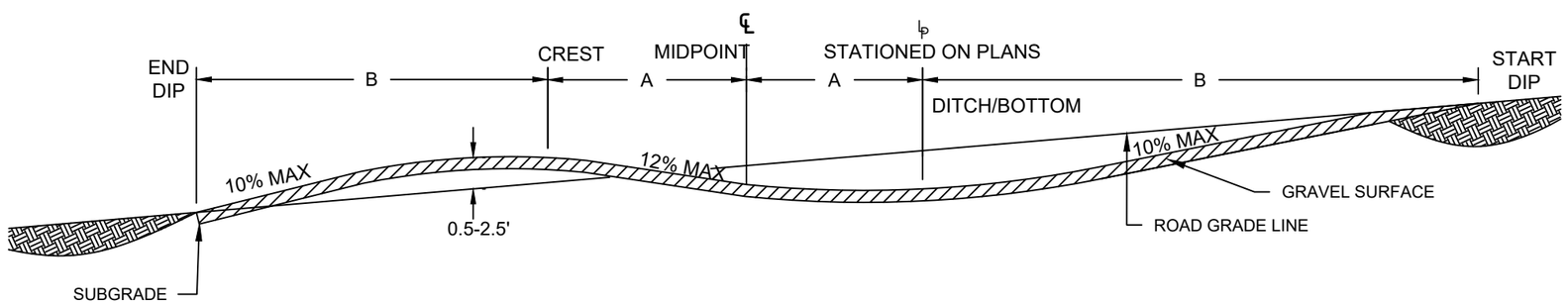
ROLLING DIP NOTES:

1. THE CROSS SLOPE OF THE ROADBED SHALL BE MAINTAINED THROUGH THE DIP.
2. THE DRAIN LINE SHALL BE SKEWED OFF OF THE ROADBED TO ALLOW POSITIVE DRAINAGE, UNLESS OTHERWISE FLAGGED.
3. FOR DIPS ON AGGREGATE SURFACE ROADS, ADD DEPTH OF COMPACTED SURFACE TO DIMENSION (H).
4. ALL DITCHES ASSOCIATED WITH ROLLING DIP STRUCTURES SHALL BE MAINTAINED WITHIN THE PROJECT SITE.
5. DIRECTION OF EXISTING WATER FLOW SHALL BE MAINTAINED.

ROLLING DIP CONSTRUCTION DIMENSIONS				
TYPE "1"				
%GRADE	LENGTH		DEPTH (H)	
	A	B	OUTSIDE EDGE	INSIDE EDGE
0-4%	18	55	0.9'	0.4'
5-8%	16	85	0.8'	0.3'
9-12%	15	110	0.7'	0.3'



ROLLING DRAINAGE DIP
PERSPECTIVE
NOT TO SCALE



ROLLING DRAINAGE DIP
PROFILE
NOT TO SCALE

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

TYPICAL ROLLING DIP DETAILS

DATE
09/20/2023

ARCHIVE NO.

DESIGNER
S. UTLEY

DRAWN
S. UTLEY

CHECKED
T. CONNOLLY

PROJECT NO.

DWG SHEET NO.
C-03

SHEET **3** OF **3**

MARSHALL SPA VICINITY MAP

Flagstaff Ranger District

Timber

Cut Units

Coconino NF Roads

Operational Maintenance Level

5 - HIGH DEGREE OF USER COMFORT

I-40 West to Williams

Flagstaff

I-40 East to Winslow

AZ-89A South to Sedona

I-17 South to Camp Verde

COC-3 South to Happy Jack

N

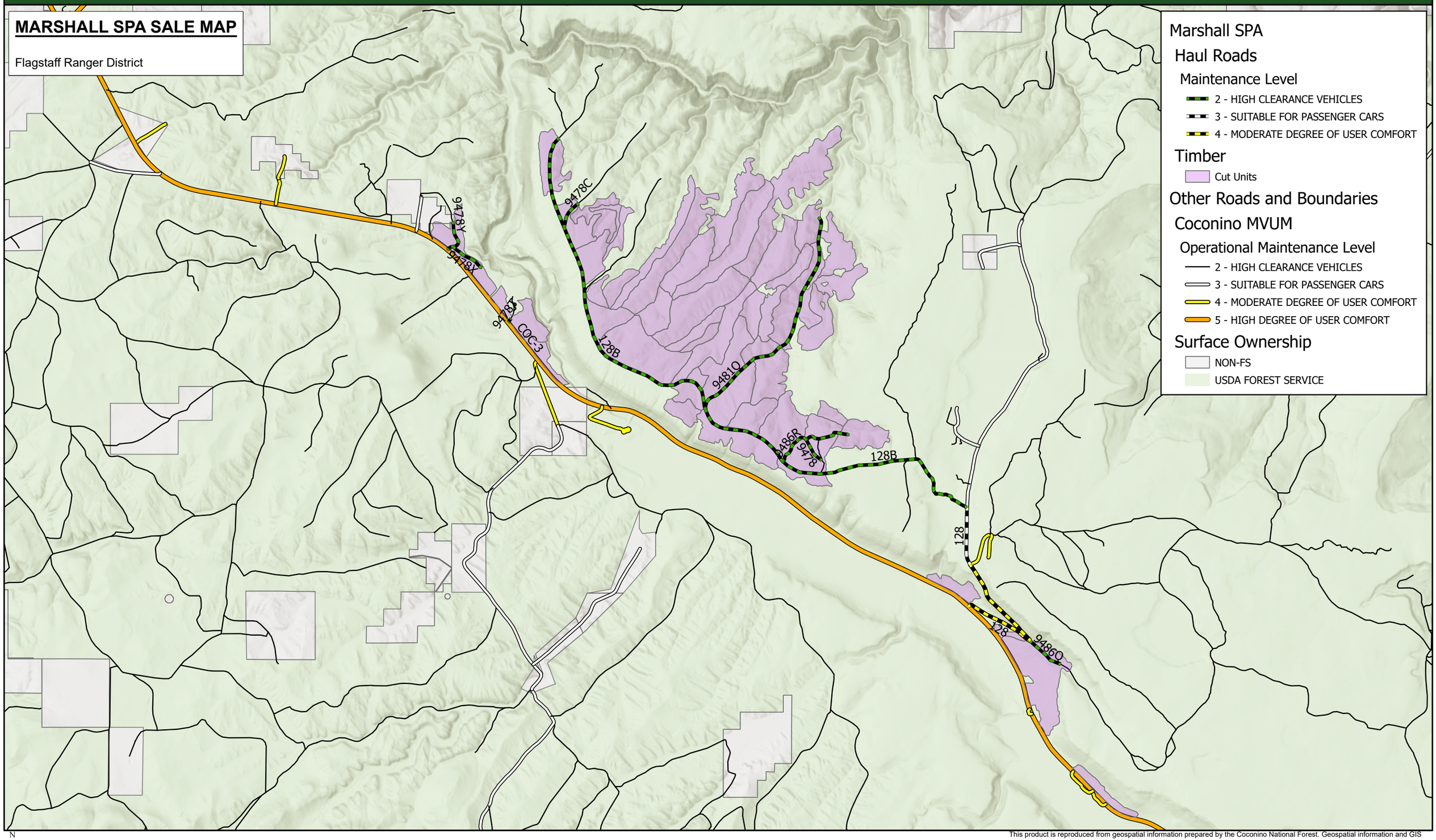
0 2 4 8 Miles

Date Saved: 8/15/2023 Document Path: T:\FS\NFS\Coconino\Program\7100Engineering\GIS\Sam Utley\Timber\Marshall TS\Marshall TS.aprx

COCONINO NATIONAL FOREST
SOUTHWEST REGION 3

MARSHALL SPA SALE MAP

Flagstaff Ranger District



Marshall SPA

Haul Roads

Maintenance Level

- 2 - HIGH CLEARANCE VEHICLES
- 3 - SUITABLE FOR PASSENGER CARS
- 4 - MODERATE DEGREE OF USER COMFORT

Timber

- Cut Units

Other Roads and Boundaries

Coconino MVUM

Operational Maintenance Level

- 2 - HIGH CLEARANCE VEHICLES
- 3 - SUITABLE FOR PASSENGER CARS
- 4 - MODERATE DEGREE OF USER COMFORT
- 5 - HIGH DEGREE OF USER COMFORT

Surface Ownership

- NON-FS
- USDA FOREST SERVICE

N

0 0.75 1.5 3 Miles

Date Saved: 8/15/2023 Document Path: T:\FS\NFS\Coconino\Program\7100Engineering\GIS\Sam Utley\Timber\Marshall TS\Marshall TS.aprx

Marshall SPA Cost Justifications

Estimated Temporary Roads:

System roads used as temporary roads and obliterated by purchaser	= 0.00 miles
Non-system road used as temporary roads and obliterated by purchaser	= 0.00 miles
New temporary roads constructed by, and obliterated by the purchaser	= 8.20 miles
Total	= 8.20 miles

Estimated Cost used for Road Maintenance Work Items:

- $550 per mile each blading for level 3 T-803 Surface Blading.
- $450 per mile each blading for level 2 T-803 Surface Blading.
- $1200 per mile for T-804 Opening Roads.
- $20 per CY for Spot Fill T-806 Surface Repair using Cinders.
- $30 per CY for Spot Fill T-806 Surface Repair using Crushed Aggregate.
- $450 per mile and $550 per entrance treatment for T-811 Close Road.
- $2000 per mile for temporary road cost.

Saw Timber:

- Volume = 6,160.91 CCF
- Truck Volume = 8.0 CCF/load
- Total distance = 171.38 miles
- Weighted Miles = 154.22 miles
- Weighted RTM's = 342.34 minutes
- Standby = 45.00 minutes
- Total RTM's = 387.34 minutes

Non-Saw Timber:

- Volume = 9,540.95 CCF
- Truck Volume = 8.0 CCF/load
- Total distance = 42.90 miles
- Weighted Miles = 26.59 miles
- Weighted RTM's = 103.21 minutes
- Standby = 45.00 minutes
- Total RTM's = 148.21 minutes

Costs:

- Surface rock cost = $1,988.59 or $0.13/CCF
- Purchaser Maintenance = $32,471.41 or $2.07/CCF
- Total Maintenance = $34,460.00 or $2.19/CCF
- Truck cost = $126.00/HR
- Haul cost = $594,254 or $96.46/CCF (Saw)
  = $321,349 or $33.68/CCF (Non-Saw)

Road Report (Optimal Route) - Traveling Round Trip Minutes and Haul Road Maintenance

Version 8.0

Forest Resource Enterprises

Sale name	Marshall
Purchaser haul road maint. rate, $/CCF	$0.00
FS haul road maint rate, $/CCF	$0.00
Other haul road maint rate, $/CCF	$0.00
Total haul road maint rate, $/CCF	$0.00
Total haul road maint, $'s (rounded)	$0.00

Volume unit of measure	CCF
Total distance in miles	171.38
Total weighted miles	154.22
Total weighted RTM's (traveling)	342.34
Total hauled timber volume	6,161
Total haul sale cost, $'s (rounded)	$553,573

get network link report | sort by road number | goto individual road | refresh data | print | erase table

Road Number	Node From	Node To	From Milepost	To Milepost	Volume Passed	% Total Volume	Total Miles	Weight Miles	Weight RTM's	Total Maint	Maint Class	Fixed Cost	Variable Cost	Maint By *select*
BeulahBlvd	10	9	11.07	13.57	6,125	99.4%	2.50	2.49	7.46				12,066	
COC-3	20	10	6.29	11.07	6,125	99.4%	4.78	4.75	12.68				20,519	
9478Y	21	20	0.22	0.27	108	1.7%	0.05	0.00	0.01				17	
9478Y	22	21	0.00	0.22	36	0.6%	0.22	0.00	0.02				25	
9478X	23	21	0.00	0.27	36	0.6%	0.27	0.00	0.02				30	
COC-3	24	20	5.59	6.29	6,018	97.7%	0.70	0.68	1.83				2,949	
9478T	25	24	0.39	0.43	121	2.0%	0.04	0.00	0.01				16	
Temp	26	25	0.00	0.39	51	0.8%	0.39	0.00	0.08				124	
COC-3	27	24	1.55	5.59	5,849	94.9%	4.04	3.84	10.22				16,553	
128	28	27	6.10	6.63	5,768	93.6%	0.53	0.50	2.98				4,787	
9486Q	29	28	0.27	0.56	198	3.2%	0.29	0.01	0.11				180	
Temp	30	29	0.00	0.27	100	1.6%	0.27	0.00	0.11				171	
128	31	28	5.45	6.10	5,453	88.5%	0.65	0.58	3.45				5,562	
Temp	32	31	0.00	0.32	59	1.0%	0.32	0.00	0.07				119	
128	33	31	4.95	5.45	5,394	87.5%	0.50	0.44	3.50				5,663	
128B	34	33	3.35	4.95	5,394	87.5%	1.60	1.40	16.81				27,185	
9486R	35	34	0.35	0.62	292	4.7%	0.27	0.01	0.15				248	
9478	36	35	0.00	0.20	149	2.4%	0.20	0.00	0.06				94	
9486R	37	35	0.00	0.35	48	0.8%	0.35	0.00	0.03				53	
128B	38	34	3.29	3.35	5,001	81.2%	0.06	0.05	0.58				950	
Temp	39	38	0.00	0.42	125	2.0%	0.42	0.01	0.21				332	
128B	40	38	3.00	3.29	4,730	76.8%	0.29	0.22	2.67				4,305	
128B	41	40	2.64	3.00	4,594	74.6%	0.36	0.27	3.22				5,191	
9481Q	42	41	1.34	1.79	1,126	18.3%	0.45	0.08	0.99				1,599	
9481Q	43	42	1.05	1.34	835	13.6%	0.29	0.04	0.47				760	
9481Q	44	43	0.72	1.05	705	11.4%	0.33	0.04	0.45				733	
Temp	45	44	0.00	0.23	59	1.0%	0.23	0.00	0.05				86	
9481Q	46	44	0.39	0.72	432	7.0%	0.33	0.02	0.28				449	
Temp	47	46	0.00	0.28	84	1.4%	0.28	0.00	0.09				149	
9481Q	48	46	0.00	0.39	122	2.0%	0.39	0.01	0.09				150	
128B	49	41	2.15	2.64	3,187	51.7%	0.49	0.25	3.04				4,909	
35th	5	1	151.57	152.17	6,125	99.4%	0.60	0.60	2.05				3,308	
Temp	50	49	0.84	1.22	742	12.1%	0.38	0.05	1.10				1,774	
Temp	51	50	0.34	0.84	476	7.7%	0.50	0.04	0.93				1,500	
Temp	52	51	0.00	0.34	254	4.1%	0.34	0.01	0.34				544	
128B	53	49	1.86	2.15	2,350	38.1%	0.29	0.11	1.33				2,138	
Temp	54	53	1.84	2.18	954	15.5%	0.34	0.05	1.26				2,041	
Temp	55	54	1.51	1.84	788	12.8%	0.33	0.04	1.01				1,638	
Temp	56	55	1.20	1.51	679	11.0%	0.31	0.03	0.82				1,323	
Temp	57	56	0.83	1.20	524	8.5%	0.37	0.03	0.76				1,222	
Temp	58	57	0.55	0.83	438	7.1%	0.28	0.02	0.48				771	
Temp	59	58	0.34	0.55	238	3.9%	0.21	0.01	0.19				314	
Durango	6	5	151.07	151.57	6,125	99.4%	0.50	0.50	1.70				2,756	
Temp	60	59	0.00	0.34	136	2.2%	0.34	0.01	0.18				291	
128B	61	53	1.46	1.86	1,305	21.2%	0.40	0.08	1.02				1,644	
Temp	62	61	0.49	1.30	539	8.7%	0.81	0.07	1.70				2,747	
Temp	63	62	0.40	0.89	388	6.3%	0.49	0.03	0.74				1,197	
Temp	64	63	0.00	0.40	173	2.8%	0.40	0.01	0.27				435	
128B	65	61	1.38	1.46	736	11.9%	0.08	0.01	0.11				184	
Temp	66	65	0.78	1.15	228	3.7%	0.37	0.01	0.33				531	
Temp	67	66	0.37	0.78	71	1.1%	0.41	0.00	0.11				182	
Temp	68	67	0.00	0.37	35	0.6%	0.37	0.00	0.05				82	
128B	69	65	0.98	1.38	363	5.9%	0.40	0.02	0.28				457	
23rd	7	6	150.57	151.07	6,125	99.4%	0.50	0.50	1.70				2,756	
Temp	70	69	0.00	0.43	65	1.0%	0.43	0.00	0.11				175	
128B	71	69	0.48	0.98	233	3.8%	0.50	0.02	0.23				369	
9478C	72	71	0.00	0.22	31	0.5%	0.22	0.00	0.01				21	
128B	73	71	0.22	0.48	172	2.8%	0.26	0.01	0.09				141	
128B	74	73	0.00	0.22	95	1.5%	0.22	0.00	0.04				66	
COC-3	75	27	0.00	1.55	82	1.3%	1.55	0.02	0.05				88	
Temp	76	75	0.00	0.29	41	0.7%	0.29	0.00	0.05				75	
I-17	8	7	13.67	150.57	6,125	99.4%	136.90	136.10	251.27				406,339	
AZ-89A	9	8	13.57	13.67	6,125	99.4%	0.10	0.10	0.30				490	

Other Road Maintenance Items and Summary

Version 8.0

print

erase table

Sale name: **Marshall**

Forest Resource Enterprises

Pre-Haul Maintenance

(Open roads, blading, brushing, small slide removal, etc.)

Type	Mtce By *select*	Total Cost

Post-Haul Maintenance

(Road closures, seeding, barriers, etc.)

Type	Mtce By *select*	Total Cost

Miscellaneous Road Maintenance Items

(Damage to roads from logging or landings, dust abatement, etc.)

Type	Mtce By *select*	Total Cost

Maintenance Summary (all items)	Total $'s	Per CCF
Required rd maint deposits, FS (CT5.32)	**$0.00**	**$0.00**
Purchaser maintenance	**$0.00**	**$0.00**
Other maintenance (CT5.32)	**$0.00**	**$0.00**
Subtotal FS & other (CT5.32)	**$0.00**	**$0.00**
Total for appraisal - Road Maintenance (all)	**$0.00**	**$0.00**

Approval	
	Title
Prepared By	*Road Management*
	Title
Reviewed By	*Project Engineer*
	Title
Reviewed By	*Systems Manager*

Data and Cost Summary

(Traveling RTM's, haul maintenance, and fixed costs included from Road Report)

Data & Cost Summary Item	Value
Appraisal point (mill or sort yard)	**Phoenix**
District or Forest	**Coconino**
Sale termination date	
Analyst name	**Utley**
Total hauled timber volume - CCF	**6,161**
Distance: appraisal point - sale area (miles)	**171.38**
Traveling (haul) round trip minutes - RTM's	**342.34**
Standing RTM's (load, unload, scale, delay)	**45.00**
Total RTM's (traveling + standing)	**387.34**
Total sale variable costs	**$594,254**
Haul cost per CCF (based on RTM's only)	**$96.46**
Rd maint cost per CCF (all maintenance)	**$0.00**
Total variable costs per CCF	**$96.46**
Total sale fixed costs (const, reconst, etc.)	**$0**
Total fixed cost per CCF	**$0.00**
Total sale costs (includes traveling rtm's, standing rtm's, all maint., & fixed costs)	**$594,254**
Total sale costs per CCF	**$96.46**

Road Report (Optimal Route) - Traveling Round Trip Minutes and Haul Road Maintenance

Version 8.0

Sale name	Marshall
Purchaser haul road maint. rate, $/CCF	$0.00
FS haul road maint rate, $/CCF	$0.00
Other haul road maint rate, $/CCF	$0.00
Total haul road maint rate, $/CCF	$0.00
Total haul road maint, $'s (rounded)	$0.00

Volume unit of measure	CCF
Total distance in miles	42.90
Total weighted miles	26.59
Total weighted RTM's (traveling)	103.21
Total hauled timber volume	9,541
Total haul sale cost, $'s (rounded)	$258,349

get network link report | sort by road number | goto individual road | refresh data | print | erase table

Road Number	Node From	Node To	From Milepost	To Milepost	Volume Passed	% Total Volume	Total Miles	Weight Miles	Weight RTM's	Total Maint	Maint Class	Fixed Cost	Variable Cost	Maint By *select*
BeulahBlvd	10	9	11.07	11.71	9,541	100.0%	0.64	0.64	1.71				4,293	
COC-3	20	10	6.29	11.07	9,541	100.0%	4.78	4.78	12.75				31,962	
9478Y	21	20	0.22	0.27	166	1.7%	0.05	0.00	0.01				27	
9478Y	22	21	0.00	0.22	56	0.6%	0.22	0.00	0.02				38	
9478X	23	21	0.00	0.27	56	0.6%	0.27	0.00	0.02				47	
COC-3	24	20	5.59	6.29	9,319	97.7%	0.70	0.68	1.83				4,566	
9478T	25	24	0.39	0.43	188	2.0%	0.04	0.00	0.01				24	
Temp	26	25	0.00	0.39	78	0.8%	0.39	0.00	0.08				193	
COC-3	27	24	1.55	5.59	9,058	94.9%	4.04	3.84	10.22				25,634	
128	28	27	6.10	6.63	8,932	93.6%	0.53	0.50	2.98				7,413	
9486Q	29	28	0.27	0.56	306	3.2%	0.29	0.01	0.11				279	
Temp	30	29	0.00	0.27	155	1.6%	0.27	0.00	0.11				264	
128	31	28	5.45	6.10	8,444	88.5%	0.65	0.58	3.45				8,613	
Temp	32	31	0.00	0.32	91	1.0%	0.32	0.00	0.07				185	
128	33	31	4.95	5.45	8,353	87.5%	0.50	0.44	3.50				8,771	
128B	34	33	3.35	4.95	8,353	87.5%	1.60	1.40	16.81				42,100	
9486R	35	34	0.35	0.62	453	4.7%	0.27	0.01	0.15				385	
9478	36	35	0.00	0.20	231	2.4%	0.20	0.00	0.06				145	
9486R	37	35	0.00	0.35	74	0.8%	0.35	0.00	0.03				81	
128B	38	34	3.29	3.35	7,744	81.2%	0.06	0.05	0.58				1,471	
Temp	39	38	0.00	0.42	194	2.0%	0.42	0.01	0.20				514	
TrucksOnly	4	1	23.59	23.69	9,541	100.0%	0.10	0.10	0.80				2,004	
128B	40	38	3.00	3.29	7,326	76.8%	0.29	0.22	2.67				6,666	
128B	41	40	2.64	3.00	7,115	74.6%	0.36	0.27	3.22				8,040	
9481Q	42	41	1.34	1.79	1,744	18.3%	0.45	0.08	0.99				2,477	
9481Q	43	42	1.05	1.34	1,293	13.6%	0.29	0.04	0.47				1,177	
9481Q	44	43	0.72	1.05	1,092	11.4%	0.33	0.04	0.45				1,136	
Temp	45	44	0.00	0.23	91	1.0%	0.23	0.00	0.05				133	
9481Q	46	44	0.39	0.72	668	7.0%	0.33	0.02	0.28				695	
Temp	47	46	0.00	0.28	131	1.4%	0.28	0.00	0.09				230	
9481Q	48	46	0.00	0.39	189	2.0%	0.39	0.01	0.09				233	
128B	49	41	2.15	2.64	4,936	51.7%	0.49	0.25	3.04				7,602	
OldRte66	5	4	22.89	23.59	9,541	100.0%	0.70	0.70	1.87				4,675	
Temp	50	49	0.84	1.22	1,150	12.1%	0.38	0.05	1.10				2,748	
Temp	51	50	0.34	0.84	738	7.7%	0.50	0.04	0.93				2,324	
Temp	52	51	0.00	0.34	393	4.1%	0.34	0.01	0.34				842	
128B	53	49	1.86	2.15	3,639	38.1%	0.29	0.11	1.33				3,311	
Temp	54	53	1.84	2.18	1,477	15.5%	0.34	0.05	1.26				3,160	
Temp	55	54	1.51	1.84	1,220	12.8%	0.33	0.04	1.01				2,537	
Temp	56	55	1.20	1.51	1,051	11.0%	0.31	0.03	0.82				2,049	
Temp	57	56	0.83	1.20	812	8.5%	0.37	0.03	0.76				1,892	
Temp	58	57	0.55	0.83	678	7.1%	0.28	0.02	0.48				1,194	
Temp	59	58	0.34	0.55	369	3.9%	0.21	0.01	0.19				486	
HughesAve	6	5	22.69	22.89	9,541	100.0%	0.20	0.20	0.53				1,336	
Temp	60	59	0.00	0.34	211	2.2%	0.34	0.01	0.18				451	
128B	61	53	1.46	1.86	2,021	21.2%	0.40	0.08	1.02				2,546	
Temp	62	61	0.49	1.30	834	8.7%	0.81	0.07	1.70				4,253	
Temp	63	62	0.40	0.89	600	6.3%	0.49	0.03	0.74				1,854	
Temp	64	63	0.00	0.40	268	2.8%	0.40	0.01	0.27				674	
128B	65	61	1.38	1.46	1,140	11.9%	0.08	0.01	0.11				285	
Temp	66	65	0.78	1.15	353	3.7%	0.37	0.01	0.33				822	
Temp	67	66	0.37	0.78	109	1.1%	0.41	0.00	0.11				281	
Temp	68	67	0.00	0.37	55	0.6%	0.37	0.00	0.05				127	
128B	69	65	0.98	1.38	562	5.9%	0.40	0.02	0.28				707	
I-40	7	6	12.29	22.69	9,541	100.0%	10.40	10.40	19.20				48,087	
Temp	70	69	0.00	0.43	100	1.0%	0.43	0.00	0.11				271	
128B	71	69	0.48	0.98	361	3.8%	0.50	0.02	0.23				571	
9478C	72	71	0.00	0.22	48	0.5%	0.22	0.00	0.01				33	
128B	73	71	0.22	0.48	266	2.8%	0.26	0.01	0.09				218	
128B	74	73	0.00	0.22	148	1.5%	0.22	0.00	0.04				102	
COC-3	75	27	0.00	1.55	126	1.3%	1.55	0.02	0.05				136	
Temp	76	75	0.00	0.29	63	0.7%	0.29	0.00	0.05				116	
I-17	8	7	11.81	12.29	9,541	100.0%	0.48	0.48	0.89				2,194	
McConnellDr	9	8	11.71	11.81	9,541	100.0%	0.10	0.10	0.27				668	

Other Road Maintenance Items and Summary

Version 8.0

print

erase table

Sale name: **Marshall**

Forest Resource Enterprises

Pre-Haul Maintenance

(Open roads, blading, brushing, small slide removal, etc.)

Type	Mtce By *select*	Total Cost

Post-Haul Maintenance

(Road closures, seeding, barriers, etc.)

Type	Mtce By *select*	Total Cost

Miscellaneous Road Maintenance Items

(Damage to roads from logging or landings, dust abatement, etc.)

Type	Mtce By *select*	Total Cost

Maintenance Summary (all items)	Total $'s	Per CCF
Required rd maint deposits, FS (CT5.32)	**$0.00**	**$0.00**
Purchaser maintenance	**$0.00**	**$0.00**
Other maintenance (CT5.32)	**$0.00**	**$0.00**
Subtotal FS & other (CT5.32)	**$0.00**	**$0.00**
Total for appraisal - Road Maintenance (all)	**$0.00**	**$0.00**

Approval	
	Title
Prepared By	*Road Management*
	Title
Reviewed By	*Project Engineer*
	Title
Reviewed By	*Systems Manager*

Data and Cost Summary

(Traveling RTM's, haul maintenance, and fixed costs included from Road Report)

Data & Cost Summary Item	Value
Appraisal point (mill or sort yard)	**Bellemont**
District or Forest	**Coconino**
Sale termination date	
Analyst name	**Utley**
Total hauled timber volume - CCF	**9,541**
Distance: appraisal point - sale area (miles)	**42.90**
Traveling (haul) round trip minutes - RTM's	**103.21**
Standing RTM's (load, unload, scale, delay)	**45.00**
Total RTM's (traveling + standing)	**148.21**
Total sale variable costs	**$321,349**
Haul cost per CCF (based on RTM's only)	**$33.68**
Rd maint cost per CCF (all maintenance)	**$0.00**
Total variable costs per CCF	**$33.68**
Total sale fixed costs (const, reconst, etc.)	**$0**
Total fixed cost per CCF	**$0.00**
Total sale costs (includes traveling rtm's, standing rtm's, all maint., & fixed costs)	**$321,349**
Total sale costs per CCF	**$33.68**

SOUTHWESTERN REGION

Road Maintenance T-Specifications for Timber Sale/Stewardship Contracts

ROAD MAINTENANCE REQUIREMENTS:
The Contractor shall maintain roads in accordance with road maintenance requirements in C/CT5.31# or K/KT-F/FT.3.1# and the following road maintenance specifications.

Specification	Specification Title
T-800	Definitions
T-801	Slide and Slump Repair
T-802	Ditch Cleaning
T-803	Surface Blading
T-804	Opening & Maintaining Roads
T-805	Opening & Maintaining Roads (High Blading)
T-806	Surface Repair
T-807	Surface Stabilization (Water)
T-808	*Obsolete*
T-808-1	Surface Stabilization (Other Materials)
T-809	Minor Drainage Structures
T-810	Roadway Vegetation
T-811	Closing Roads
T-812	Miscellaneous Structures
T-813	Treatment and Disposal of Hazard Trees
T-GEN	General Requirements

SPECIFICATION T-800 DEFINITIONS

Wherever the following terms or pronouns are used in Specifications T-801 through T-GEN, the intent and meaning shall be interpreted as follows:

800-1.1 - Agreement. Maintenance projects require a mutually acceptable method to resolve the problems, which arise when incompatible situations arise between drawings and specifications and actual conditions on the ground to allow orderly and satisfactory progress of the maintenance.

These specifications have been developed in anticipation of those problem areas and have provided that such changes will be by Agreement.

It is intended that drawings and specifications will govern unless "on-the-ground" conditions warrant otherwise, when specifications call for "Agreement", "agreed", or "approval" such Agreement or approval shall be promptly confirmed in writing.

800-1.2 - Annual Road Maintenance Plan. A plan prepared by various users of one or several roads. The plan is an Agreement on maintenance responsibilities to be performed for the coming year.

800-1.3 - Base Course. Material used to reinforce Subgrade or, as shown on drawings, placed on Subgrade to distribute wheel loads.

800-1.4 - Berm. Curb or dike constructed to prevent uncontrolled Roadway runoff water from discharging onto embankment slope.

800-1.5 - Borrow. Select Material taken from designated borrow sites.

800-1.6 - Crown, Inslope, and Outslope. The cross slope of the Traveled Way to aid in drainage and traffic maneuverability.

800-1.7 - Culverts. A conduit or passageway under a road, trail, or other obstruction. A culvert differs from a bridge in that it is usually entirely below the elevation of the Traveled Way.

800-1.8 - Drainage Dip. A dip in the Traveled Way which intercepts surface runoff and diverts the water off the Traveled Way. A Drainage Dip does not block the movement of traffic.

800-1.9 - Drainage Structures. Manufactured structures which control the runoff of water from the Roadway including Inslope, overside drains, aprons, flumes, downdrains, downpipes, culverts, and the like.

800-1.10 - Dust Abatement Plan. A table which lists the road, dust palliative, application rates, and estimated number of subsequent applications.

800-1.11 - Lead-off Ditches. A ditch used to transmit water from a Drainage Structure or Drainage Dip outlet to the natural drainage area.

800-1.12 - Material. Any substances specified for use in the performance of the work.

800-1.13 – Pre-haul Maintenance. Road maintenance work which must be accomplished to maintain the roads to a satisfactory condition commensurate with the Purchaser's use, provided Purchaser's Operations do not damage improvements under B/BT6.22 or G/GT.2.2, or National Forest resources and hauling can be done safely. This work will be shown in the Annual Road Maintenance Plan as provided in C/CT5.31# or K/T-F/T3.1#. Pre-haul Maintenance work

the Purchaser elects to perform will be in compliance with the Road Maintenance T-Specifications.

800-1.14 - Roadbed. The portion of a road between the intersection of Subgrade and sideslopes, excluding that portion of the ditch below Subgrade.

800-1.15 - Road Maintenance Plan. A table which shows applicable road maintenance specifications to be performed by Purchaser on specific roads.

800-1.16 - Roadside. A general term denoting the area adjoining the outer edge of the Roadway.

800-1.17 - Roadway. The portion of a road within the limits of excavation and embankment.

800-1.18 - Shoulder. That portion of Roadway contiguous with Traveled Way for accommodation of stopped vehicles, for emergency use, and lateral support of base and Surface Course, if any.

800-1.19 - Slide. A concentrated deposit of Materials from above or on backslope extending onto the Traveled Way or Shoulders, whether caused by mass land movements or accumulated ravelling.

800-1.20 - Slough. Material eroded from the backslope which partially or completely blocks the ditch, but does not encroach on the Traveled Way so as to block passage of traffic.

800-1.21 - Slump. A localized portion of the Roadbed which has slipped or otherwise become lower than that of the adjacent Roadbed and constitutes a hazard to traffic.

800-1.22 - Special Project Specifications. Specifications which detail conditions and requirements peculiar to the individual project.

800-1.23 - Subgrade. Top surface of Roadbed upon which Base Course or Surface Course is constructed. For roads without Base Course or Surface Course, that portion of Roadbed prepared as the finished wearing surface.

800-1.24 - Surface Course. The Material placed on Base Course or Subgrade primarily to resist abrasion and the effects of climate. Surface Course may be referred to as surfacing.

800-1.25 - Surface Treatment Plan. A table which lists the roads and surface treatments to be applied.

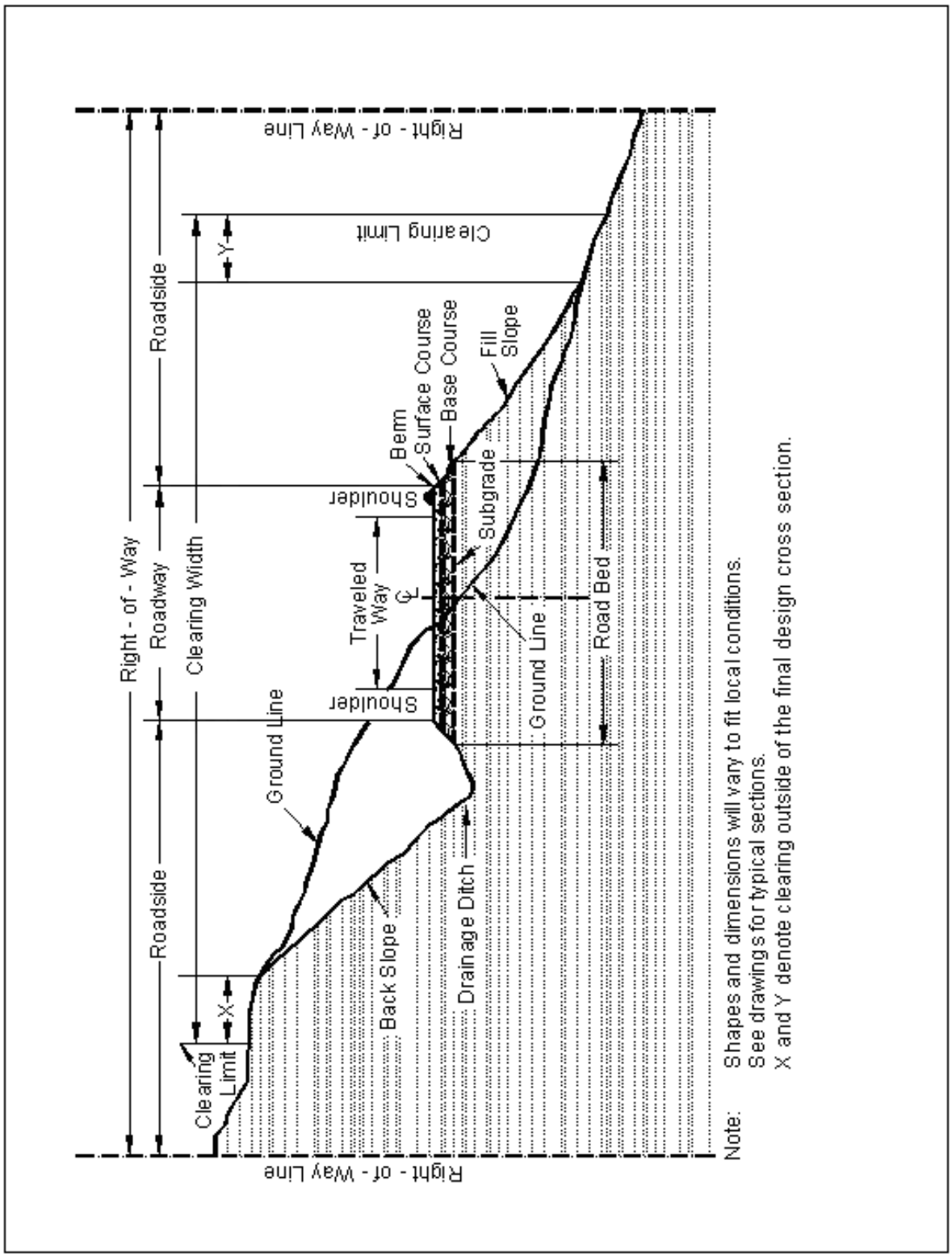
800-1.26 - Traveled Way. That portion of Roadway, excluding Shoulders, used for the movement of vehicles.

800-1.27 - Turnouts. That portion of the Traveled Way constructed as additional width on single lane roads to allow for safe passing of vehicles.

800-1.28 - Water Source. A place designated by the Contracting Officer for acquiring water for road maintenance purposes.

800-1.29 - Waterbar. A dip in the Roadbed which intercepts surface runoff and diverts the water off the Roadway. A Waterbar is not designed to be traversable by logging trucks.

Figure 800-1—Illustration of road structure terms.



T-800-3

SPECIFICATION T-801 SLIDE AND SLUMP REPAIR

DESCRIPTION

1.1 Slide removal consists of the removal from Roadway and disposal of any Material such as soil, rock, and vegetation that cannot be routinely handled by a motor grader during T-802 Ditch Cleaning, and T-803 Surface Blading operations.

Slump repair consists of the filling, with select material, of depressions or washouts in Roadway which cannot be routinely filled by a motor grader during T-803 Surface Blading operations.

Slide removal and Slump repair includes excavation, loading, hauling, placing, and compacting of waste or replacement Material and the development of disposal or borrow areas.

REQUIREMENTS

3.1 Slide removal and slump repair shall be performed whenever necessary during Purchaser's use to facilitate traffic, proper drainage, and to prevent resource damage.

3.2 Slide Material, including soil, rock and vegetative matter which encroaches into the Roadway, shall be removed. The slope which generated the Slide Material shall be reshaped during the removal of the Slide Material with the excavation and loading equipment. Slide Material deposited on the fill slope and below the Traveled Way will not be removed unless needed for slope stability or to protect adjacent resources.

Surface and Base Courses shall not be excavated during Slide removal operations.

Slide Material which cannot be used for other beneficial purposes shall be disposed of at disposal sites designated by the designated Forest Service official. Material placed in disposal sites will not require compaction unless compaction is shown on Road Maintenance Plan. Side casting may be approved by the designated Forest Service official. Side casting into streams, lakes, or water courses shall not be permitted.

3.3 When filling Slumps or washouts, Material shall be moved from agreed locations or borrow sites, placed in 6 inch layers, and compacted by operating the hauling and spreading equipment uniformly over the full width of each layer.

Existing aggregate surfacing shall be salvaged when practical and reinstalled after depressions have been filled. Damaged aggregate base, aggregate surfacing, and bituminous pavement shall be repaired under Specification T-806 Surface Repair.

3.4 The repaired areas of the Slump shall conform to the cross-section which existed prior to the Slump and shall blend with the adjacent undisturbed Traveled Way, unless otherwise agreed.

3.5 During repair, care shall be taken not to permanently foul aggregate or bituminous-surfaces through covering or mixing with earth or other debris from ditches, slides or other sources.

SPECIFICATION T-802 DITCH CLEANING

DESCRIPTION

1.1 Ditch cleaning, which includes outlet and lead-off ditches, consists of removing and disposing all material from Roadway drainage ditches to provide a free-draining waterway conforming to the previous lines, grades, and cross-sections.

REQUIREMENTS

3.1 Ditch cleaning shall be performed as often as necessary during use to facilitate proper drainage.

3.2 All Slough Material or other debris which might obstruct water flow in the Roadway ditch shall be removed. Material removed from the ditch, if suitable and agreed to **in writing** by the designated Forest Service official, may be blended into existing native road surface, Shoulder, or placed in designed Berms in conjunction with T-803 Surface Blading operations.

Material removed from ditches that is not by Agreement blended into existing roads or placed in Berms shall be loaded and hauled to the disposal site designated by the designated Forest Service official, placed in 6 inch layers and compacted by the hauling vehicle, or disposed of as otherwise agreed.

3.3 During ditch cleaning, care shall be taken not to permanently contaminate aggregate or bituminous-surfaces through covering or mixing with earth or other debris from the ditches.

3.4 Roadway backslopes or berms shall not be undercut.

SPECIFICATION T-803 SURFACE BLADING

DESCRIPTION

1.1 Surface blading consists of keeping a native or aggregate surface Roadbed in a condition to facilitate traffic and provide proper drainage. It includes maintaining the Crown or Slope of the Traveled Way, Shoulders, Drainage Dips, all drainage ditches, Turnouts, Berms, and approach road intersections; also cleaning bridge decks. It also provides a level of smoothness appropriate for the traffic served.

MATERIALS

2.1 *Water*. **When required**, water shall be applied according to the requirements in Specification T-807 during scarifying and/or blading if sufficient moisture is not present to cut, mix, or compact the surface Material. Water Sources will be shown on the project area map, or designated by the designated Forest Service official. The requirement will be listed in C/CT5.31# or K/KT-F/FT.3.1#, when applicable.

REQUIREMENTS

3.1 Surface blading shall be performed immediately before, during, and after Purchaser's use as often as necessary to facilitate traffic and proper drainage.

3.2 Surface irregularities shall be eliminated by scarification and/or blading, and the surface left in a free-draining state and to a smoothness needed to facilitate traffic. The surface blading shall preserve the existing cross-section. Surface Material which has been displaced to the Shoulders or Turnouts shall be returned to the Traveled Way. The blading operation shall be conducted to prevent the loss of surface Material and to provide for a thorough mixing of the Material being worked.

3.3 When directed by the designated Forest Service official, residual bituminous material from previous surface-stabilization treatments shall be scarified and reduced to produce material not exceeding 3 inches (76.2 mm) in greatest dimension.

3.4 Roadway backslopes or Berms shall not be undercut, nor shall new Berms be established unless agreed to, **in writing**, by the designated Forest Service official.

Berms shall be repaired by placing Material, as needed to restore the Berm, to reasonably blend with existing line, grade, and cross-section. Other berms, which are determined by the designated Forest Service official as unnecessary, shall be removed.

3.5 Intersecting roads shall be bladed for a reasonable distance to assure proper blending of the two riding surfaces.

3.6 Drainage Dips and all Ditches shall be cleaned and maintained to reasonably blend with existing line, grade, and cross-section and to provide positive drainage.

3.7 On native surfaced roads, Material generated from backslope Sloughing, and ditch cleaning may be blended with the surface Material being worked. On aggregate surfaced roads this Material shall not be blended with Surface or Base Course Material unless agreed to, **in writing**, by the designated Forest Service official.

3.8 Rocks or other Material remaining on the Traveled Way after the final pass that are larger than 4 inches in diameter or are larger than the maximum size of imported surfacing shall be removed from the Traveled Way. Unless otherwise designated by the designated Forest Service official, the oversized Material shall be disposed of by sidecasting. Sidecasting into streams, lakes, or water courses shall not be permitted.

3.9 Material and/or debris resulting from work under this specification shall not remain on or in structures, such as Culverts, bridge decks, overside drains, cattleguards, ditches, Drainage Dips, and the like.

3.10 *Compaction.* **When required**, the roadbed shall be compacted according to one of the following compaction methods, as listed in C/CT5.31# or K/KT-F/FT.3.1#:

Compaction Method A - Operate equipment over the full-width until there is no visible evidence of further consolidation.

Compaction Method B - Use compression-type or vibratory rollers. Compact, 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 coarse particles.

3.11 *Grid Rolling.* **When required**, the roadbed shall be grid rolled as listed in C/CT5.31# or K/KT-F/FT.3.1#. Unless otherwise agreed by the designated Forest Service official, grid-rolling will continue until roadbed imported surfacing-materials are reduced to a size not exceeding 3 inches (76.2 mm) in greatest dimension or two-thirds of the depth of the existing surfacing, whichever is greater.

SPECIFICATION T-804 OPENING AND MAINTAINING ROADS

DESCRIPTION

1.1 Opening and Maintaining Roads consists of opening roads by removing closure devices, cleaning ditches and other drainage devices built into the roadway, removing berms, and blading the traveled-way. This work also consists of maintaining the roadway immediately before, during, and after the Purchaser's use as necessary to facilitate traffic and proper drainage.

REQUIREMENTS

3.1 Closure devices, such as waterbars, depressions, mounds of earth, or downed-trees, shall be removed and disposed of at locations designated by the designated Forest Service official.

3.2 All trees and logs on the roadbed, and trees and brush that overhang the traveled-way and interfere with vehicle travel shall be removed and scattered outside the roadway.

3.3 All drainage features including drainage-dips, ditches, roadway cross-slope, and other drainage devices built into the roadway shall be cleaned and maintained so they are functional.

3.4 Berms shall be removed as directed by the designated Forest Service official, and the traveled-way shall be bladed to produce a smooth rideable surface.

SPECIFICATION T-805 OPENING AND MAINTAINING ROADS (HIGH BLADING)

DESCRIPTION

1.1 Opening and Maintaining Roads (High Blading) consists of opening roads by removing closure devices, cleaning ditches and other drainage devices built into the roadway, removing berms, and blading the traveled-way. This work also consists of maintaining the roadway immediately before, during, and after the Purchaser's use as necessary to facilitate traffic and proper drainage. High blading is the removal of oversize material without removing surface vegetation. Oversize is that material 4 inches in diameter and larger, found loose upon the traveled-way.

REQUIREMENTS

3.1 Closure devices, such as waterbars, depressions, mounds of earth, or downed-trees, shall be removed and disposed of at locations designated by the designated Forest Service official.

3.2 All trees and logs on the roadbed, and trees and brush that overhang the traveled-way and interfere with vehicle travel shall be removed and scattered outside the roadway.

3.3 All features including drainage-dips, ditches, roadway cross-slope, and other drainage devices built into the roadway shall be cleaned and maintained so they are functional.

3.4 Berms shall be removed as directed by the designated Forest Service official, and the Traveled Way shall be high-bladed to produce a smooth rideable surface.

SPECIFICATION T-806 SURFACE REPAIR

DESCRIPTION

1.1 Surface repair consists of repairing potholes or small soft areas in the Traveled Way. It includes area preparation and furnishing and placing all necessary Materials, and other work necessary to repair the surface.

MATERIALS

2.1 *Aggregates*-The types and gradations of aggregate shall be similar to, and compatible with, the existing surface material, as determined by the designated Forest Service official.

a) Pit-run Aggregate: Pit-run aggregate shall consist of native materials of a size and gradation that can be taken directly from the source and placed on the road without crushing or screening. The maximum size shall be 3 inches (76.2 mm) in the greatest dimension.

b) Grid-rolled Aggregate: Grid-rolled aggregate shall consist of native materials of a quality that can be taken directly from the source, without crushing or screening, and broken-down on the road by grid-rolling. The material shall be broken-down to a maximum size of 3 inches (76.2 mm) in the greatest dimension.

c) Crushed Aggregate: Crushed-aggregate shall be crushed stone, slag, or gravel meeting current Forest Service or State DOT requirements.

2.2 Material used in the repair of soft areas on aggregate or native surfaced roads may be acquired from approved commercial sources, designated Forest Service Borrow areas, or Borrow sources agreed to, **in writing**, by the designated Forest Service official. The quality and quantity of the imported Material used in the repair will be limited to that needed to provide a stable Traveled Way for hauling and to minimize damage to the road and adjacent resources. The quantity of imported surface repair Material used in the appraisal estimate will be shown on Road Maintenance Plan. However, the magnitude of the work may vary depending on Purchaser's hauling schedule and ground conditions.

2.3 Material used in the repair of bituminous pavements may be acquired from local commercial sources. If a mixing table is required, the location shall be approved by the designated Forest Service official. The bituminous mixture to be used by the Purchaser shall be approved by the designated Forest Service official prior to placement. The Purchaser's share of the quantity of bituminous mixture used in the appraisal estimate will be shown on Road Maintenance Plan. However, Purchaser's share of the work may vary depending on Purchaser's hauling schedule, ground conditions, other traffic, etc.

2.4 Water, when required, shall be applied according to the requirements in Specification T-807 Surface Stabilization (Water), and will be specified on the project area map, or designated by the designated Forest Service official. The requirement will be listed in C/CT5.31# or K/KT-F/FT.3.1#, when applicable.

REQUIREMENTS

3.1 Work under this specification shall be performed as often as necessary, and in a timely manner during Purchaser's use to facilitate traffic and reduce further deterioration of the Traveled Way.

3.2 *Aggregate Surface Repair.* Existing aggregate, which has been contaminated with unsuitable material from the subgrade or from other activities shall be removed as directed by the designated Forest Service official. New aggregate shall be mixed until it is uniform throughout, at a moisture-content suitable to prevent segregation and to attain the desired compaction.

The aggregate shall be spread in a uniform layer, with no segregation of size, and to a loose depth that shall have the required thickness when compacted.

If the required compacted depth of any aggregate base or surface course exceeds six inches, it shall be placed in two or more layers of approximately equal thickness. The maximum compacted thickness of any layer shall not exceed 6 inches.

Hauling equipment shall be operated over the surface at the previously constructed layer in such a way as to minimize rutting or uneven compaction.

Compaction and grid-rolling, when required, will be as specified in Specification T-803 Surface Blading, and as listed in C/CT5.31# or K/KT-F/FT.3.1#.

All material removed from aggregate-surface repair shall be disposed of as designated by the designated Forest Service official.

3.3 *Bituminous Pavement Repairs*. The areas to receive bituminous pavement repairs will be marked on the road surface by the Forest Service prior to Purchaser performing the work.

3.4 *Potholes (deep patch).* Surface Course and Base Course materials shall be excavated to a depth necessary to reach firm, suitable material. The minimum depth of excavation shall be 2 inches and the maximum depth of excavation shall be to the top of the subgrade.

The edges of the prepared hole shall be extended to form a vertical face in unfractured asphalt surfacing. The prepared hole shall generally be circular or rectangular in shape, dry, and cleaned of all loose Material.

Prepared potholes shall be patched or barricaded immediately.

The faces of the prepared hole shall be tacked with a slow-setting emulsified asphalt.

The bituminous mixture shall be placed in layers not exceeding a compacted depth of 2 inches. Each layer shall be compacted thoroughly with hand or mechanical tampers or rollers. Compaction shall not be done with equipment wheels.

Upon completion, the compacted patch in the pothole shall be flush, with a tolerance or approximately ¼ inch to ½ inch above the level of the adjacent pavement.

3.5 *Skin Patches*. Bituminous mixture shall be distributed uniformly with feathered edges in layers not to exceed 2 inches compacted depth. When multiple layers are ordered, joints shall be offset at least 6 inches between layers.

Each layer shall be compacted by two passes with a 7-10 ton steel roller or comparable vibratory roller.

3.6 *Asphalt Berm*. Damaged segments of Berm shall be removed and the exposed ends beveled at approximately 45 degrees from vertical. The Berm foundation shall be cleaned and patched as necessary. The foundation and joining surfaces shall be coated with a slow-setting emulsified asphalt. Asphalt mix shall be placed and compacted to conform to the shape and alignment of the undamaged segment.

3.7 *Disposal*. All Materials removed from potholes, patches, and Berms shall be disposed of at disposal sites designated by the designated Forest Service official.

SPECIFICATION T-807 SURFACE STABILIZATION (WATER)

DESCRIPTION

1.1 Surface stabilization (water) consists of applying water to the road surface as necessary to control road-surface loss, provide for road user safety, and minimize damage to adjacent resources.

May also be used to provide water for compaction of surface material(s), to prevent segregation, and for other work deemed necessary.

MATERIALS

2.1 Water is the specified-material for surface stabilization; however, Purchaser may use other materials if agreed to, **in writing**, by the designated Forest Service official. Water-source locations will be shown on the project area map, or designated by the designated Forest Service official.

REQUIREMENTS

3.1 The rate of application shall be such that the water will not run-off of the surface and cause erosion or unnecessary waste.

SPECIFICATION T-808 SURFACE STABILIZATION (BITUMINOUS)

DESCRIPTION

1.1 **This Specification has been removed.**

SPECIFICATION T-808-1 SURFACE STABILIZATION (OTHER MATERIALS)

DESCRIPTION

1.1 Surface stabilization (other materials) consists of preparing the roadbed and furnishing and applying surface-stabilization materials as necessary to abate dust, control road-surfacing loss, provide for user safety, and minimize damage to adjacent resources.

MATERIALS

2.1 The type of surface stabilization material to be used, the rates of application, and frequency of applications will be shown in C/CT5.31# or K/KT-F/FT.3.1#.

2.2 *Water.* Furnish water free of substances detrimental to the work.

2.3 *Magnesium Chloride liquid.* Furnish a water solution conforming to the following:

(1) Magnesium Chloride by mass	28 percent min.
(2) Specific Gravity, ASTM D1298	1.29 to 1.33

2.4 *Calcium Chloride liquid.* Furnish a water solution conforming to the following:

(1) Calcium Chloride liquid	AASHTO M 144, Type L
(2) Calcium Chloride by mass	35 percent min.

2.5 *Acceptance of Materials*. Certification, sampling, and acceptance of materials will be based upon manufacturer's certification. All proposed materials will be subject to the designated Forest Service official's approval **prior** to application.

REQUIREMENTS

3.1 *Preparation for Surface Stabilization Materials Other Than Water.* Prior to application of any material, the entire roadbed shall be prepared as required under Specification T-803 Surface Blading.

Bituminous and other residue from previous treatments shall be scarified and pulverized to produce loosened material not exceeding 3 inches in greatest dimension.

A light-application of water shall be applied just prior to applying the surface stabilizer, unless otherwise agreed to by the designated Forest Service official.

Application rates and methods shall adhere to the Manufacturer's recommendations.

3.2 *Application Methods of Surface Stabilization Materials*. One or more of the following methods shall be used as specified in C/CT5.31# or K/KT-F/FT.3.1#:

a). Direct Penetration –

1). Prepared Surface: The stabilizer application is made directly to the traveled-way and any shoulders prepared in accordance with Specification T-803 Surface Blading. The road shall be closed to traffic until penetration is complete or until excess material is blotted according to Subsection 3.4, or as approved by the CO.

2). No Surface Preparation: The stabilizer is applied directly to the existing surface, regardless of its condition. The road shall be closed to traffic until penetration is complete or until excess material is blotted according to Subsection 3.4, or as approved by the CO.

b). Penetration - The top 1 inch (25.4 mm) of roadway-surfacing is placed to the side in a windrow. The stabilizer application is made to the exposed roadway, and the windrow is pulled-back across the road as a blotter since penetration into the compacted-surface is minimal.

c). Enhanced Penetration - The top 1 inch (25.4 mm) is loosened and left in-place. The stabilizer application then penetrates the loose material.

3.3 *Weather Limitations*. Stabilizing materials shall not be applied when it is raining, when the surface is too wet to receive the material, or if rain is anticipated to occur within 24 hours of application.

Surface stabilizers shall be applied only when the surface temperature of the traveled-way is 50°F (10° C) in the shade, and rising.

3.4 *Blotter Material*. Blotter-material, when used, shall be spread in sufficient quantities to prevent tire pickup.

3.5 *Traffic.* Traffic shall be maintained in accordance with B/BT6.33 or G/GT.3.3.

SPECIFICATION T-809 MINOR DRAINAGE STRUCTURES

DESCRIPTION

1.1 Minor drainage structures consists of maintaining Drainage Structures and related items such as culverts, inlet and outlet channels, related ditches, existing riprap, trash racks, and drop-inlets. Minor drainage structures are those with waterway opening of less than 35 ft^2 (3.2 m^2) in a single installation, or a multiple installation in which the smallest opening is less than 19 ft^2 (1.7 m^2). This includes overside drains.

MATERIALS

2.1 All Materials used in the maintenance of Drainage Structures shall conform by type and specification to the Material in the structure being maintained.

REQUIREMENTS

3.1 During periods of Purchaser's operation, Purchaser shall keep ditches, culverts and other drainage facilities clear and functioning.

3.2 Drainage Structures and related items shall be cleared of all foreign Material which has been deposited above the bottom of the structure and all vegetative growth which interferes with the flow pattern.

Vegetative debris shall be scattered outside of the roadbed unless otherwise agreed. Debris shall be placed so as not to enter the stream-channels. Material removed that cannot be incorporated into maintenance work shall be hauled to a disposal site designated by the designated Forest Service official.

3.3 Perform maintenance to insure the proper functioning of the head walls, aprons, inlet assemblies, overside drains, riprap, trash racks, and other facilities related to the Drainage Structure.

If outlet or inlet riprap was installed by Purchaser as a construction item or existed prior to Purchaser's haul, it shall be maintained in good condition including the replacement of riprap if necessary to previous line, grade, and cross-section.

SPECIFICATION T-810 ROADWAY VEGETATION

DESCRIPTION

1.1 Roadway vegetation includes removal of brush and trees from within the Roadway limits, including around impaired signing, gates, bridges, and other areas that need visibility and/or increased sight distance.

REQUIREMENTS

3.1 Vegetative matter within the Roadway which impedes vehicular travel or interferes with road maintenance operations, such as surface blading and ditch and culvert cleaning shall be removed. Downed timber meeting utilization standards shall be cut in appropriate lengths and decked along the Roadside in locations where the Traveled Way or sight distances will not be impaired.

3.2 Brush and trees that obstruct proper sight-distance shall be removed. Low shrubs and brush, which do not restrict sight distance, provides ground cover or reduces erosion, shall not be removed.

Vegetative-material consisting of limbs, tops and brush shall be scattered outside of the roadway. Stumps and logs not meeting utilization standards may also be scattered outside of the roadway. Purchaser shall avoid placing vegetative material in concentrations. Disposal of vegetative material will not be permitted in meadows or drainage ways.

SPECIFICATION T-811 CLOSING ROADS

DESCRIPTION

1.1 Closing roads consists of closing roads by restoring or installing closure-devices and drainage-facilities on roads no longer needed by the Purchaser or when interim closures are required during periods of Purchaser's non-use.

Closure devices and drainage facilities may consist of cross-ditches, waterbars, drainage-dips, barriers or gates and restoring cross-sloped sections.

MAINTENANCE REQUIREMENTS

3.1 During periods of Contractor's/Purchaser's non-use, roads designated for interim closures shall be closed unless otherwise agreed to, **in writing**, by the designated Forest Service official.

The entire roadway shall be bladed and shaped to provide drainage during periods of closure or non-use.

Where possible, and still retaining appropriate surface-drainage characteristics, existing surface-vegetation shall be protected in accordance with the High Blading requirements found in Specification T-805 Opening and Maintaining Roads (High Blading).

3.2 All drainage-dips, out-sloped or in-sloped sections, or other drainage devices built into the roadbed and roadway ditches shall be restored and replaced. Existing culverts shall be maintained to provide unobstructed flow.

Waterbars and other cross-ditches shall be installed at locations designated by the designated Forest Service official.

3.3 All closure-devices and signs shall be constructed, located, installed, and maintained according to the standards contained in the most current version of the MUTCD.

3.4 Where existing surface-vegetation has been destroyed as a result of Purchaser's operation, the entire roadway will be seeded with a seed-mixture approved by the designated Forest Service official.

SPECIFICATION T-812 MISCELLANEOUS STRUCTURES

DESCRIPTION

1.1 Maintenance of miscellaneous structures includes cattleguards, gates, H-braces, fencing, guardrails, signage, and other similar structures that have been previously installed to insure safe and efficient operation of the road.

MATERIALS

2.1 Any Materials needed in the maintenance of miscellaneous structures shall be similar in type and quality to the Material in the structure being maintained.

REQUIREMENTS

3.1 *Cattleguards*. Loose rail or wing elements shall be straightened and welded or bolted back in place.

Excess Material carried into the cattleguard shall be removed when drainage is blocked or when it reaches 6 inches from the bottom of the cattleguard frame. Drainage into and from the cattleguard shall be kept open.

3.2 *Gates*. Gates shall be kept in good repair and made to swing easily. Hinges or latches shall be repaired if not operating properly and hinges shall be oiled. Brush and debris shall be removed from within the swinging radius.

Loose wire gate ends and internal stays shall be maintained in good condition. Gate wire shall be maintained as necessary to insure proper operation of the gate both as a vehicle passageway and as a barrier to cattle movement.

3.3 *H-braces.* Posts, horizontal braces, and diagonal struts or tie wires shall be maintained to provide for tightness of fence and gate or latch posts.

3.4 *Fencing.* Fencing which has no opening or provisions for gating shall be temporarily braced prior to cutting. Fencing shall be replaced upon completion of use and shall be stretched and securely fastened to conform to its original spacing before cutting.

3.5 *Signage.* Structure delineators, regulatory and warning signs determined by the designated Forest Service official as necessary, shall be maintained in good, clean condition.

3.6 *Guardrails.* Guardrails shall be maintained according to the most recent AASHTO standards and specifications.

SPECIFICATION T-813 TREATMENT AND DISPOSAL OF HAZARD TREES

DESCRIPTION

1.1 Treatment and disposal of hazard trees consists of felling and disposal of designated unstable live or dead trees. Any removal of timber is subject to prior agreement between the CO and the Purchaser.

REQUIREMENTS

3.1 *Designation of hazard trees.* Hazard trees to be felled will be designated in advance by the designated Forest Service official, and will be flagged and/or marked.

3.2 *Falling, bucking, and treatment for disposal.* Use controlled felling to ensure the direction of fall and prevent damage to property, structures, roadway, residual trees, and traffic. Stump heights, measured on the side adjacent to the highest ground, must not exceed 12 inches or 1/3 of the stump diameter, whichever is greater. Higher stump heights are permitted when necessary for safety.

Felled snags and trees, which are not marked for removal, will be left in a stable condition such that they will not roll or slide. Position logs away from standing trees so they will not roll, are not on top of one another, and are located out of roadway and drainage structures.

Fell, limb, and remove trees which are marked for removal that equal or exceed the utilization standards as listed in the contract or Supplemental Specifications. Dispose of merchantable timber designated for removal in accordance with Provision B/BT2.32 or C/CT.3.2 Construction Clearing, or as designated by the designated Forest Service official.

3.3 *Slash Treatment.* Within the roadway, remove limbs, chunks, and debris in excess of 12 inches in length and 3 inches in diameter, and concentrations that may plug ditches or culverts, and water courses.

Dispose of slash by scattering outside the roadway limits without damaging trees, or improvements.

3.4 *Safety.* Adhere to the requirements in Provision B/BT6.33 or G/GT.3.3

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SPECIFICATION T-GEN GENERAL REQUIREMENTS

DESCRIPTION

1.1 General requirements consists of requirements that are mandatory for all T-Specs included in the contract.

REQUIREMENTS

3.1 *Equipment Specifications.* The equipment to be used to complete the work in this contract shall meet the following minimum standards:

Road Grader - Motor patrol, self-propelled, tandem drive, with a mold board not more than 14 feet or less than 12 feet with a 3 tooth ripper (scarifier) bar.

Crawler Tractor/Dozer - D4 with a 3 tooth ripper (scarifier) bar and an angle dozer blade (6 way tilt preferred).

3.2 *Equipment Cleaning.* Adhere to the requirements in provision B/BT6.35 or G/GT.3.5.

3.3 *Traffic Control.* Adhere to the requirements in provision B/BT6.33 or G/GT.3.3

3.4 *Bridges.* Clean the deck of any accumulated dirt or gravel and clean deck drains. Protect structures according to the requirements in Provision B/BT6.22 or G/GT.2.2.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE REGION 3

Coconino National Forest

Coconino County, Arizona

Marshall Supplemental Project Agreement

Road Maintenance Drawings and Specifications

Prepared By: _____

Project Engineer Date

Technical Review By: _____

Project Team Leader Date

Project Satisfactorily Meets

Management Area Direction: _____

District Ranger Date

Reviewed and Approved

For Technical Adequacy: _____

Forest Engineer Date

Project Approval for Inclusion In

Program of Work & Funding Availability: _____

Forest Supervisor Date

MARSHALL SPA
5.0 TRANSPORTATION FACILITIES
TABLE OF CONTENTS

5.4 Road Maintenance

General Notes:

1. All roads specified for surface blading shall conform to timber sale road maintenance standards. Purchaser shall maintain all out-sloped drains and lead out ditches per specifications.

2. Additional drainage features may be required if road haul and conditions should change.

3. Berms of materials or other obstructions caused by maintenance operations shall be removed prior to the end of each day's operations and are not to remain overnight, weekends and holidays. If, due to weather conditions or equipment breakdowns, berms or obstructions cannot be removed, they shall be signed as a hazard and visibly illuminated at night, per the Manual on Uniform Traffic Control Devices (MUTCD) requirements.

4. Contractor's equipment provided for the performance of the work shall be of the appropriate size, type, and number and the Contractor's equipment shall be in good working condition and suitable for the work required. Operators shall be competent and experienced in the operation of the equipment. Equipment shall have safety signing and appurtenances required by OSHA, such as Rollover Protection Structures (ROPS), fire suppression devices, lights and slow-moving vehicle signs. The equipment used for blading shall be a diesel, tandem drive motor patrol of at least 150 horsepower. Grading equipment must be capable of cutting, crowning, and shaping operations necessary to successfully perform the tasks.

ACRONYMS:

AGG	– Aggregate Surfacing
AASHTO	– American Association of State and Highway Transportation Officials
CWFS	– Cooperative Work Forest Service
FRD	– Flagstaff Ranger District
FSH	– Forest Service Handbook
FSR	– Forest System Road
IMP	– Improved Surfacing
ML	– Maintenance Level
MP	– Mile Post
MUTCD	– Manual on Uniform Traffic Control Devices
MVUM	– Motor Vehicle Use Map
NAT	– Native Surfacing
OSHA	– Occupational Safety and Health Administration
PAV	– Pavement
ROPS	– Rollover Protection Structure
SRR	– Surfacing Rock Repair
SPA	– Supplemental Project Agreement

ROAD LENGTH TABULATION - MAINTENANCE				
ROAD NO.	MAINTENANCE LEVEL	TERMINUS TO TERMINUS		MILES
FSR 128	3	FSR 129	FSR 128B	0.43
FSR 128B	2	FSR 128	MP 4.93	4.93
FSR 9478	2	FSR 9486R	MP 0.17	0.17
FSR 9478C	2	FSR 128B	MP 0.20	0.20
FSR 9478X	2	FSR 9478Y	MP 0.23	0.23
FSR 9478Y	2	COC-3	MP 0.26	0.26
FSR 9481Q	2	FSR 128B	MP 1.79	1.79
FSR 9486R	2	FSR 128B	MP 0.58	0.58
FSR 9486Q	2	FSR 128	MP 0.36	0.36
FSR 9487T	2	COC-3	MP 0.05	0.05
			Total	9.00

Road Maintenance Requirements Summary

Road	Termini		Miles	Road ML	Applicable Pre-Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P	P		P		P		T-803 ends and T-804 begins at MP 4.38
FSR 9478	FSR 9486R	MP 0.17	0.17	2	P							
FSR 9478C	FSR 128B	MP 0.20	0.20	2	P							
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P			P				
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2		P						
FSR 9486R	FSR 128B	MP 0.58	0.58	2	P			P				
FSR 9486Q	FSR 128	MP 0.36	0.36	2		P						
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

Road	Termini		Miles	Road ML	Applicable During Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P							T-803 only to MP 1.57
FSR 9478	FSR 9486R	MP 0.17	0.17	2								
FSR 9478C	FSR 128B	MP 0.20	0.20	2								
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P							
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2								
FSR 9486R	FSR 128B	MP 0.58	0.58	2								
FSR 9486Q	FSR 128	MP 0.36	0.36	2								
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

Road	Termini		Miles	Road ML	Applicable Post-Haul Road Maintenance Specifications							Remarks
	From	To			T-803	T-804	T-805	T-806	T-809	T-810	T-811	
FSR 128	FSR 129	FSR 128B	0.43	3	P							
FSR 128B	FSR 128	MP 4.93	4.93	2	P							
FSR 9478	FSR 9486R	MP 0.17	0.17	2							P	
FSR 9478C	FSR 128B	MP 0.20	0.20	2	P							
FSR 9478X	FSR 9478Y	MP 0.23	0.23	2	P							
FSR 9478Y	COC-3	MP 0.26	0.26	2	P							
FSR 9481Q	FSR 128B	MP 1.79	1.79	2							P	
FSR 9486R	FSR 128B	MP 0.58	0.58	2	P							
FSR 9486Q	FSR 128	MP 0.36	0.36	2							P	
FSR 9487T	COC-3	MP 0.05	0.05	2	P							

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

USDA - FOREST SERVICE																									
$0.26/CCF-mile for AGG CWFS Deposits								TIMBER SALE:	Marshall																
$0.18/CCF-mile for PAV CWFS Deposits								DISTRICT:	FRD																
$0.16/CCF-mile for IMP CWFS Deposits								ROAD MAINTENANCE APPRAISAL																	
								(REF: FSH 2409.18)																	
TIMBER SALE		Marshall						VOLUME:	15702																
				CWFS-FS MTC ($)					PURCHASER MAINTENANCE DOLLARS																	
ROAD NUMBER	MILES	SURFACE TYPE	VOLUME CCF	SURFACE	SRR @ 26/CCF-MILE	SUBTOTAL	OVER FACTOR@1.21	TOTAL CWFS $	T-801	T802	T-803	T-804	T-805	T-806	T-807 & T-808	T-809	T-810	T-811	T-812	T-813	TOTAL PURCHASER MTC	TOTAL MTCE $			
128	0.43	AGG	14700		$ 3,822.00	$ 1,643.46	$ 345.13	$ 1,988.59			$ 709.50	$ -		$ -				$ -			$ 709.50	$ 2,698.09			
128B	4.93	NAT			$ -	$ -	$ -	$ -			$ 4,752.00	$ 660.00		$ 12,554.67				$ -			$ 17,966.67	$ 17,966.67			
9478	0.17	NAT			$ -	$ -	$ -	$ -			$ 180.00	$ -		$ -				$ 626.50			$ 806.50	$ 806.50			
9478C	0.20	NAT			$ -	$ -	$ -	$ -			$ 207.00	$ -		$ -				$ -			$ 207.00	$ 207.00			
9478X	0.23	NAT			$ -	$ -	$ -	$ -			$ 310.50	$ -		$ 312.58				$ -			$ 623.08	$ 623.08			
9478Y	0.26	NAT			$ -	$ -	$ -	$ -			$ 351.00	$ -		$ -				$ -			$ 351.00	$ 351.00			
9481Q	1.79	NAT			$ -	$ -	$ -	$ -			$ -	$ 2,148.00		$ -				$ 1,355.50			$ 3,503.50	$ 3,503.50			
9486R	0.58	NAT			$ -	$ -	$ -	$ -			$ 522.00	$ -		$ 6,570.67				$ -			$ 7,092.67	$ 7,092.67			
9486Q	0.36	NAT			$ -	$ -	$ -	$ -			$ -	$ 432.00		$ -				$ 712.00			$ 1,144.00	$ 1,144.00			
9487T	0.05	NAT			$ -	$ -	$ -	$ -			$ 67.50	$ -		$ -				$ -			$ 67.50	$ 67.50			
						Total CWFS		$ 1,988.59																	
																					$ 32,471.41	$ 34,460.00			
PREPARED	Utley							(1) CWFS MTC				0.13		$/CCF											
APPROVED								(2) TOTAL				2.07		$/CCF											
								(3) TOTAL + CWFS MTC				2.19		$/CCF							R3-FS-2400-110				

Road Work Descriptions
For
Marshall SPA

NOTES:

1. In addition to the Specifications noted below, Road Maintenance Specification T-GEN is required for all road work on the Road Package. The T-GEN Specification addresses Equipment Specifications, Noxious Weeds, Traffic Control, and Bridge Maintenance.

2. All road maintenance work shall be done in accordance with attached Best Management Practices for Road Maintenance.

3. Maintenance Specification T-806 SURFACE REPAIR shall be performed using commercial material source.

4. Maintenance Specification T-811 CLOSING ROADS shall be performed post haul by first blading and shaping the length of the road to be closed. Entrance treatments should be applied at designated junctions by spreading slash to the end of the line of site from the road entrance.

Road # **128** **Maintenance Level 3**

Traveled-Way 14’ minimum, or existing width Road Length 0.43 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 129 on the right. Begin T-803 MAINTENANCE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.43.
0.02	Protect in place existing gate and cattle guard.
0.22	Maintain existing 18” squash culvert.
0.33	Maintain existing 18” squash culvert.
0.43	Maintain existing junction with FSR 128B on the left. End T-803 MAINTENANCE BLADING pre, during-, and post-haul.

Road # **128B** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 4.93 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 128. Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth) and T-803 MAINTENANCE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 4.93.
0.07	End T-806 SURFACE REPAIR with 6” lift.

0.09	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.12	End T-806 SURFACE REPAIR with 6” lift.
0.14	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.16	End T-806 SURFACE REPAIR with 6” lift.
0.19	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.20	End T-806 SURFACE REPAIR with 3” lift.
0.29	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.31	End T-806 SURFACE REPAIR with 3” lift.
0.34	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
0.39	End T-806 SURFACE REPAIR with 6” lift.
0.41	Maintain existing lead out on the right. Suitable material to be brought back onto the road.
0.44	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.59	End T-806 SURFACE REPAIR with 3” lift.
0.70	Maintain existing lead out on the right. Suitable material to be brought back onto the road.
0.79	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.96	End T-806 SURFACE REPAIR with 3” lift.
1.25	Protect in place existing cattle guard.
1.51	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
1.57	Junction with FSR 9486R on the right. End T-803 MAINTENANCE BLADING during-haul.
1.65	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
1.69	End T-806 SURFACE REPAIR with 6” lift.
1.94	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
1.97	End T-806 SURFACE REPAIR with 6” lift.
1.99	Maintain existing lead out on the left. Suitable material to be brought back onto the road.

2.11	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
2.22	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
2.31	Junction with FSR 9481Q on the right.
2.50	Maintain existing lead out on the left. Suitable material to be brought back onto the road.
3.13	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
3.23	End T-806 SURFACE REPAIR with 6” lift.
3.88	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 6” lift (compacted depth).
3.90	End T-806 SURFACE REPAIR with 6” lift.
4.24	Junction with FSR 9478C on the right.
4.38	End T-803 MAINTENANCE BLADING and begin T-804 OPENING ROADS pre-haul.
4.93	End T-804 OPENING ROADS pre-haul and T-803 MAINTENANCE BLADING post-haul.

Road # **9478** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 0.17 mi.

Mile Post	Work Description
0.00	Junction with FSR 9486R. Begin T-803 SURFACE BLADING pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 9486R, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.17.
0.17	End T-803 SURFACE BLADING pre-haul and T-811 CLOSING ROADS post-haul.

Road # **9478C** **Maintenance Level 2**

Traveled-Way 12’ minimum, or existing width Road Length 0.20 mi.

Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-803 SURFACE BLADING pre- and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattle guards, fences, route markers, signs, or other structures from MP 0.00 to 0.20.
0.20	End T-803 SURFACE BLADING pre- and post-haul.

Road #	**9478X**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.23 mi.

Mile Post	Work Description
0.00	Maintain existing junction with FSR 9478Y. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.23.
0.01	Protect in place existing gate.
0.07	Caution: powerline overhead.
0.08	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.09	End T-806 SURFACE REPAIR with 3” lift.
0.16	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 3” lift (compacted depth).
0.17	End T-806 SURFACE REPAIR with 3” lift.
0.23	End T-803 SURFACE BLADING pre-, during-, and post-haul.

Road #	**9478Y**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.26 mi.

Mile Post	Work Description
0.00	Maintain existing junction with COC-3. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.26.
0.04	Maintain existing junction with FSR 9478X on the right.
0.06	Caution: powerline overhead.
0.26	Private property boundary. End T-803 SURFACE BLADING pre-, during-, and post-haul.

Road #	**9481Q**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 1.79 mi.

Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 128B, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 1.79.
1.79	End T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul.

Road #	**9486R**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.58 mi.

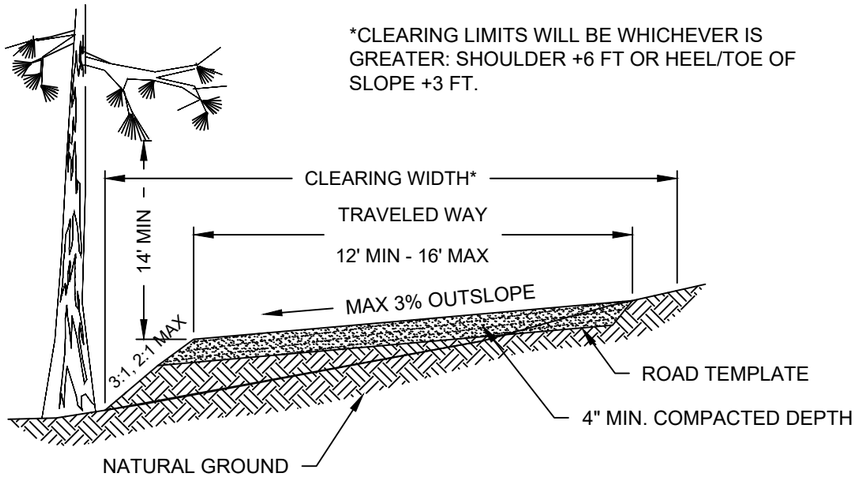
Mile Post	Work Description
0.00	Junction with FSR 128B. Begin T-803 SURFACE BLADING pre- and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.58.
0.01	Begin T-806 SURFACE REPAIR Section 2.1.a, placing material in a 12” lift (compacted depth).
0.17	End T-806 SURFACE REPAIR with 12” lift.
0.25	Junction with FSR 9478 on the right.
0.58	End T-803 SURFACE BLADING pre- and post-haul.

Road #	**9486Q**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.36 mi.

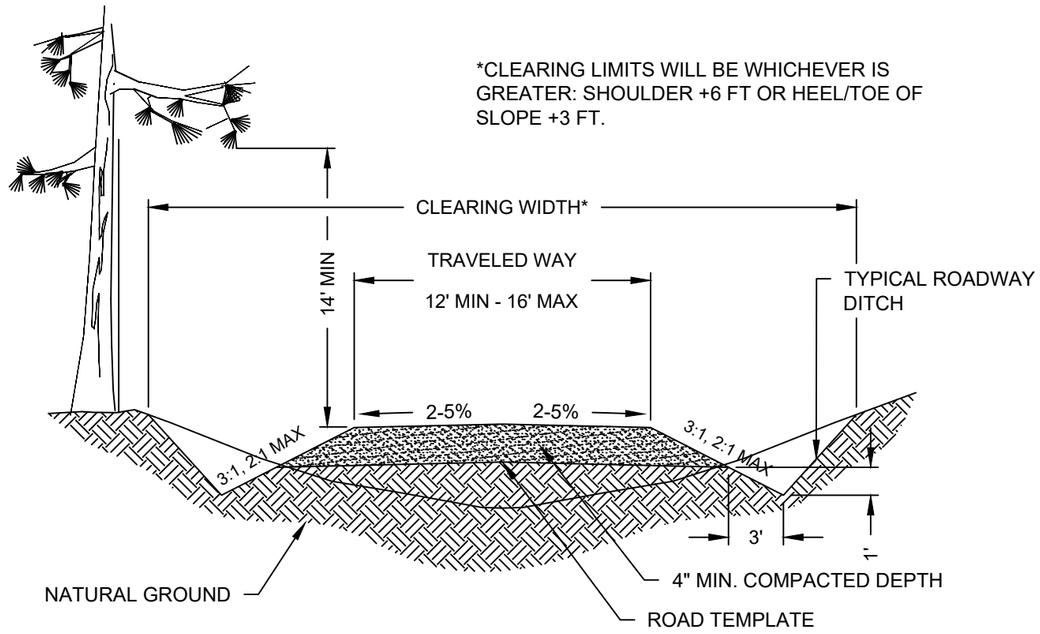
Mile Post	Work Description
0.00	Junction with FSR 128. Begin T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul. Apply entrance treatment at junction with FSR 128, per T-811 CLOSING ROADS. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.36.
0.36	End T-804 OPENING ROADS pre-haul and T-811 CLOSING ROADS post-haul.

Road #	**9487T**	**Maintenance Level 2**
Traveled-Way	12’ minimum, or existing width	Road Length 0.05 mi.

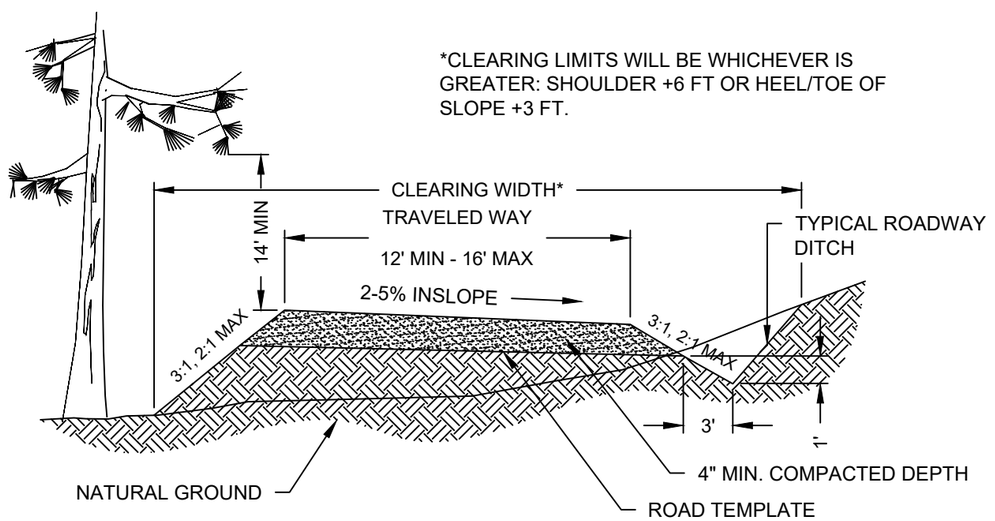
Mile Post	Work Description
0.00	Maintain existing junction with COC-3. Begin T-803 SURFACE BLADING pre-, during-, and post-haul. Maintain all existing drainage features and structures, including those not listed. Protect in place all existing cattleguards, fences, route markers, signs, or other structures from MP 0.00 to 0.05.
0.05	Powerline overhead. End T-803 SURFACE BLADING pre-, during-, and post-haul.



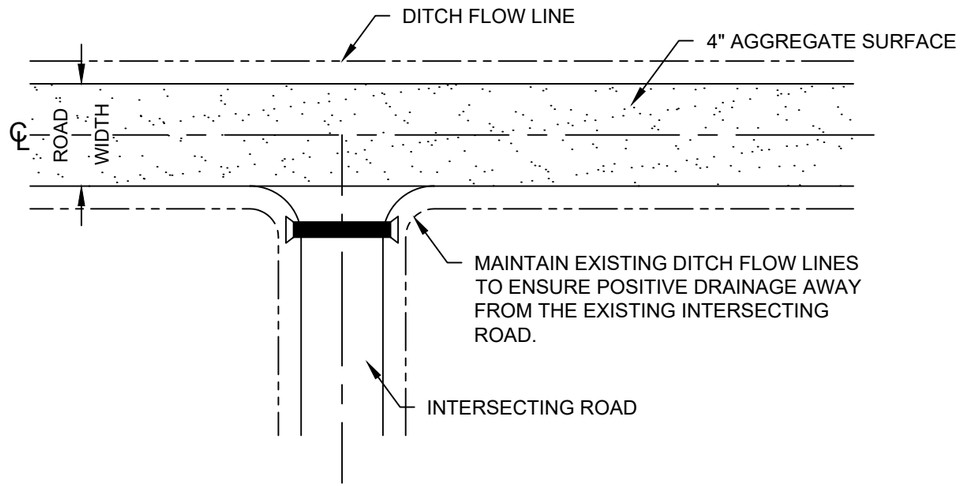
TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING AND WITHOUT ROADWAY DITCH



TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING, CROWN, AND ROADWAY DITCH



TYPICAL CROSS-SECTION WITH AGGREGATE SURFACING AND ROADWAY DITCH



INTERSECTION GRADING AND SHAPING

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

TYPICAL ROADWAY DETAILS

DATE
09/20/2023

ARCHIVE NO.

DESIGNER
S. UTLEY

DRAWN
S. UTLEY

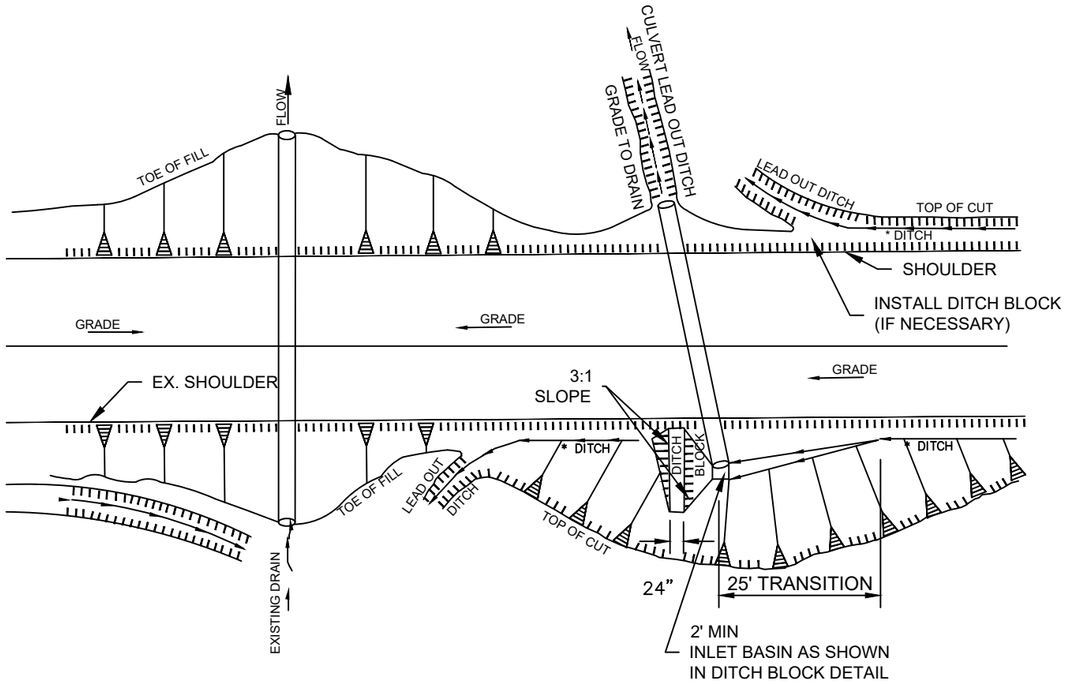
CHECKED
T. CONNOLLY

PROJECT NO.

DWG SHEET NO.
C-01

SHEET **1** OF **3**

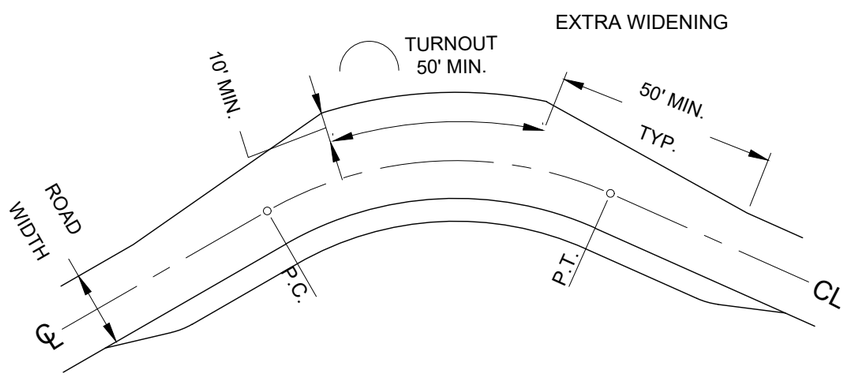
9/20/23 09:36 SAMUELUTLEY2 C:\USERS\SAMUELUTLEY2\BOX\7700 TRAVEL MGMT COC\7720 – TRANSPORTATION SYSTEM DEVELOPMENT\ROAD PRECONSTRUCTION\TIMBER\FRD\2023\MARSHALL\CAD\TYPICAL DRAWINGS.DWG;



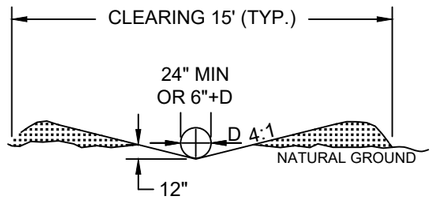
SAMPLE DITCH TYPICAL

NOTES:

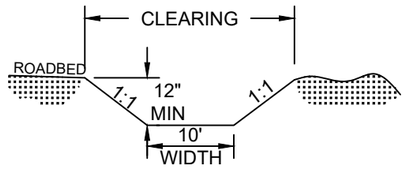
1. THE SLOPE OF LEAD OUT DITCHES SHALL BE CONSTRUCTED TO A MINIMUM OF -2% SLOPE WITHIN THE PREVIOUSLY EXISTING DISTURBED SOIL.
2. DITCH BLOCK WILL NOT BE REQUIRED WHEN INLET BASIN IS IN A SAG.
3. DITCH BLOCK ELEVATION SHALL BE 4" LOWER THAN THE ADJACENT SUBGRADE ELEVATION.



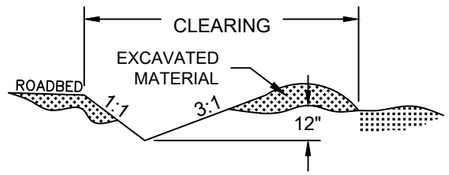
TURNOUT AND CURVE WIDENING



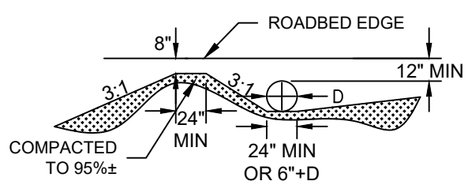
CULVERT LEAD OUT DITCH



FLAT BOTTOM DITCH



LEAD OUT DITCH



DITCH BLOCK

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

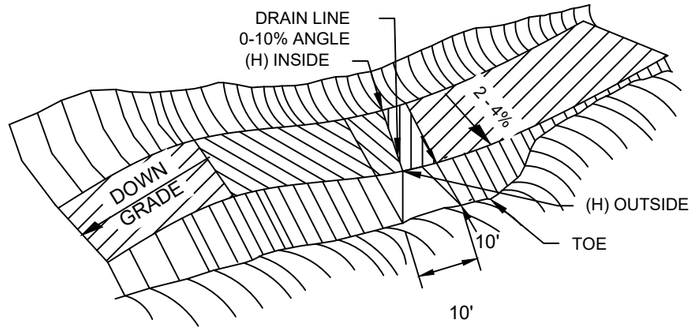
TYPICAL DITCH AND TURNOUT DETAILS

DATE: 09/20/2023	
ARCHIVE NO.	
DESIGNER: S. UTLEY	DWG SHEET NO.: C-02
DRAWN: S. UTLEY	
CHECKED: T. CONNOLLY	SHEET 2 OF 3
PROJECT NO.	

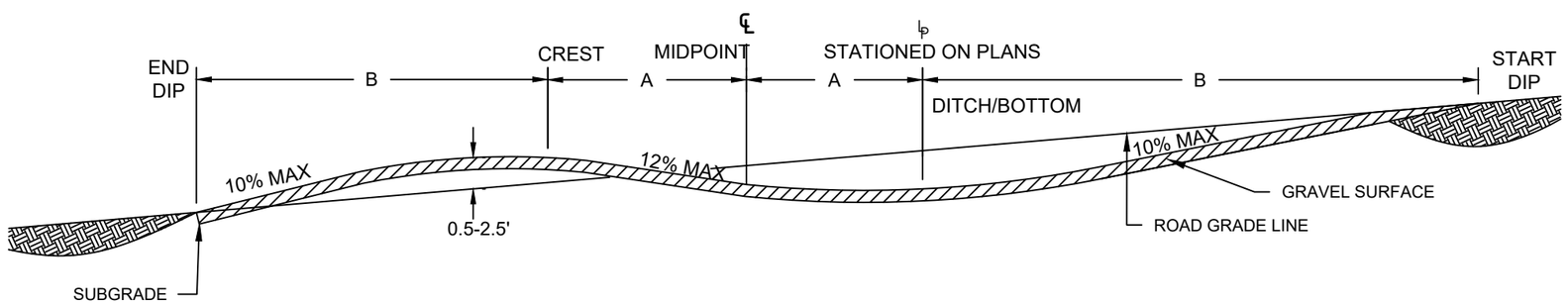
ROLLING DIP NOTES:

1. THE CROSS SLOPE OF THE ROADBED SHALL BE MAINTAINED THROUGH THE DIP.
2. THE DRAIN LINE SHALL BE SKEWED OFF OF THE ROADBED TO ALLOW POSITIVE DRAINAGE, UNLESS OTHERWISE FLAGGED.
3. FOR DIPS ON AGGREGATE SURFACE ROADS, ADD DEPTH OF COMPACTED SURFACE TO DIMENSION (H).
4. ALL DITCHES ASSOCIATED WITH ROLLING DIP STRUCTURES SHALL BE MAINTAINED WITHIN THE PROJECT SITE.
5. DIRECTION OF EXISTING WATER FLOW SHALL BE MAINTAINED.

ROLLING DIP CONSTRUCTION DIMENSIONS				
TYPE "1"				
%GRADE	LENGTH		DEPTH (H)	
	A	B	OUTSIDE EDGE	INSIDE EDGE
0-4%	18	55	0.9'	0.4'
5-8%	16	85	0.8'	0.3'
9-12%	15	110	0.7'	0.3'



ROLLING DRAINAGE DIP
PERSPECTIVE
NOT TO SCALE



ROLLING DRAINAGE DIP
PROFILE
NOT TO SCALE

United States Department of Agriculture
Forest Service

R3
SOUTHWESTERN REGION

PROJECT NAME

MARSHALL SPA

COCONINO NATIONAL FOREST

FLAGSTAFF RANGER DISTRICT

DRAWING TITLE

TYPICAL ROLLING DIP DETAILS

DATE
09/20/2023

ARCHIVE NO.

DESIGNER
S. UTLEY

DRAWN
S. UTLEY

CHECKED
T. CONNOLLY

PROJECT NO.

DWG SHEET NO.
C-03

SHEET **3** OF **3**

MARSHALL SPA VICINITY MAP

Flagstaff Ranger District

Timber

Cut Units

Coconino NF Roads

Operational Maintenance Level

5 - HIGH DEGREE OF USER COMFORT

I-40 West to Williams

Flagstaff

I-40 East to Winslow

AZ-89A South to Sedona

I-17 South to Camp Verde

COC-3 South to Happy Jack

N

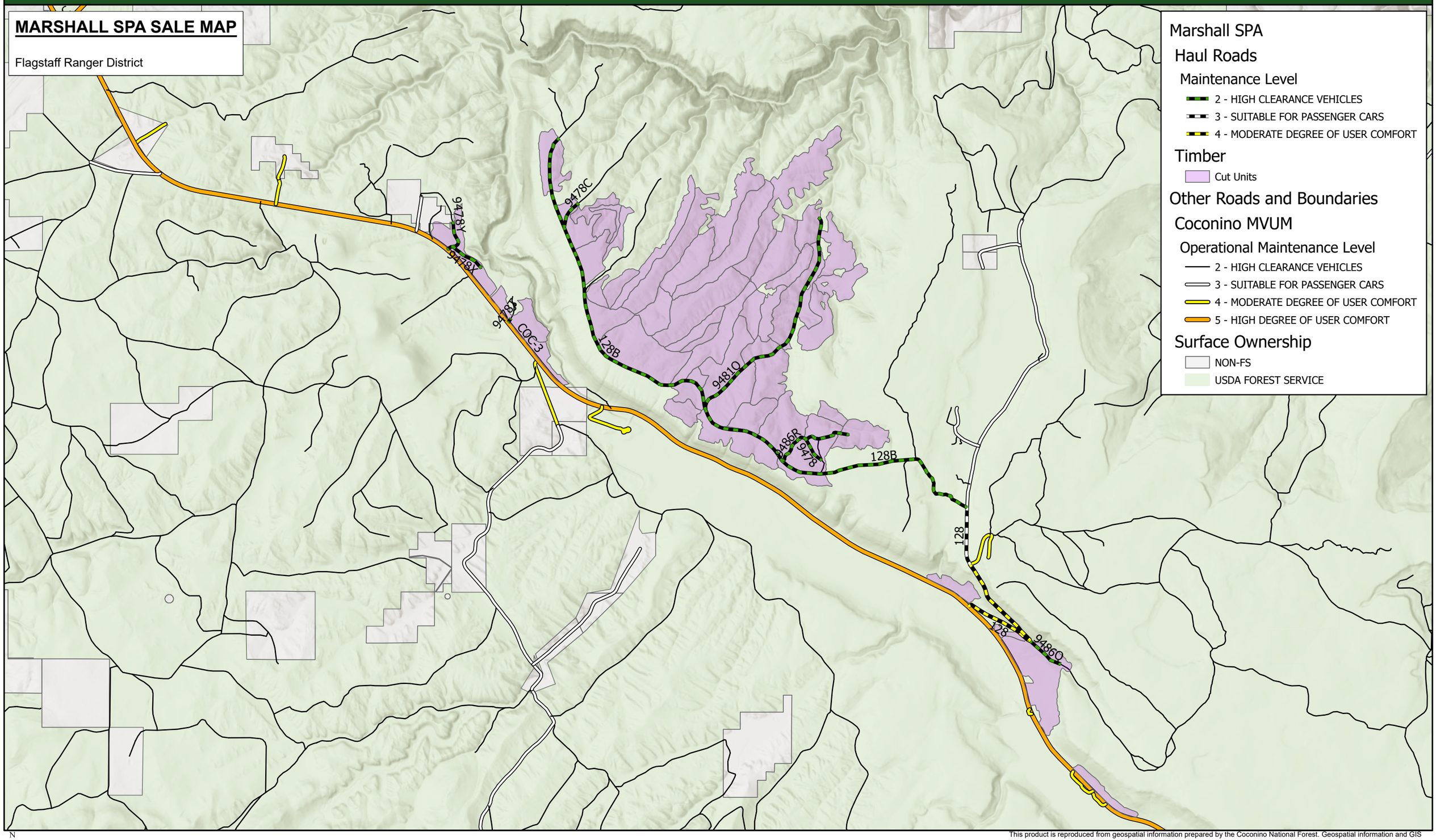
0 2 4 8 Miles

Date Saved: 8/15/2023 Document Path: T:\FS\NFS\Coconino\Program\7100Engineering\GIS\Sam Utley\Timber\Marshall TS\Marshall TS.aprx

COCONINO NATIONAL FOREST
SOUTHWEST REGION 3

MARSHALL SPA SALE MAP

Flagstaff Ranger District



Marshall SPA

Haul Roads

Maintenance Level

- 2 - HIGH CLEARANCE VEHICLES
- 3 - SUITABLE FOR PASSENGER CARS
- 4 - MODERATE DEGREE OF USER COMFORT

Timber

- Cut Units

Other Roads and Boundaries

Coconino MVUM

Operational Maintenance Level

- 2 - HIGH CLEARANCE VEHICLES
- 3 - SUITABLE FOR PASSENGER CARS
- 4 - MODERATE DEGREE OF USER COMFORT
- 5 - HIGH DEGREE OF USER COMFORT

Surface Ownership

- NON-FS
- USDA FOREST SERVICE

N

0 0.75 1.5 3 Miles

Date Saved: 8/15/2023 Document Path: T:\FS\NFS\Coconino\Program\7100Engineering\GIS\Sam Utley\Timber\Marshall TS\Marshall TS.aprx

Marshall SPA Cost Justifications

Estimated Temporary Roads:

System roads used as temporary roads and obliterated by purchaser	= 0.00 miles
Non-system road used as temporary roads and obliterated by purchaser	= 0.00 miles
New temporary roads constructed by, and obliterated by the purchaser	= 8.20 miles
Total	= 8.20 miles

Estimated Cost used for Road Maintenance Work Items:

- $550 per mile each blading for level 3 T-803 Surface Blading.
- $450 per mile each blading for level 2 T-803 Surface Blading.
- $1200 per mile for T-804 Opening Roads.
- $20 per CY for Spot Fill T-806 Surface Repair using Cinders.
- $30 per CY for Spot Fill T-806 Surface Repair using Crushed Aggregate.
- $450 per mile and $550 per entrance treatment for T-811 Close Road.
- $2000 per mile for temporary road cost.

Saw Timber:

- Volume = 6,160.91 CCF
- Truck Volume = 8.0 CCF/load
- Total distance = 171.38 miles
- Weighted Miles = 154.22 miles
- Weighted RTM's = 342.34 minutes
- Standby = 45.00 minutes
- Total RTM's = 387.34 minutes

Non-Saw Timber:

- Volume = 9,540.95 CCF
- Truck Volume = 8.0 CCF/load
- Total distance = 42.90 miles
- Weighted Miles = 26.59 miles
- Weighted RTM's = 103.21 minutes
- Standby = 45.00 minutes
- Total RTM's = 148.21 minutes

Costs:

- Surface rock cost = $1,988.59 or $0.13/CCF
- Purchaser Maintenance = $32,471.41 or $2.07/CCF
- Total Maintenance = $34,460.00 or $2.19/CCF
- Truck cost = $126.00/HR
- Haul cost = $594,254 or $96.46/CCF (Saw)
  = $321,349 or $33.68/CCF (Non-Saw)

Road Report (Optimal Route) - Traveling Round Trip Minutes and Haul Road Maintenance

Version 8.0

Forest Resource Enterprises

Sale name	Marshall
Purchaser haul road maint. rate, $/CCF	$0.00
FS haul road maint rate, $/CCF	$0.00
Other haul road maint rate, $/CCF	$0.00
Total haul road maint rate, $/CCF	$0.00
Total haul road maint, $'s (rounded)	$0.00

Volume unit of measure	CCF
Total distance in miles	171.38
Total weighted miles	154.22
Total weighted RTM's (traveling)	342.34
Total hauled timber volume	6,161
Total haul sale cost, $'s (rounded)	$553,573

get network link report | sort by road number | goto individual road | refresh data | print | erase table

Road Number	Node From	Node To	From Milepost	To Milepost	Volume Passed	% Total Volume	Total Miles	Weight Miles	Weight RTM's	Total Maint	Maint Class	Fixed Cost	Variable Cost	Maint By *select*
BeulahBlvd	10	9	11.07	13.57	6,125	99.4%	2.50	2.49	7.46				12,066	
COC-3	20	10	6.29	11.07	6,125	99.4%	4.78	4.75	12.68				20,519	
9478Y	21	20	0.22	0.27	108	1.7%	0.05	0.00	0.01				17	
9478Y	22	21	0.00	0.22	36	0.6%	0.22	0.00	0.02				25	
9478X	23	21	0.00	0.27	36	0.6%	0.27	0.00	0.02				30	
COC-3	24	20	5.59	6.29	6,018	97.7%	0.70	0.68	1.83				2,949	
9478T	25	24	0.39	0.43	121	2.0%	0.04	0.00	0.01				16	
Temp	26	25	0.00	0.39	51	0.8%	0.39	0.00	0.08				124	
COC-3	27	24	1.55	5.59	5,849	94.9%	4.04	3.84	10.22				16,553	
128	28	27	6.10	6.63	5,768	93.6%	0.53	0.50	2.98				4,787	
9486Q	29	28	0.27	0.56	198	3.2%	0.29	0.01	0.11				180	
Temp	30	29	0.00	0.27	100	1.6%	0.27	0.00	0.11				171	
128	31	28	5.45	6.10	5,453	88.5%	0.65	0.58	3.45				5,562	
Temp	32	31	0.00	0.32	59	1.0%	0.32	0.00	0.07				119	
128	33	31	4.95	5.45	5,394	87.5%	0.50	0.44	3.50				5,663	
128B	34	33	3.35	4.95	5,394	87.5%	1.60	1.40	16.81				27,185	
9486R	35	34	0.35	0.62	292	4.7%	0.27	0.01	0.15				248	
9478	36	35	0.00	0.20	149	2.4%	0.20	0.00	0.06				94	
9486R	37	35	0.00	0.35	48	0.8%	0.35	0.00	0.03				53	
128B	38	34	3.29	3.35	5,001	81.2%	0.06	0.05	0.58				950	
Temp	39	38	0.00	0.42	125	2.0%	0.42	0.01	0.21				332	
128B	40	38	3.00	3.29	4,730	76.8%	0.29	0.22	2.67				4,305	
128B	41	40	2.64	3.00	4,594	74.6%	0.36	0.27	3.22				5,191	
9481Q	42	41	1.34	1.79	1,126	18.3%	0.45	0.08	0.99				1,599	
9481Q	43	42	1.05	1.34	835	13.6%	0.29	0.04	0.47				760	
9481Q	44	43	0.72	1.05	705	11.4%	0.33	0.04	0.45				733	
Temp	45	44	0.00	0.23	59	1.0%	0.23	0.00	0.05				86	
9481Q	46	44	0.39	0.72	432	7.0%	0.33	0.02	0.28				449	
Temp	47	46	0.00	0.28	84	1.4%	0.28	0.00	0.09				149	
9481Q	48	46	0.00	0.39	122	2.0%	0.39	0.01	0.09				150	
128B	49	41	2.15	2.64	3,187	51.7%	0.49	0.25	3.04				4,909	
35th	5	1	151.57	152.17	6,125	99.4%	0.60	0.60	2.05				3,308	
Temp	50	49	0.84	1.22	742	12.1%	0.38	0.05	1.10				1,774	
Temp	51	50	0.34	0.84	476	7.7%	0.50	0.04	0.93				1,500	
Temp	52	51	0.00	0.34	254	4.1%	0.34	0.01	0.34				544	
128B	53	49	1.86	2.15	2,350	38.1%	0.29	0.11	1.33				2,138	
Temp	54	53	1.84	2.18	954	15.5%	0.34	0.05	1.26				2,041	
Temp	55	54	1.51	1.84	788	12.8%	0.33	0.04	1.01				1,638	
Temp	56	55	1.20	1.51	679	11.0%	0.31	0.03	0.82				1,323	
Temp	57	56	0.83	1.20	524	8.5%	0.37	0.03	0.76				1,222	
Temp	58	57	0.55	0.83	438	7.1%	0.28	0.02	0.48				771	
Temp	59	58	0.34	0.55	238	3.9%	0.21	0.01	0.19				314	
Durango	6	5	151.07	151.57	6,125	99.4%	0.50	0.50	1.70				2,756	
Temp	60	59	0.00	0.34	136	2.2%	0.34	0.01	0.18				291	
128B	61	53	1.46	1.86	1,305	21.2%	0.40	0.08	1.02				1,644	
Temp	62	61	0.49	1.30	539	8.7%	0.81	0.07	1.70				2,747	
Temp	63	62	0.40	0.89	388	6.3%	0.49	0.03	0.74				1,197	
Temp	64	63	0.00	0.40	173	2.8%	0.40	0.01	0.27				435	
128B	65	61	1.38	1.46	736	11.9%	0.08	0.01	0.11				184	
Temp	66	65	0.78	1.15	228	3.7%	0.37	0.01	0.33				531	
Temp	67	66	0.37	0.78	71	1.1%	0.41	0.00	0.11				182	
Temp	68	67	0.00	0.37	35	0.6%	0.37	0.00	0.05				82	
128B	69	65	0.98	1.38	363	5.9%	0.40	0.02	0.28				457	
23rd	7	6	150.57	151.07	6,125	99.4%	0.50	0.50	1.70				2,756	
Temp	70	69	0.00	0.43	65	1.0%	0.43	0.00	0.11				175	
128B	71	69	0.48	0.98	233	3.8%	0.50	0.02	0.23				369	
9478C	72	71	0.00	0.22	31	0.5%	0.22	0.00	0.01				21	
128B	73	71	0.22	0.48	172	2.8%	0.26	0.01	0.09				141	
128B	74	73	0.00	0.22	95	1.5%	0.22	0.00	0.04				66	
COC-3	75	27	0.00	1.55	82	1.3%	1.55	0.02	0.05				88	
Temp	76	75	0.00	0.29	41	0.7%	0.29	0.00	0.05				75	
I-17	8	7	13.67	150.57	6,125	99.4%	136.90	136.10	251.27				406,339	
AZ-89A	9	8	13.57	13.67	6,125	99.4%	0.10	0.10	0.30				490	

Other Road Maintenance Items and Summary

Version 8.0

print

erase table

Sale name: **Marshall**

Forest Resource Enterprises

Pre-Haul Maintenance

(Open roads, blading, brushing, small slide removal, etc.)

Type	Mtce By *select*	Total Cost

Post-Haul Maintenance

(Road closures, seeding, barriers, etc.)

Type	Mtce By *select*	Total Cost

Miscellaneous Road Maintenance Items

(Damage to roads from logging or landings, dust abatement, etc.)

Type	Mtce By *select*	Total Cost

Maintenance Summary (all items)	Total $'s	Per CCF
Required rd maint deposits, FS (CT5.32)	**$0.00**	**$0.00**
Purchaser maintenance	**$0.00**	**$0.00**
Other maintenance (CT5.32)	**$0.00**	**$0.00**
Subtotal FS & other (CT5.32)	**$0.00**	**$0.00**
Total for appraisal - Road Maintenance (all)	**$0.00**	**$0.00**

Approval	
	Title
Prepared By	*Road Management*
	Title
Reviewed By	*Project Engineer*
	Title
Reviewed By	*Systems Manager*

Data and Cost Summary

(Traveling RTM's, haul maintenance, and fixed costs included from Road Report)

Data & Cost Summary Item	Value
Appraisal point (mill or sort yard)	**Phoenix**
District or Forest	**Coconino**
Sale termination date	
Analyst name	**Utley**
Total hauled timber volume - CCF	**6,161**
Distance: appraisal point - sale area (miles)	**171.38**
Traveling (haul) round trip minutes - RTM's	**342.34**
Standing RTM's (load, unload, scale, delay)	**45.00**
Total RTM's (traveling + standing)	**387.34**
Total sale variable costs	**$594,254**
Haul cost per CCF (based on RTM's only)	**$96.46**
Rd maint cost per CCF (all maintenance)	**$0.00**
Total variable costs per CCF	**$96.46**
Total sale fixed costs (const, reconst, etc.)	**$0**
Total fixed cost per CCF	**$0.00**
Total sale costs (includes traveling rtm's, standing rtm's, all maint., & fixed costs)	**$594,254**
Total sale costs per CCF	**$96.46**

Road Report (Optimal Route) - Traveling Round Trip Minutes and Haul Road Maintenance

Version 8.0

Sale name	Marshall
Purchaser haul road maint. rate, $/CCF	$0.00
FS haul road maint rate, $/CCF	$0.00
Other haul road maint rate, $/CCF	$0.00
Total haul road maint rate, $/CCF	$0.00
Total haul road maint, $'s (rounded)	$0.00

Volume unit of measure	CCF
Total distance in miles	42.90
Total weighted miles	26.59
Total weighted RTM's (traveling)	103.21
Total hauled timber volume	9,541
Total haul sale cost, $'s (rounded)	$258,349

get network link report | sort by road number | goto individual road | refresh data | print | erase table

Road Number	Node From	Node To	From Milepost	To Milepost	Volume Passed	% Total Volume	Total Miles	Weight Miles	Weight RTM's	Total Maint	Maint Class	Fixed Cost	Variable Cost	Maint By *select*
BeulahBlvd	10	9	11.07	11.71	9,541	100.0%	0.64	0.64	1.71				4,293	
COC-3	20	10	6.29	11.07	9,541	100.0%	4.78	4.78	12.75				31,962	
9478Y	21	20	0.22	0.27	166	1.7%	0.05	0.00	0.01				27	
9478Y	22	21	0.00	0.22	56	0.6%	0.22	0.00	0.02				38	
9478X	23	21	0.00	0.27	56	0.6%	0.27	0.00	0.02				47	
COC-3	24	20	5.59	6.29	9,319	97.7%	0.70	0.68	1.83				4,566	
9478T	25	24	0.39	0.43	188	2.0%	0.04	0.00	0.01				24	
Temp	26	25	0.00	0.39	78	0.8%	0.39	0.00	0.08				193	
COC-3	27	24	1.55	5.59	9,058	94.9%	4.04	3.84	10.22				25,634	
128	28	27	6.10	6.63	8,932	93.6%	0.53	0.50	2.98				7,413	
9486Q	29	28	0.27	0.56	306	3.2%	0.29	0.01	0.11				279	
Temp	30	29	0.00	0.27	155	1.6%	0.27	0.00	0.11				264	
128	31	28	5.45	6.10	8,444	88.5%	0.65	0.58	3.45				8,613	
Temp	32	31	0.00	0.32	91	1.0%	0.32	0.00	0.07				185	
128	33	31	4.95	5.45	8,353	87.5%	0.50	0.44	3.50				8,771	
128B	34	33	3.35	4.95	8,353	87.5%	1.60	1.40	16.81				42,100	
9486R	35	34	0.35	0.62	453	4.7%	0.27	0.01	0.15				385	
9478	36	35	0.00	0.20	231	2.4%	0.20	0.00	0.06				145	
9486R	37	35	0.00	0.35	74	0.8%	0.35	0.00	0.03				81	
128B	38	34	3.29	3.35	7,744	81.2%	0.06	0.05	0.58				1,471	
Temp	39	38	0.00	0.42	194	2.0%	0.42	0.01	0.20				514	
TrucksOnly	4	1	23.59	23.69	9,541	100.0%	0.10	0.10	0.80				2,004	
128B	40	38	3.00	3.29	7,326	76.8%	0.29	0.22	2.67				6,666	
128B	41	40	2.64	3.00	7,115	74.6%	0.36	0.27	3.22				8,040	
9481Q	42	41	1.34	1.79	1,744	18.3%	0.45	0.08	0.99				2,477	
9481Q	43	42	1.05	1.34	1,293	13.6%	0.29	0.04	0.47				1,177	
9481Q	44	43	0.72	1.05	1,092	11.4%	0.33	0.04	0.45				1,136	
Temp	45	44	0.00	0.23	91	1.0%	0.23	0.00	0.05				133	
9481Q	46	44	0.39	0.72	668	7.0%	0.33	0.02	0.28				695	
Temp	47	46	0.00	0.28	131	1.4%	0.28	0.00	0.09				230	
9481Q	48	46	0.00	0.39	189	2.0%	0.39	0.01	0.09				233	
128B	49	41	2.15	2.64	4,936	51.7%	0.49	0.25	3.04				7,602	
OldRte66	5	4	22.89	23.59	9,541	100.0%	0.70	0.70	1.87				4,675	
Temp	50	49	0.84	1.22	1,150	12.1%	0.38	0.05	1.10				2,748	
Temp	51	50	0.34	0.84	738	7.7%	0.50	0.04	0.93				2,324	
Temp	52	51	0.00	0.34	393	4.1%	0.34	0.01	0.34				842	
128B	53	49	1.86	2.15	3,639	38.1%	0.29	0.11	1.33				3,311	
Temp	54	53	1.84	2.18	1,477	15.5%	0.34	0.05	1.26				3,160	
Temp	55	54	1.51	1.84	1,220	12.8%	0.33	0.04	1.01				2,537	
Temp	56	55	1.20	1.51	1,051	11.0%	0.31	0.03	0.82				2,049	
Temp	57	56	0.83	1.20	812	8.5%	0.37	0.03	0.76				1,892	
Temp	58	57	0.55	0.83	678	7.1%	0.28	0.02	0.48				1,194	
Temp	59	58	0.34	0.55	369	3.9%	0.21	0.01	0.19				486	
HughesAve	6	5	22.69	22.89	9,541	100.0%	0.20	0.20	0.53				1,336	
Temp	60	59	0.00	0.34	211	2.2%	0.34	0.01	0.18				451	
128B	61	53	1.46	1.86	2,021	21.2%	0.40	0.08	1.02				2,546	
Temp	62	61	0.49	1.30	834	8.7%	0.81	0.07	1.70				4,253	
Temp	63	62	0.40	0.89	600	6.3%	0.49	0.03	0.74				1,854	
Temp	64	63	0.00	0.40	268	2.8%	0.40	0.01	0.27				674	
128B	65	61	1.38	1.46	1,140	11.9%	0.08	0.01	0.11				285	
Temp	66	65	0.78	1.15	353	3.7%	0.37	0.01	0.33				822	
Temp	67	66	0.37	0.78	109	1.1%	0.41	0.00	0.11				281	
Temp	68	67	0.00	0.37	55	0.6%	0.37	0.00	0.05				127	
128B	69	65	0.98	1.38	562	5.9%	0.40	0.02	0.28				707	
I-40	7	6	12.29	22.69	9,541	100.0%	10.40	10.40	19.20				48,087	
Temp	70	69	0.00	0.43	100	1.0%	0.43	0.00	0.11				271	
128B	71	69	0.48	0.98	361	3.8%	0.50	0.02	0.23				571	
9478C	72	71	0.00	0.22	48	0.5%	0.22	0.00	0.01				33	
128B	73	71	0.22	0.48	266	2.8%	0.26	0.01	0.09				218	
128B	74	73	0.00	0.22	148	1.5%	0.22	0.00	0.04				102	
COC-3	75	27	0.00	1.55	126	1.3%	1.55	0.02	0.05				136	
Temp	76	75	0.00	0.29	63	0.7%	0.29	0.00	0.05				116	
I-17	8	7	11.81	12.29	9,541	100.0%	0.48	0.48	0.89				2,194	
McConnellDr	9	8	11.71	11.81	9,541	100.0%	0.10	0.10	0.27				668	

Other Road Maintenance Items and Summary

Version 8.0

print

erase table

Sale name: **Marshall**

Forest Resource Enterprises

Pre-Haul Maintenance

(Open roads, blading, brushing, small slide removal, etc.)

Type	Mtce By *select*	Total Cost

Post-Haul Maintenance

(Road closures, seeding, barriers, etc.)

Type	Mtce By *select*	Total Cost

Miscellaneous Road Maintenance Items

(Damage to roads from logging or landings, dust abatement, etc.)

Type	Mtce By *select*	Total Cost

Maintenance Summary (all items)	Total $'s	Per CCF
Required rd maint deposits, FS (CT5.32)	**$0.00**	**$0.00**
Purchaser maintenance	**$0.00**	**$0.00**
Other maintenance (CT5.32)	**$0.00**	**$0.00**
Subtotal FS & other (CT5.32)	**$0.00**	**$0.00**
Total for appraisal - Road Maintenance (all)	**$0.00**	**$0.00**

Approval	
	Title
Prepared By	*Road Management*
	Title
Reviewed By	*Project Engineer*
	Title
Reviewed By	*Systems Manager*

Data and Cost Summary

(Traveling RTM's, haul maintenance, and fixed costs included from Road Report)

Data & Cost Summary Item	Value
Appraisal point (mill or sort yard)	**Bellemont**
District or Forest	**Coconino**
Sale termination date	
Analyst name	**Utley**
Total hauled timber volume - CCF	**9,541**
Distance: appraisal point - sale area (miles)	**42.90**
Traveling (haul) round trip minutes - RTM's	**103.21**
Standing RTM's (load, unload, scale, delay)	**45.00**
Total RTM's (traveling + standing)	**148.21**
Total sale variable costs	**$321,349**
Haul cost per CCF (based on RTM's only)	**$33.68**
Rd maint cost per CCF (all maintenance)	**$0.00**
Total variable costs per CCF	**$33.68**
Total sale fixed costs (const, reconst, etc.)	**$0**
Total fixed cost per CCF	**$0.00**
Total sale costs (includes traveling rtm's, standing rtm's, all maint., & fixed costs)	**$321,349**
Total sale costs per CCF	**$33.68**

SOUTHWESTERN REGION

Road Maintenance T-Specifications for Timber Sale/Stewardship Contracts

ROAD MAINTENANCE REQUIREMENTS:
The Contractor shall maintain roads in accordance with road maintenance requirements in C/CT5.31# or K/KT-F/FT.3.1# and the following road maintenance specifications.

Specification	Specification Title
T-800	Definitions
T-801	Slide and Slump Repair
T-802	Ditch Cleaning
T-803	Surface Blading
T-804	Opening & Maintaining Roads
T-805	Opening & Maintaining Roads (High Blading)
T-806	Surface Repair
T-807	Surface Stabilization (Water)
T-808	*Obsolete*
T-808-1	Surface Stabilization (Other Materials)
T-809	Minor Drainage Structures
T-810	Roadway Vegetation
T-811	Closing Roads
T-812	Miscellaneous Structures
T-813	Treatment and Disposal of Hazard Trees
T-GEN	General Requirements

SPECIFICATION T-800 DEFINITIONS

Wherever the following terms or pronouns are used in Specifications T-801 through T-GEN, the intent and meaning shall be interpreted as follows:

800-1.1 - Agreement. Maintenance projects require a mutually acceptable method to resolve the problems, which arise when incompatible situations arise between drawings and specifications and actual conditions on the ground to allow orderly and satisfactory progress of the maintenance.

These specifications have been developed in anticipation of those problem areas and have provided that such changes will be by Agreement.

It is intended that drawings and specifications will govern unless "on-the-ground" conditions warrant otherwise, when specifications call for "Agreement", "agreed", or "approval" such Agreement or approval shall be promptly confirmed in writing.

800-1.2 - Annual Road Maintenance Plan. A plan prepared by various users of one or several roads. The plan is an Agreement on maintenance responsibilities to be performed for the coming year.

800-1.3 - Base Course. Material used to reinforce Subgrade or, as shown on drawings, placed on Subgrade to distribute wheel loads.

800-1.4 - Berm. Curb or dike constructed to prevent uncontrolled Roadway runoff water from discharging onto embankment slope.

800-1.5 - Borrow. Select Material taken from designated borrow sites.

800-1.6 - Crown, Inslope, and Outslope. The cross slope of the Traveled Way to aid in drainage and traffic maneuverability.

800-1.7 - Culverts. A conduit or passageway under a road, trail, or other obstruction. A culvert differs from a bridge in that it is usually entirely below the elevation of the Traveled Way.

800-1.8 - Drainage Dip. A dip in the Traveled Way which intercepts surface runoff and diverts the water off the Traveled Way. A Drainage Dip does not block the movement of traffic.

800-1.9 - Drainage Structures. Manufactured structures which control the runoff of water from the Roadway including Inslope, overside drains, aprons, flumes, downdrains, downpipes, culverts, and the like.

800-1.10 - Dust Abatement Plan. A table which lists the road, dust palliative, application rates, and estimated number of subsequent applications.

800-1.11 - Lead-off Ditches. A ditch used to transmit water from a Drainage Structure or Drainage Dip outlet to the natural drainage area.

800-1.12 - Material. Any substances specified for use in the performance of the work.

800-1.13 – Pre-haul Maintenance. Road maintenance work which must be accomplished to maintain the roads to a satisfactory condition commensurate with the Purchaser's use, provided Purchaser's Operations do not damage improvements under B/BT6.22 or G/GT.2.2, or National Forest resources and hauling can be done safely. This work will be shown in the Annual Road Maintenance Plan as provided in C/CT5.31# or K/T-F/T3.1#. Pre-haul Maintenance work

the Purchaser elects to perform will be in compliance with the Road Maintenance T-Specifications.

800-1.14 - Roadbed. The portion of a road between the intersection of Subgrade and sideslopes, excluding that portion of the ditch below Subgrade.

800-1.15 - Road Maintenance Plan. A table which shows applicable road maintenance specifications to be performed by Purchaser on specific roads.

800-1.16 - Roadside. A general term denoting the area adjoining the outer edge of the Roadway.

800-1.17 - Roadway. The portion of a road within the limits of excavation and embankment.

800-1.18 - Shoulder. That portion of Roadway contiguous with Traveled Way for accommodation of stopped vehicles, for emergency use, and lateral support of base and Surface Course, if any.

800-1.19 - Slide. A concentrated deposit of Materials from above or on backslope extending onto the Traveled Way or Shoulders, whether caused by mass land movements or accumulated ravelling.

800-1.20 - Slough. Material eroded from the backslope which partially or completely blocks the ditch, but does not encroach on the Traveled Way so as to block passage of traffic.

800-1.21 - Slump. A localized portion of the Roadbed which has slipped or otherwise become lower than that of the adjacent Roadbed and constitutes a hazard to traffic.

800-1.22 - Special Project Specifications. Specifications which detail conditions and requirements peculiar to the individual project.

800-1.23 - Subgrade. Top surface of Roadbed upon which Base Course or Surface Course is constructed. For roads without Base Course or Surface Course, that portion of Roadbed prepared as the finished wearing surface.

800-1.24 - Surface Course. The Material placed on Base Course or Subgrade primarily to resist abrasion and the effects of climate. Surface Course may be referred to as surfacing.

800-1.25 - Surface Treatment Plan. A table which lists the roads and surface treatments to be applied.

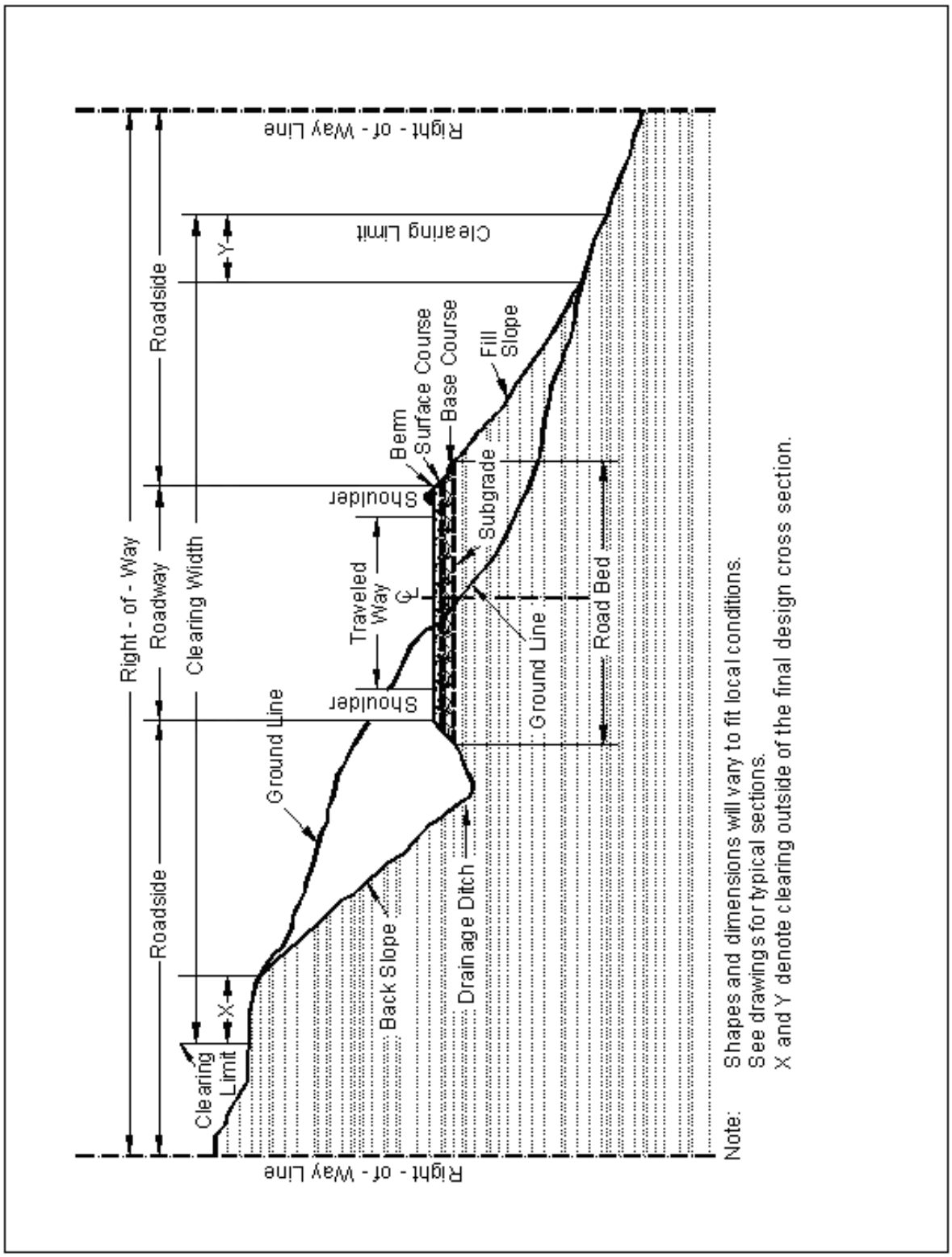
800-1.26 - Traveled Way. That portion of Roadway, excluding Shoulders, used for the movement of vehicles.

800-1.27 - Turnouts. That portion of the Traveled Way constructed as additional width on single lane roads to allow for safe passing of vehicles.

800-1.28 - Water Source. A place designated by the Contracting Officer for acquiring water for road maintenance purposes.

800-1.29 - Waterbar. A dip in the Roadbed which intercepts surface runoff and diverts the water off the Roadway. A Waterbar is not designed to be traversable by logging trucks.

Figure 800-1—Illustration of road structure terms.



T-800-3

SPECIFICATION T-801 SLIDE AND SLUMP REPAIR

DESCRIPTION

1.1 Slide removal consists of the removal from Roadway and disposal of any Material such as soil, rock, and vegetation that cannot be routinely handled by a motor grader during T-802 Ditch Cleaning, and T-803 Surface Blading operations.

Slump repair consists of the filling, with select material, of depressions or washouts in Roadway which cannot be routinely filled by a motor grader during T-803 Surface Blading operations.

Slide removal and Slump repair includes excavation, loading, hauling, placing, and compacting of waste or replacement Material and the development of disposal or borrow areas.

REQUIREMENTS

3.1 Slide removal and slump repair shall be performed whenever necessary during Purchaser's use to facilitate traffic, proper drainage, and to prevent resource damage.

3.2 Slide Material, including soil, rock and vegetative matter which encroaches into the Roadway, shall be removed. The slope which generated the Slide Material shall be reshaped during the removal of the Slide Material with the excavation and loading equipment. Slide Material deposited on the fill slope and below the Traveled Way will not be removed unless needed for slope stability or to protect adjacent resources.

Surface and Base Courses shall not be excavated during Slide removal operations.

Slide Material which cannot be used for other beneficial purposes shall be disposed of at disposal sites designated by the designated Forest Service official. Material placed in disposal sites will not require compaction unless compaction is shown on Road Maintenance Plan. Side casting may be approved by the designated Forest Service official. Side casting into streams, lakes, or water courses shall not be permitted.

3.3 When filling Slumps or washouts, Material shall be moved from agreed locations or borrow sites, placed in 6 inch layers, and compacted by operating the hauling and spreading equipment uniformly over the full width of each layer.

Existing aggregate surfacing shall be salvaged when practical and reinstalled after depressions have been filled. Damaged aggregate base, aggregate surfacing, and bituminous pavement shall be repaired under Specification T-806 Surface Repair.

3.4 The repaired areas of the Slump shall conform to the cross-section which existed prior to the Slump and shall blend with the adjacent undisturbed Traveled Way, unless otherwise agreed.

3.5 During repair, care shall be taken not to permanently foul aggregate or bituminous-surfaces through covering or mixing with earth or other debris from ditches, slides or other sources.

SPECIFICATION T-802 DITCH CLEANING

DESCRIPTION

1.1 Ditch cleaning, which includes outlet and lead-off ditches, consists of removing and disposing all material from Roadway drainage ditches to provide a free-draining waterway conforming to the previous lines, grades, and cross-sections.

REQUIREMENTS

3.1 Ditch cleaning shall be performed as often as necessary during use to facilitate proper drainage.

3.2 All Slough Material or other debris which might obstruct water flow in the Roadway ditch shall be removed. Material removed from the ditch, if suitable and agreed to **in writing** by the designated Forest Service official, may be blended into existing native road surface, Shoulder, or placed in designed Berms in conjunction with T-803 Surface Blading operations.

Material removed from ditches that is not by Agreement blended into existing roads or placed in Berms shall be loaded and hauled to the disposal site designated by the designated Forest Service official, placed in 6 inch layers and compacted by the hauling vehicle, or disposed of as otherwise agreed.

3.3 During ditch cleaning, care shall be taken not to permanently contaminate aggregate or bituminous-surfaces through covering or mixing with earth or other debris from the ditches.

3.4 Roadway backslopes or berms shall not be undercut.

SPECIFICATION T-803 SURFACE BLADING

DESCRIPTION

1.1 Surface blading consists of keeping a native or aggregate surface Roadbed in a condition to facilitate traffic and provide proper drainage. It includes maintaining the Crown or Slope of the Traveled Way, Shoulders, Drainage Dips, all drainage ditches, Turnouts, Berms, and approach road intersections; also cleaning bridge decks. It also provides a level of smoothness appropriate for the traffic served.

MATERIALS

2.1 *Water*. **When required**, water shall be applied according to the requirements in Specification T-807 during scarifying and/or blading if sufficient moisture is not present to cut, mix, or compact the surface Material. Water Sources will be shown on the project area map, or designated by the designated Forest Service official. The requirement will be listed in C/CT5.31# or K/KT-F/FT.3.1#, when applicable.

REQUIREMENTS

3.1 Surface blading shall be performed immediately before, during, and after Purchaser's use as often as necessary to facilitate traffic and proper drainage.

3.2 Surface irregularities shall be eliminated by scarification and/or blading, and the surface left in a free-draining state and to a smoothness needed to facilitate traffic. The surface blading shall preserve the existing cross-section. Surface Material which has been displaced to the Shoulders or Turnouts shall be returned to the Traveled Way. The blading operation shall be conducted to prevent the loss of surface Material and to provide for a thorough mixing of the Material being worked.

3.3 When directed by the designated Forest Service official, residual bituminous material from previous surface-stabilization treatments shall be scarified and reduced to produce material not exceeding 3 inches (76.2 mm) in greatest dimension.

3.4 Roadway backslopes or Berms shall not be undercut, nor shall new Berms be established unless agreed to, **in writing**, by the designated Forest Service official.

Berms shall be repaired by placing Material, as needed to restore the Berm, to reasonably blend with existing line, grade, and cross-section. Other berms, which are determined by the designated Forest Service official as unnecessary, shall be removed.

3.5 Intersecting roads shall be bladed for a reasonable distance to assure proper blending of the two riding surfaces.

3.6 Drainage Dips and all Ditches shall be cleaned and maintained to reasonably blend with existing line, grade, and cross-section and to provide positive drainage.

3.7 On native surfaced roads, Material generated from backslope Sloughing, and ditch cleaning may be blended with the surface Material being worked. On aggregate surfaced roads this Material shall not be blended with Surface or Base Course Material unless agreed to, **in writing**, by the designated Forest Service official.

3.8 Rocks or other Material remaining on the Traveled Way after the final pass that are larger than 4 inches in diameter or are larger than the maximum size of imported surfacing shall be removed from the Traveled Way. Unless otherwise designated by the designated Forest Service official, the oversized Material shall be disposed of by sidecasting. Sidecasting into streams, lakes, or water courses shall not be permitted.

3.9 Material and/or debris resulting from work under this specification shall not remain on or in structures, such as Culverts, bridge decks, overside drains, cattleguards, ditches, Drainage Dips, and the like.

3.10 *Compaction.* **When required**, the roadbed shall be compacted according to one of the following compaction methods, as listed in C/CT5.31# or K/KT-F/FT.3.1#:

Compaction Method A - Operate equipment over the full-width until there is no visible evidence of further consolidation.

Compaction Method B - Use compression-type or vibratory rollers. Compact, 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 coarse particles.

3.11 *Grid Rolling.* **When required**, the roadbed shall be grid rolled as listed in C/CT5.31# or K/KT-F/FT.3.1#. Unless otherwise agreed by the designated Forest Service official, grid-rolling will continue until roadbed imported surfacing-materials are reduced to a size not exceeding 3 inches (76.2 mm) in greatest dimension or two-thirds of the depth of the existing surfacing, whichever is greater.

SPECIFICATION T-804 OPENING AND MAINTAINING ROADS

DESCRIPTION

1.1 Opening and Maintaining Roads consists of opening roads by removing closure devices, cleaning ditches and other drainage devices built into the roadway, removing berms, and blading the traveled-way. This work also consists of maintaining the roadway immediately before, during, and after the Purchaser's use as necessary to facilitate traffic and proper drainage.

REQUIREMENTS

3.1 Closure devices, such as waterbars, depressions, mounds of earth, or downed-trees, shall be removed and disposed of at locations designated by the designated Forest Service official.

3.2 All trees and logs on the roadbed, and trees and brush that overhang the traveled-way and interfere with vehicle travel shall be removed and scattered outside the roadway.

3.3 All drainage features including drainage-dips, ditches, roadway cross-slope, and other drainage devices built into the roadway shall be cleaned and maintained so they are functional.

3.4 Berms shall be removed as directed by the designated Forest Service official, and the traveled-way shall be bladed to produce a smooth rideable surface.

SPECIFICATION T-805 OPENING AND MAINTAINING ROADS (HIGH BLADING)

DESCRIPTION

1.1 Opening and Maintaining Roads (High Blading) consists of opening roads by removing closure devices, cleaning ditches and other drainage devices built into the roadway, removing berms, and blading the traveled-way. This work also consists of maintaining the roadway immediately before, during, and after the Purchaser's use as necessary to facilitate traffic and proper drainage. High blading is the removal of oversize material without removing surface vegetation. Oversize is that material 4 inches in diameter and larger, found loose upon the traveled-way.

REQUIREMENTS

3.1 Closure devices, such as waterbars, depressions, mounds of earth, or downed-trees, shall be removed and disposed of at locations designated by the designated Forest Service official.

3.2 All trees and logs on the roadbed, and trees and brush that overhang the traveled-way and interfere with vehicle travel shall be removed and scattered outside the roadway.

3.3 All features including drainage-dips, ditches, roadway cross-slope, and other drainage devices built into the roadway shall be cleaned and maintained so they are functional.

3.4 Berms shall be removed as directed by the designated Forest Service official, and the Traveled Way shall be high-bladed to produce a smooth rideable surface.

SPECIFICATION T-806 SURFACE REPAIR

DESCRIPTION

1.1 Surface repair consists of repairing potholes or small soft areas in the Traveled Way. It includes area preparation and furnishing and placing all necessary Materials, and other work necessary to repair the surface.

MATERIALS

2.1 *Aggregates*-The types and gradations of aggregate shall be similar to, and compatible with, the existing surface material, as determined by the designated Forest Service official.

a) Pit-run Aggregate: Pit-run aggregate shall consist of native materials of a size and gradation that can be taken directly from the source and placed on the road without crushing or screening. The maximum size shall be 3 inches (76.2 mm) in the greatest dimension.

b) Grid-rolled Aggregate: Grid-rolled aggregate shall consist of native materials of a quality that can be taken directly from the source, without crushing or screening, and broken-down on the road by grid-rolling. The material shall be broken-down to a maximum size of 3 inches (76.2 mm) in the greatest dimension.

c) Crushed Aggregate: Crushed-aggregate shall be crushed stone, slag, or gravel meeting current Forest Service or State DOT requirements.

2.2 Material used in the repair of soft areas on aggregate or native surfaced roads may be acquired from approved commercial sources, designated Forest Service Borrow areas, or Borrow sources agreed to, **in writing**, by the designated Forest Service official. The quality and quantity of the imported Material used in the repair will be limited to that needed to provide a stable Traveled Way for hauling and to minimize damage to the road and adjacent resources. The quantity of imported surface repair Material used in the appraisal estimate will be shown on Road Maintenance Plan. However, the magnitude of the work may vary depending on Purchaser's hauling schedule and ground conditions.

2.3 Material used in the repair of bituminous pavements may be acquired from local commercial sources. If a mixing table is required, the location shall be approved by the designated Forest Service official. The bituminous mixture to be used by the Purchaser shall be approved by the designated Forest Service official prior to placement. The Purchaser's share of the quantity of bituminous mixture used in the appraisal estimate will be shown on Road Maintenance Plan. However, Purchaser's share of the work may vary depending on Purchaser's hauling schedule, ground conditions, other traffic, etc.

2.4 Water, when required, shall be applied according to the requirements in Specification T-807 Surface Stabilization (Water), and will be specified on the project area map, or designated by the designated Forest Service official. The requirement will be listed in C/CT5.31# or K/KT-F/FT.3.1#, when applicable.

REQUIREMENTS

3.1 Work under this specification shall be performed as often as necessary, and in a timely manner during Purchaser's use to facilitate traffic and reduce further deterioration of the Traveled Way.

3.2 *Aggregate Surface Repair.* Existing aggregate, which has been contaminated with unsuitable material from the subgrade or from other activities shall be removed as directed by the designated Forest Service official. New aggregate shall be mixed until it is uniform throughout, at a moisture-content suitable to prevent segregation and to attain the desired compaction.

The aggregate shall be spread in a uniform layer, with no segregation of size, and to a loose depth that shall have the required thickness when compacted.

If the required compacted depth of any aggregate base or surface course exceeds six inches, it shall be placed in two or more layers of approximately equal thickness. The maximum compacted thickness of any layer shall not exceed 6 inches.

Hauling equipment shall be operated over the surface at the previously constructed layer in such a way as to minimize rutting or uneven compaction.

Compaction and grid-rolling, when required, will be as specified in Specification T-803 Surface Blading, and as listed in C/CT5.31# or K/KT-F/FT.3.1#.

All material removed from aggregate-surface repair shall be disposed of as designated by the designated Forest Service official.

3.3 *Bituminous Pavement Repairs*. The areas to receive bituminous pavement repairs will be marked on the road surface by the Forest Service prior to Purchaser performing the work.

3.4 *Potholes (deep patch).* Surface Course and Base Course materials shall be excavated to a depth necessary to reach firm, suitable material. The minimum depth of excavation shall be 2 inches and the maximum depth of excavation shall be to the top of the subgrade.

The edges of the prepared hole shall be extended to form a vertical face in unfractured asphalt surfacing. The prepared hole shall generally be circular or rectangular in shape, dry, and cleaned of all loose Material.

Prepared potholes shall be patched or barricaded immediately.

The faces of the prepared hole shall be tacked with a slow-setting emulsified asphalt.

The bituminous mixture shall be placed in layers not exceeding a compacted depth of 2 inches. Each layer shall be compacted thoroughly with hand or mechanical tampers or rollers. Compaction shall not be done with equipment wheels.

Upon completion, the compacted patch in the pothole shall be flush, with a tolerance or approximately ¼ inch to ½ inch above the level of the adjacent pavement.

3.5 *Skin Patches*. Bituminous mixture shall be distributed uniformly with feathered edges in layers not to exceed 2 inches compacted depth. When multiple layers are ordered, joints shall be offset at least 6 inches between layers.

Each layer shall be compacted by two passes with a 7-10 ton steel roller or comparable vibratory roller.

3.6 *Asphalt Berm*. Damaged segments of Berm shall be removed and the exposed ends beveled at approximately 45 degrees from vertical. The Berm foundation shall be cleaned and patched as necessary. The foundation and joining surfaces shall be coated with a slow-setting emulsified asphalt. Asphalt mix shall be placed and compacted to conform to the shape and alignment of the undamaged segment.

3.7 *Disposal*. All Materials removed from potholes, patches, and Berms shall be disposed of at disposal sites designated by the designated Forest Service official.

SPECIFICATION T-807 SURFACE STABILIZATION (WATER)

DESCRIPTION

1.1 Surface stabilization (water) consists of applying water to the road surface as necessary to control road-surface loss, provide for road user safety, and minimize damage to adjacent resources.

May also be used to provide water for compaction of surface material(s), to prevent segregation, and for other work deemed necessary.

MATERIALS

2.1 Water is the specified-material for surface stabilization; however, Purchaser may use other materials if agreed to, **in writing**, by the designated Forest Service official. Water-source locations will be shown on the project area map, or designated by the designated Forest Service official.

REQUIREMENTS

3.1 The rate of application shall be such that the water will not run-off of the surface and cause erosion or unnecessary waste.

SPECIFICATION T-808 SURFACE STABILIZATION (BITUMINOUS)

DESCRIPTION

1.1 **This Specification has been removed.**

SPECIFICATION T-808-1 SURFACE STABILIZATION (OTHER MATERIALS)

DESCRIPTION

1.1 Surface stabilization (other materials) consists of preparing the roadbed and furnishing and applying surface-stabilization materials as necessary to abate dust, control road-surfacing loss, provide for user safety, and minimize damage to adjacent resources.

MATERIALS

2.1 The type of surface stabilization material to be used, the rates of application, and frequency of applications will be shown in C/CT5.31# or K/KT-F/FT.3.1#.

2.2 *Water.* Furnish water free of substances detrimental to the work.

2.3 *Magnesium Chloride liquid.* Furnish a water solution conforming to the following:

(1) Magnesium Chloride by mass	28 percent min.
(2) Specific Gravity, ASTM D1298	1.29 to 1.33

2.4 *Calcium Chloride liquid.* Furnish a water solution conforming to the following:

(1) Calcium Chloride liquid	AASHTO M 144, Type L
(2) Calcium Chloride by mass	35 percent min.

2.5 *Acceptance of Materials*. Certification, sampling, and acceptance of materials will be based upon manufacturer's certification. All proposed materials will be subject to the designated Forest Service official's approval **prior** to application.

REQUIREMENTS

3.1 *Preparation for Surface Stabilization Materials Other Than Water.* Prior to application of any material, the entire roadbed shall be prepared as required under Specification T-803 Surface Blading.

Bituminous and other residue from previous treatments shall be scarified and pulverized to produce loosened material not exceeding 3 inches in greatest dimension.

A light-application of water shall be applied just prior to applying the surface stabilizer, unless otherwise agreed to by the designated Forest Service official.

Application rates and methods shall adhere to the Manufacturer's recommendations.

3.2 *Application Methods of Surface Stabilization Materials*. One or more of the following methods shall be used as specified in C/CT5.31# or K/KT-F/FT.3.1#:

a). Direct Penetration –

1). Prepared Surface: The stabilizer application is made directly to the traveled-way and any shoulders prepared in accordance with Specification T-803 Surface Blading. The road shall be closed to traffic until penetration is complete or until excess material is blotted according to Subsection 3.4, or as approved by the CO.

2). No Surface Preparation: The stabilizer is applied directly to the existing surface, regardless of its condition. The road shall be closed to traffic until penetration is complete or until excess material is blotted according to Subsection 3.4, or as approved by the CO.

b). Penetration - The top 1 inch (25.4 mm) of roadway-surfacing is placed to the side in a windrow. The stabilizer application is made to the exposed roadway, and the windrow is pulled-back across the road as a blotter since penetration into the compacted-surface is minimal.

c). Enhanced Penetration - The top 1 inch (25.4 mm) is loosened and left in-place. The stabilizer application then penetrates the loose material.

3.3 *Weather Limitations*. Stabilizing materials shall not be applied when it is raining, when the surface is too wet to receive the material, or if rain is anticipated to occur within 24 hours of application.

Surface stabilizers shall be applied only when the surface temperature of the traveled-way is 50°F (10° C) in the shade, and rising.

3.4 *Blotter Material*. Blotter-material, when used, shall be spread in sufficient quantities to prevent tire pickup.

3.5 *Traffic.* Traffic shall be maintained in accordance with B/BT6.33 or G/GT.3.3.

SPECIFICATION T-809 MINOR DRAINAGE STRUCTURES

DESCRIPTION

1.1 Minor drainage structures consists of maintaining Drainage Structures and related items such as culverts, inlet and outlet channels, related ditches, existing riprap, trash racks, and drop-inlets. Minor drainage structures are those with waterway opening of less than 35 ft^2 (3.2 m^2) in a single installation, or a multiple installation in which the smallest opening is less than 19 ft^2 (1.7 m^2). This includes overside drains.

MATERIALS

2.1 All Materials used in the maintenance of Drainage Structures shall conform by type and specification to the Material in the structure being maintained.

REQUIREMENTS

3.1 During periods of Purchaser's operation, Purchaser shall keep ditches, culverts and other drainage facilities clear and functioning.

3.2 Drainage Structures and related items shall be cleared of all foreign Material which has been deposited above the bottom of the structure and all vegetative growth which interferes with the flow pattern.

Vegetative debris shall be scattered outside of the roadbed unless otherwise agreed. Debris shall be placed so as not to enter the stream-channels. Material removed that cannot be incorporated into maintenance work shall be hauled to a disposal site designated by the designated Forest Service official.

3.3 Perform maintenance to insure the proper functioning of the head walls, aprons, inlet assemblies, overside drains, riprap, trash racks, and other facilities related to the Drainage Structure.

If outlet or inlet riprap was installed by Purchaser as a construction item or existed prior to Purchaser's haul, it shall be maintained in good condition including the replacement of riprap if necessary to previous line, grade, and cross-section.

SPECIFICATION T-810 ROADWAY VEGETATION

DESCRIPTION

1.1 Roadway vegetation includes removal of brush and trees from within the Roadway limits, including around impaired signing, gates, bridges, and other areas that need visibility and/or increased sight distance.

REQUIREMENTS

3.1 Vegetative matter within the Roadway which impedes vehicular travel or interferes with road maintenance operations, such as surface blading and ditch and culvert cleaning shall be removed. Downed timber meeting utilization standards shall be cut in appropriate lengths and decked along the Roadside in locations where the Traveled Way or sight distances will not be impaired.

3.2 Brush and trees that obstruct proper sight-distance shall be removed. Low shrubs and brush, which do not restrict sight distance, provides ground cover or reduces erosion, shall not be removed.

Vegetative-material consisting of limbs, tops and brush shall be scattered outside of the roadway. Stumps and logs not meeting utilization standards may also be scattered outside of the roadway. Purchaser shall avoid placing vegetative material in concentrations. Disposal of vegetative material will not be permitted in meadows or drainage ways.

SPECIFICATION T-811 CLOSING ROADS

DESCRIPTION

1.1 Closing roads consists of closing roads by restoring or installing closure-devices and drainage-facilities on roads no longer needed by the Purchaser or when interim closures are required during periods of Purchaser's non-use.

Closure devices and drainage facilities may consist of cross-ditches, waterbars, drainage-dips, barriers or gates and restoring cross-sloped sections.

MAINTENANCE REQUIREMENTS

3.1 During periods of Contractor's/Purchaser's non-use, roads designated for interim closures shall be closed unless otherwise agreed to, **in writing**, by the designated Forest Service official.

The entire roadway shall be bladed and shaped to provide drainage during periods of closure or non-use.

Where possible, and still retaining appropriate surface-drainage characteristics, existing surface-vegetation shall be protected in accordance with the High Blading requirements found in Specification T-805 Opening and Maintaining Roads (High Blading).

3.2 All drainage-dips, out-sloped or in-sloped sections, or other drainage devices built into the roadbed and roadway ditches shall be restored and replaced. Existing culverts shall be maintained to provide unobstructed flow.

Waterbars and other cross-ditches shall be installed at locations designated by the designated Forest Service official.

3.3 All closure-devices and signs shall be constructed, located, installed, and maintained according to the standards contained in the most current version of the MUTCD.

3.4 Where existing surface-vegetation has been destroyed as a result of Purchaser's operation, the entire roadway will be seeded with a seed-mixture approved by the designated Forest Service official.

SPECIFICATION T-812 MISCELLANEOUS STRUCTURES

DESCRIPTION

1.1 Maintenance of miscellaneous structures includes cattleguards, gates, H-braces, fencing, guardrails, signage, and other similar structures that have been previously installed to insure safe and efficient operation of the road.

MATERIALS

2.1 Any Materials needed in the maintenance of miscellaneous structures shall be similar in type and quality to the Material in the structure being maintained.

REQUIREMENTS

3.1 *Cattleguards*. Loose rail or wing elements shall be straightened and welded or bolted back in place.

Excess Material carried into the cattleguard shall be removed when drainage is blocked or when it reaches 6 inches from the bottom of the cattleguard frame. Drainage into and from the cattleguard shall be kept open.

3.2 *Gates*. Gates shall be kept in good repair and made to swing easily. Hinges or latches shall be repaired if not operating properly and hinges shall be oiled. Brush and debris shall be removed from within the swinging radius.

Loose wire gate ends and internal stays shall be maintained in good condition. Gate wire shall be maintained as necessary to insure proper operation of the gate both as a vehicle passageway and as a barrier to cattle movement.

3.3 *H-braces.* Posts, horizontal braces, and diagonal struts or tie wires shall be maintained to provide for tightness of fence and gate or latch posts.

3.4 *Fencing.* Fencing which has no opening or provisions for gating shall be temporarily braced prior to cutting. Fencing shall be replaced upon completion of use and shall be stretched and securely fastened to conform to its original spacing before cutting.

3.5 *Signage.* Structure delineators, regulatory and warning signs determined by the designated Forest Service official as necessary, shall be maintained in good, clean condition.

3.6 *Guardrails.* Guardrails shall be maintained according to the most recent AASHTO standards and specifications.

SPECIFICATION T-813 TREATMENT AND DISPOSAL OF HAZARD TREES

DESCRIPTION

1.1 Treatment and disposal of hazard trees consists of felling and disposal of designated unstable live or dead trees. Any removal of timber is subject to prior agreement between the CO and the Purchaser.

REQUIREMENTS

3.1 *Designation of hazard trees.* Hazard trees to be felled will be designated in advance by the designated Forest Service official, and will be flagged and/or marked.

3.2 *Falling, bucking, and treatment for disposal.* Use controlled felling to ensure the direction of fall and prevent damage to property, structures, roadway, residual trees, and traffic. Stump heights, measured on the side adjacent to the highest ground, must not exceed 12 inches or 1/3 of the stump diameter, whichever is greater. Higher stump heights are permitted when necessary for safety.

Felled snags and trees, which are not marked for removal, will be left in a stable condition such that they will not roll or slide. Position logs away from standing trees so they will not roll, are not on top of one another, and are located out of roadway and drainage structures.

Fell, limb, and remove trees which are marked for removal that equal or exceed the utilization standards as listed in the contract or Supplemental Specifications. Dispose of merchantable timber designated for removal in accordance with Provision B/BT2.32 or C/CT.3.2 Construction Clearing, or as designated by the designated Forest Service official.

3.3 *Slash Treatment.* Within the roadway, remove limbs, chunks, and debris in excess of 12 inches in length and 3 inches in diameter, and concentrations that may plug ditches or culverts, and water courses.

Dispose of slash by scattering outside the roadway limits without damaging trees, or improvements.

3.4 *Safety.* Adhere to the requirements in Provision B/BT6.33 or G/GT.3.3

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SPECIFICATION T-GEN GENERAL REQUIREMENTS

DESCRIPTION

1.1 General requirements consists of requirements that are mandatory for all T-Specs included in the contract.

REQUIREMENTS

3.1 *Equipment Specifications.* The equipment to be used to complete the work in this contract shall meet the following minimum standards:

Road Grader - Motor patrol, self-propelled, tandem drive, with a mold board not more than 14 feet or less than 12 feet with a 3 tooth ripper (scarifier) bar.

Crawler Tractor/Dozer - D4 with a 3 tooth ripper (scarifier) bar and an angle dozer blade (6 way tilt preferred).

3.2 *Equipment Cleaning.* Adhere to the requirements in provision B/BT6.35 or G/GT.3.5.

3.3 *Traffic Control.* Adhere to the requirements in provision B/BT6.33 or G/GT.3.3

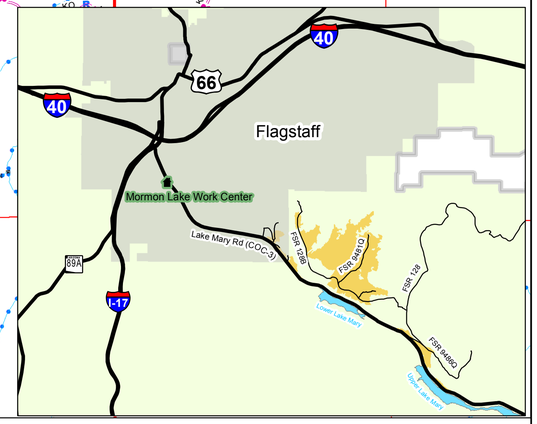
3.4 *Bridges.* Clean the deck of any accumulated dirt or gravel and clean deck drains. Protect structures according to the requirements in Provision B/BT6.22 or G/GT.2.2.

APPENDIX D

R 7 E | R 8 E | R 9 E

T 20 N

Coconino NF
Flagstaff
Ranger District



Attachment 2
Contract Area Map
Marshall
Flagstaff Ranger District
Coconino National Forest

Legend

Contract Area Boundary B.0,

Non Forest Service Lands **FAR 52.236.9**

01 Sub-divisions B.0, B.1, C.3, D.4.2.1

Cut Unit Designation

- 1 Leave Tree Cut Units C.3, C.5, R3 K-C.3.5.7# , **FAR 52.236.9**
- Cut Tree Cut Units - C.3, C.5, R3 K-C.3.5.6# , **FAR 52.236.9**
- DXP - C.3, C.5, R3 K-C.3.5.5# , **FAR 52.236.9**
- DXP (Tablet) - C.3, C.5, R3 K-C.3.5.5# , **FAR 52.236.9**

Protected Wildlife Features

- MSO Timing Restrictions (No operations from March 1st thru August 31st) R3 K-G.3.1.3#, **F.4,H.12**
- R MSO Hauling Restrictions (No operations from March 1st to August 31st) R3 K-G.3.1.3#, **F.4, H.8, H.12**
- PFA Timing Restrictions (No operations from March 1st to Septmber 30 th) R3 K-G.3.1.3#, **F.4, H.12**
- R R PFA Hauling Restrictions (No operations from March 1st to Septmber 30 th) R3 K-G.3.1.3#, **F.4, H.8,H.12**

Protect Plants

- Noxious Weeds R3 K-G.4#, **H.17**
- Sensitive Species of Concern R3 K-G.4#, **H.17, FAR 52.236.9**

****Clause's in BOLD can be found in the Request For Proposal***

Protect Improvements and Features

- Trail R3 K-G.3.1.3#, R3 K-G.4.3, R3 K-G.6.22, R3 K-G.6.22.1, **FAR 52.236.9**
- Streamcourse Protection R3 K-G.6,
- Spring R3 K-G.31.3#,
- W Underground Water Line R3 K-G.6.22.1, **FAR 52.236.9**
- Overhead Utilities R3 K-G.6.22.1, **FAR 52.236.9**
- Overhead Phone Lines R3 K-G.6.22.1, **FAR 52.236.9**
- UndergroundUtility Lines R3 K-G.6.22.1, **FAR 52.236.9**
- Forest Service Road R3 K-G.6.22.1, **FAR 52.236.9**
- KO KO Keep Open Roads R3 K-G.3.1.3#, R3 K-G.4#, **H.8**
- Highway 180 R3 K-G.6.22.1, **FAR 52.236.9**
- Fence R3 K-G.6.22.1, **FAR 52.236.9**
- Protect Gates R3 K-G.6.22, **FAR 52.236.9**
- Protect Cattleguards R3 K-G.6.22.1, , **FAR 52.236.9**
- Protected Monuments R3 K-G.6.22.1, **H.16,FAR 52.236.9**
- SZ Safety Zone **H.6**, R3 K-G.4.3

Purchaser Slash Responsibilites G.7, R3 K-G.7#	
Fell Damage Stems (FELL)	All Units
Machine Pile (MPile)	All Units
Optional Item: Non Commercial Thinning Cut & Machine Pile in accordance with Biomass Cutting Guide - 8'-16' spacing of trees 3 feet - 5.9" DBH. C.3, C.5, K-C.3.5.6#	
All Units	

Disclaimer Statement:
The USDA Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Using GIS products for the purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. This map is not a legal land line or ownership document. Public lands are subject to change and leasing, and may have access restrictions; check with local offices. Obtain permission before entering private land. Land lines are approximate.
****

Map prepared by: JSD 5/21/2018
Path:T:\FS\NFS\Coconino\Project\Flagstaff\ContractDoc Prep\GIS\MXD\Marshal

0 0.5 1 Miles

Marshall Lake
Lower Lake Mary
Lake Mary Rd (COC-3)
SZ

APPENDIX E
SCHEDULE OF ITEMS
AND
SPECIFICATIONS

Item Number		Description	Unit of Measure	Quantity
Project 2: Marshall Hazardous Fuels Reduction				
01		Cut, skid, process, and deck designated timber 6" DBH and greater, with required removal of 9" DBH and above	Acres	2,193.0
02		Road Maintenance*	Miles	27.0
03		TSI (6'- 5.9" dbh)	Acres	2,193.0
04		Removal of slash off NFS lands	Acres	2,193.0
05		Process remaining bole wood into firewood and haul to agreed upon locations.	Cords	5,812

*9.00 miles of Forest road shall include a pre, during, and post haul blade.
(9.00 miles x 3 occurrences = 27.00 miles)

SCHEDULE OF ITEMS:

SPECIFICATIONS

PROJECT: MARSHALL HAZARDOUS FUELS REDUCTION

Mechanical ALL UNITS (2,193 acres)

Item Number 1 - **Cut, skid, process, and deck designated timber 6" DBH and greater, with required removal of 9" DBH and greater: All Units (2,193 Acres)**

Cut and remove from Contract Area all included products as identified in Appendix F.

1. Cut, skid, process, and deck designated timber 6" DBH and greater, with required removal of 9" DBH and above.
2. The remaining decked wood (4" – 8.9" DBH) will be processed and removed off site in accordance with *Item Number 5,* or left onsite in decks at agreed upon staging locations.
3. All landings and skid trails shall be treated in accordance with requirements of provisions in Appendix G.
4. Construction and obliteration of all newly created temporary roads in accordance with requirements provisions in Appendix C & G.

Item Number 2 - **Road Maintenance**

See Appendix C for Road Maintenance requirements.

T-803 on the following roads: 128, 128B, 9478, 9478C, 9478X, 9478Y, 9486R, 9487T
T-804 on the following roads: 128B, 9481Q, 9486Q
T-806 on the following roads: 128B, 9478X, 9486R
T-810 on the following roads: 128B
T-811 on the following roads: 9478, 9481Q, 9486Q

Item Number 3 - **Timber Stand Improvement (Pine 6' to 5.9" DBH and Juniper >3' tall) (Mechanical preferred); (*See Appendix B.* Non-Commercial Thinning and Piling and Slash Removal and Appendix F.8.5** for unit breakdown***)***

All Units (2,193 Acres)

Cut and skid (mechanical preferred) all material described in Appendix B and F for applicable units to the landing and process down to as small of a top as possible. The logs 4 feet in length and longer and larger than 2" on the small end will be decked in a separate pile to be provided to the tribes for firewood. It is preferred to have TSI work completed concurrent or prior to the cut and removal of included timber. If mechanical skidding is not possible, pile in woods in accordance with specifications below. Hand piling in woods will occur under agreed upon conditions, and be approved in writing. Where non-commercial trees are sparse and slash will not accumulate, lop and scatter will be allowed by prior FS approval.

Hand Piling:

Location of Piles: *Only done when machine accumulation is not feasible*

- Piles may be located within or adjacent to the group opening so long as the following criteria are met:
- Piles shall be a minimum of 10 feet from the crown or drip line of any tree or in the least impactful location among standing live trees.
- Piles shall be located a minimum of 15 feet from physical improvements (such as roads, trails, and ditches), unit boundaries, select genetic trees, wildlife trees, designated wildlife clumps, designated recreational trails, riparian vegetation, and stream courses.
- Piles shall be placed so they are not on top of logs, stumps, fire lines, or channels.
- Slash on visible rock shall be pulled off the rock and placed at least 6 feet from the rock.

Construction and Size of Piles

- Piles shall be constructed in a manner which provides for rapid ignition and complete consumption of all piled material.
- Each pile shall be constructed by stacking limbs, stems, cut boles and other slash on the pile so as to be parallel with each other, and in such a manner that they are stable and will not fall over. Piles shall be as compact as possible with no slash

laid against the pile. All bole wood shall be stacked parallel on piles, unless otherwise directed by contract administrator. Avoid 'teepee' style piling.

- Minimum pile size shall be 5 feet in diameter by 5 feet in height but no greater than 10 feet in diameter by 10 feet in height, unless otherwise approved by the contract administrator. Pile width shall not be more than two times the overall pile height.
- All piles shall be trimmed, with trimmed pieces stacked parallel on each pile.
- Where slash produced by operations is too nominal to construct a pile of minimum size (i.e., low stand density, single trees), slash will either be dragged from within a 20-30 feet radius to create a pile or dragged and incorporated into an existing pile within the same radius. In cases where these standards cannot be met, the cut trees will be limbed, bucked, and scattered to a height of less than 18 inches above the ground.

Item Number 4 - **Removal of Slash from FS Lands; (2,193 acres)**

1. Remove all slash (residue/biomass) from landings. The intent of this is to process logs down to the smallest top possible (2") and provide the long logs or boles as firewood. All remaining branches/biomass/fiber in the slash piles is to be removed off FS lands. Some slash may be left in the Contract Area as erosion control for landings, skid trials, and temporary road closeout by written agreement.

Optional Item number 5- **Process all remaining wood not included as Sawtimber or removed as Slash into firewood and haul to agreed upon locations.**

1. Process all remaining wood not included as Sawtimber or removed as slash into firewood and haul to agreed upon locations on the Navajo and Hopi Reservations.
2. This wood is to be processed into traditional size firewood lengths of 12" – 20" long.
3. Each log truck and trailer shall be measured to determine # of cords per truck/trailer configuration.
4. Load tags will be used to account for the service item of hauling fuelwood to agreed upon locations. FS and NFF will determine best way to account for load tags with regards to using an ammo can on site or at each location.
5. Best attempts shall be made to leave the least amount of sawdust/bark on site because of processing. Final chip depths to remain on site shall not exceed 3" deep.
6. This wood is being provided for free by the USFS to the tribal nations via 36 CFR 223.15 Provisions of trees, or forest products to Indians Tribes for traditions and cultural purposes:
    - (a) Pursuant to section 8105 of the Food, Conservation, and Energy Act of2008 (Pub. L. 110- 246, 122 Stat. 1651) [hereinafter the "2008 Farm Bill"], Regional Foresters or designated Forest Officers may, at their discretion, provide trees, portions of trees, or forest products to Indian tribes free of charge for traditional and cultural purposes provided that:
    - (1) The trees, portions of trees, or forest products are provided to tribal officials on behalf of an Indian tribe for traditional and cultural purposes; and
    - (2) The trees, portions of trees, or forest products will not be used for commercial purposes.

APPENDIX F
TIMBER REMOVAL SPECIFICATIONS
Marshall Hazardous Fuels Reduction Project

F.1. LOCATION AND AREA			
This Stewardship Project Area of:	**2,193**	acres are more or less located in:	**Township 20 North, Range 8 East in Sections: 4-9, 16-18, 20, 21, 22, 26, 27, 34 and 35. In T20.N. R7E Sections 1, 12 and 13 of Coconino County, Gila and Salt River Baseline and Meridian, Arizona**

F.2. VOLUME ESTIMATE AND UTILIZATION STANDARDS

Species	Product	Estimated Quantity	Unit of Measure	Minimum Specifications				
				Merchantable Tree		Piece Required to be Removed		
				Diameter Breast Height (dbh) (in)	Number Of Min Pieces per Tree	Length (ft)	Diameter Inside Bark at Small End (in)	Net Merch. Factor 1/
Ponderosa Pine (14"+)	Sawtimber	19,505	Tons	14	1	10	6	10.67
Ponderosa Pine (9"-13.9")	Sawtimber	28,105	Tons	9	1	10	6	10.67
Total Quantity		**47,610**						

1/ Enter Merchantability Factor (Merch. Factor) or Net Scale in % of Gross Scale, whichever is appropriate.

F.3. UTILIZATION AND REMOVAL OF INCLUDED TIMBER

"Utilization Standards" for trees and minimum pieces are stated in F.2. To meet minimum tree specifications, trees must equal or exceed tree diameters listed in F.2. and contain at least one minimum piece. Except for timber required or authorized to be left, CONTRACTOR shall fell and buck such trees and shall remove from Project Area and present for Scaling all pieces that:

- Meet minimum piece standards in F.2., or
- Do not meet such standards but would have qualified as part of minimum pieces if bucking lengths were varied to include such material.

F.3.1 TIMBER TO BE CUT, SKID, PROCESSED AND DECKED AND REQUIRED TO BE LEFT ON FS LANDS

- Timber cut from 4"- 8.9" DBH is not authorized to be removed from Project Area as per the *Service Item 1 - Cut, skid, process, and deck designated timber 6" DBH and greater, with required removal of 9",* but still needs to be cut, skid and decked in accordance with F.8 and *Item Number 3 - Timber Stand Improvement.*
- The CONTRACTOR shall utilize the volume below for Service Item #5 in Appendix E unless

agreed upon.

Species	Product	Estimated Quantity	UOM	Converted to cords	Diameter Inside Bark at Small End (in)
Ponderosa Pine (4"-8.9" DBH)	Firewood	10,113	Tons	4,045	2
Juniper	Firewood	4,419	Tons	1,767	2
Total		14,532		5,812	

***2.5 tons to 1 cord was conversion used.*

F.4. HIGH STUMPS
See also G.15.

Species	Product	Maximum Stump Height (inches)
All	All	6

F.5. TIMBER DESIGNATIONS.
Timber designated for cutting shall be confined to the Stewardship Project Area. No undesignated timber shall be cut without prior notification to and approval of the Forest Service. Prescriptions/timber designations are included later in this subsection.

DESIGNATIONS	UNIT NUMBER	ACRES
Individual Trees – Leave tree marking	12, 14, 31, 50, 52, 56, 60, 69, 70, 71	297
Individual Trees - Cut tree marking	67	42
Designation by Prescription	1 -11, 13, 15 - 20, 24, 25, 27, 29, 30, 32 - 35, 351, 36, 40 ,51, 53, 54, 58, 62, 66, 68, 72 and 73	1854

F.6. CUTTING UNIT BOUNDARY DESIGNATION.
The boundaries of cutting units are designated as shown in the following table. The trees used for boundary designation are not to be cut.

Cutting Unit	Paint Color	Designation
All	**ORANGE**	Two horizontal bands of ORANGE paint ¾ of the way around the bole (or around the entire bole when adjacent boundaries exist), near DBH, facing into the cutting unit, with an orange stump mark. Three horizontal bands of ORANGE paint designate cutting unit boundary corners.

F.8 TREE DESIGNATION/PRESCRIPTIONS.

F.8.1 INDIVIDUAL TREE MARKING- LEAVE TREE DESIGNATION
In cutting units 12, 14, 31, 50, 52, 56, 60, 69, 70 and 71 as shown on the PAM, all live trees meeting minimum tree specifications of F.2 are designated for cutting except trees reserved from cutting. Trees reserved from cutting have been marked with **ORANGE** tracer paint.

F.8.2. DESIGNATION BY PRESCRIPTION (DXP) PLUS

Digital silvicultural prescriptions in units with Designation by Prescription timber designation may be available to aid CONTRACTOR in achieving the desired condition described in F.8.3. - Designation by Prescription (DxP).

F.8.3. DESIGNATION BY PRESCRIPTION (DXP)

Within Subdivision(s) or cutting unit(s) 1 -11, 13, 15 - 20, 24, 25, 27, 29, 30, 32 - 35, 351, 36, 40 ,51, 53, 54, 58, 62, 66, 68, 72 and 73, as shown on Project Area Map, the following criteria shall be used by Contractor to designate trees and other products for cutting and removal.

F.8.4 INDIVIDUAL TREES (CUT TREE MARKING) (9/15)

In cutting unit(s) **67** shown on the Project Area Map all live trees meeting minimum tree diameter specifications of F.2 are designated for cutting except trees reserved from cutting. Individual trees to be cut have been marked using **BLUE tracer p**aint.

(a) Specific designation guides are listed below by cutting unit
Cutting units with an * have digital prescription guide available.

Cutting Units 1*, 2*, 4*, 5*, 6*, 7*, 25, 32, 33, 34, 53, 54, (Goshawk PFA)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, regardless of form, health and vigor (see yellow pine/old tree description).
- Cut all ponderosa pine 6-18" dbh within 33' of large oaks >12" drc and large alligator juniper >24" drc. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine >6" dbh, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to 1 acres in size, with an average group size of .25 acres. At least one group 1 acre in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet. Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups with some trees arranged in clumps with nearly touching or interlocking crowns.
- Where most of the trees are greater than 12" dbh, basal area (BA) shall range from 50 to 100 ft^2/ac, with an average of 70 ft^2/ac. Where most of the trees are less than 12" dbh, BA shall range from 30 to 70 ft^2/ac with an average of 50 ft^2/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" dbh (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine >6" dbh (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" dbh (avoid groups dominated by 16"+ dbh trees).
  - In areas that contain desirable trees less than 6" dbh which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-2 acres, average opening size is about one acre
- Openings should have a maximum width of 200 feet
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).
- All trees within identified Archeological sites will be left.
- Utilize the existing groups of large trees, particularly trees greater than 16" dbh, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.
- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Units 8, 9, 15, 19, 20, 24, 27, 29, 36, 51, 58, 62, 66, (Goshawk Foraging Area)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, regardless of form, health and vigor (see yellow pine/old tree description).

- Cut all ponderosa pine 6-18" dbh within 33' of large oaks >12" drc and large alligator juniper >24" drc. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine >6" dbh, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to.7 acres in size, with an average group size of .25 acres. At least one group of .7 acres in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet**.** Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups. Where possible, in each group some trees should be arranged in clumps with nearly touching or interlocking crowns.
  Where most of the trees are greater than 12" dbh, basal area (BA) shall range from 40 to 90 ft²/ac, with an average of 50 ft²/ac. Where most of the trees are less than 12" dbh BA shall range from 30 to 60 ft²/ac, with an average of 40 ft²/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" dbh (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine >6" dbh (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" dbh (avoid groups dominated by 16"+ dbh trees).
  - In areas that contain desirable trees less than 6" dbh which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-4 acres, average opening size is about one acre
- Openings should have a maximum width of 200 feet
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).
- All trees within identified Archeological sites will be left.
- Utilize the existing groups of large trees, particularly trees greater than 16" dbh, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.

- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Units 10, 11, 13, 16, 17, 18, 30, 35, 40, 68, 72, 73, 351 (Goshawk Foraging Area / MSO Restricted with 24" upper diameter limit)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, and **all other ponderosa pine >24" dbh** regardless of form, health and vigor. (see yellow pine/old tree description).
- Cut all ponderosa pine 6-18" dbh within 33' of large oaks >12" drc and large alligator juniper >24" drc. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine 6-24" dbh, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to.7 acres in size, with an average group size of .25 acres. At least one group of .7 acres in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet**.** Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups. Where possible, in each group some trees should be arranged in clumps with nearly touching or interlocking crowns.
  Where most of the trees are greater than 12" dbh, basal area (BA) shall range from 40 to 90 ft^2/ac, with an average of 50 ft^2/ac. Where most of the trees are less than 12" dbh BA shall range from 30 to 60 ft^2/ac, with an average of 40 ft^2/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" dbh (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine 6-24" dbh (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" dbh (avoid groups dominated by 16"+ dbh trees).
  - In areas that contain desirable trees less than 6" dbh which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-4 acres, average opening size is about one acre
- Openings should have a maximum width of 200 feet
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).
- All trees within identified Archeological sites will be left.

- Utilize the existing groups of large trees, particularly trees greater than 16" dbh, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.
- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Unit 3 (Goshawk Nest Stand / MSO Restricted with 24" upper diameter limit)

Cutting Guide (in order of priority)

Forested Area:

- Leave all Yellow Pines and Gambel oak, and **all other ponderosa pine >24" dbh** regardless of form, health and vigor. (see yellow pine/old tree definition).
- Leave all desirable and acceptable ponderosa pine ≥ 18" dbh.
- Cut all ponderosa pine 6-18" dbh within 33' of large oaks >12" drc and large alligator juniper >24" drc. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Thin from below ponderosa pine 6-24" dbh to 65 ft^2/acre (~80 ft^2/acre overall, including oak and juniper), focusing on the removal of intermediate and overtopped trees, followed by non-desirable co-dominant/dominant trees if needed (*see Table 1*). Residual trees should be irregularly spaced.
- In some areas, there may not be enough trees in the dominant/co-dominant size class to reach the targeted stocking level. In this case, leave additional desirable or acceptable trees from smaller size classes to increase stocking.
- Where available, leave up to two wildlife trees per acre greater than 18" dbh (*see Table 1*).

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- All trees within identified Archeological sites will be left.
- In areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

None

Yellow Pine/Old Tree Description

Old trees (approximately >150 years old) should be retained, with few exceptions, regardless of their diameter. Removal of old trees would be rare. Exceptions would be made for threats to human health and safety, and those rare circumstances where the removal of an old tree is necessary in order to prevent additional habitat degradation. Old trees should not be cut for forest health issues or to balance age or size class distributions. One example of a situation where the removal of an old tree is necessary in order to prevent additional habitat degradation is in the rare case of an old tree growing on the side of an existing curve in a road. Logging equipment may require a wider turning radius. The options are to relocate the road or cut the old tree and widen the curve to accommodate the larger turning radius. Relocating the road would result in a larger area of the forest being permanently disturbed, versus cutting the large tree and widening the curves radius. This is an example where cutting the old tree would result in less habitat degradation then relocating a road.
Old trees would be determined by the following characteristics described by Thomson (1940) as age class 3 (intermediate-mature) and age class 4 (mature-overmature).

Age – Approximately 150 years and older.

D.b.h. – Site dependent.

Bark – ranging from reddish brown, shading to black in the top with moderately large plates between the fissures to reddish brown to yellow, with very wide, long, and smooth plates.

Tops – ranging from pyramidal or rounded (occasionally pointed) to flat (making no further height growth).

Branching – ranging from upturned in upper third of the crown, horizontal in the middle third, and drooping in the lower third of the crown to mostly large, drooping, gnarled, or crooked. Branch whorls range from incomplete and indistinct except at the top to completely indistinct and incomplete.

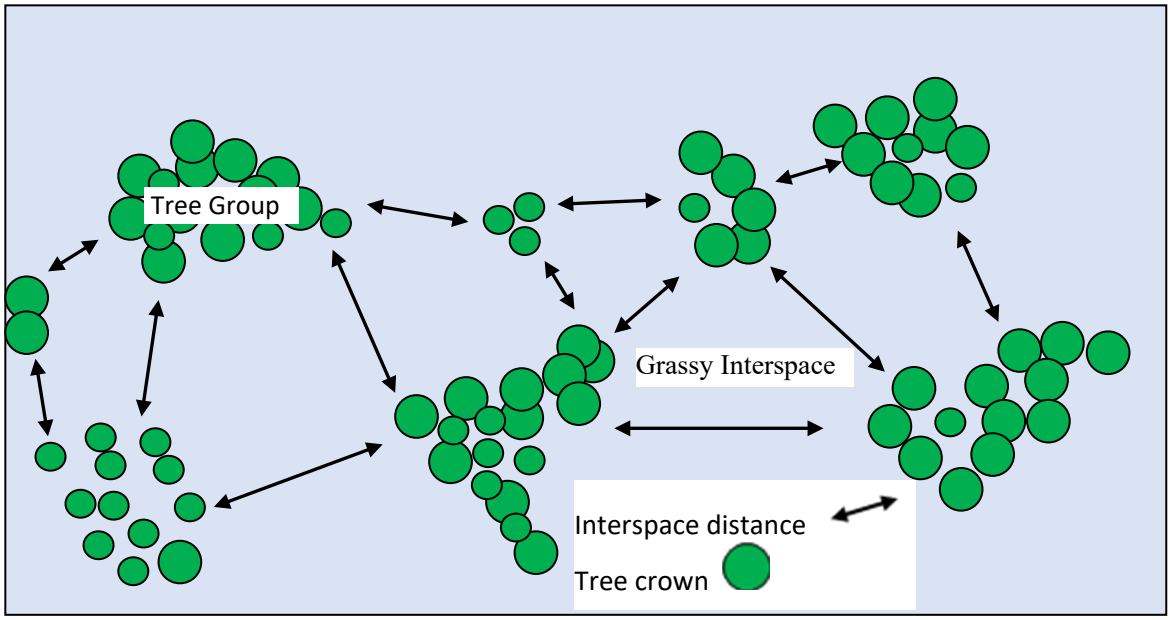


Figure 1. An example of tree groups surrounded by interspaces.

Table 1: Tree Quality Standards

Guidelines for Choosing Leave Trees			
EVALUATION CRITERIA	**DESIRABLE (usually leave)**	**ACCEPTABLE (leave or cut, usually leave when in deficient size classes)**	**NON- DESIRABLE (usually cut)**
LIVE CROWN RATIO	>40% for ponderosa pine	25-40% for ponderosa pine	<25% for ponderosa pine

CROWN CLASS	dominants and co-dominants	co-dominants better intermediates	intermediates and suppressed/over-topped, poor form
INSECTS, ANIMAL, FIRE, MISC. DISEASE (see next row for mistletoe)	NONE	Minor insect or animal defoliation (< 25% live crown ratio). Barking of ponderosa pine < 50% of bole circumference. Fire kill of cambium < 50% of bole circumference or the scorch is on the lower 2/3 of the crown.	Any successful bark beetle attacks. Defoliation >25% of live crown. Barking of ponderosa pine >50% of bole circumference. Any significant top killing. Fire kill of cambium >50 % of bole circumference, or the scorch reaches into the upper 1/3 of the crown. Any conks on stem which indicate rot.
HAWKSWORTH DWARF MISTLETOE RATING (DMR)	NONE	Pines 6-9" dbh with a DMR rating of 2 or less Pines 9+" dbh with a DMR rating of 3 or less	Pines <6" dbh with any sign of infection Pines 6-9" dbh with a DMR rating >2 Pines 9+" dbh with a DMR rating from 4-6, unless classified as wildlife trees.
FORM DEFECTS	NONE	MINOR (no significant weakening of the tree anticipated. Minor crooks, sweeps, and tight forks which are <30% of total tree height are acceptable if the tree is dominant or co-dominant and otherwise has good vigor).	MAJOR (weakening of tree or multiple tops)
SOUNDNESS DEFECTS	NONE	NONE	ANY
WILDLIFE TREES	Trees greater than 18" with fading crowns, existing cavities, dead tops, and/or lightning scars for current wildlife benefit and/or future snag recruitment		

(b) Additional trees to be cut, if any, are Marked by Forest Service with 2/ BLUE tracer paint.

(c) Cutting unit boundaries and other trees that shall be left uncut are Marked by Forest Service with 2/ ORANGE tracer paint.

Contractor may select cut trees in cutting units 3/ 1, 2, 3, 4, 5 ,6 ,7, 8 ,9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 24, 25, 27, 29, 30, 32, 33, 34, 35, 351, 36, 40, 51, 53, 54, 58, 62, 66, 68, 72, 73, without pre-harvest marking in accordance with the criteria in (a). If specified in (a) Contractor shall Mark leave trees in cutting units 4/ N/A with Contractor's non-tracer 2/ N/A paint for inspection and approval by Forest Service prior to cutting.

F.8.4 ACCEPTANCE OF WORK upon Purchaser's written request and assurance that cutting to prescription has been completed in a cutting unit in accordance with ***F.8.3*** and unless otherwise agreed in writing, procedures for inspecting Purchaser cutting under ***F.8.3*** are as follows:

Cutting Units 1*, 2*, 3, 4*, 5*, 6* ,7*, 8 ,9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 24, 25, 27, 29, 30, 32, 33, 34, 35, 351, 36, 40, 51, 53, 54, 58, 62, 66, 68, 72, 73

* Cutting units have a digital prescription guide (DPG) available.

Criteria

Criteria for acceptance for each cutting unit are described below.

For quality assurance, the government will conduct visual inspections, accompanied by random plots as needed, for each cutting unit to determine compliance with thinning treatment specifications. Inspections will consist of a review of the residual trees in terms of tree density, spatial distribution, and tree quality. The Forest Service will determine if the contractor has met the desired conditions by visually assessing the following acceptance criteria:

Cutting Units 1, 2, 4, 5, 6, 7, 8 ,9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 24, 25, 27, 29, 30, 32, 33, 34, 35, 351, 36, 40, 51, 53, 54, 58, 62, 66, 68, 72, 73:

- Tree density (residual BA's meet the targets described in cutting guide ± 10 ft^2/acre)
- Spatial Patterns
    - Size of groups (>90% of groups within acreage range provided in cutting guide)
    - Width of interspaces and/or regeneration openings (>75% of interspaces within range of widths provided in cutting guide, no regeneration opening widths greater than 200 feet)

      or
    - Cut matches DPG (across >75% of area/plots)
- Residual tree quality (>75% of residual trees desirable/acceptable)

Cutting Units 3:

- Tree density (residual BA's meet the targets described in cutting guide ± 10 ft^2/acre)
- Residual tree quality (>75% of residual trees desirable/acceptable)

When work is satisfactory, it will be accepted. When work is unsatisfactory, the contractor will be responsible for any rework to comply with contract requirements.

If the contractor disagrees with the visual inspection results of the Forest Service, the contractor may request a formal sample across the unit. The number of plots to assess formal compliance is based on Table 1 below.

Table 1. Minimum # of plots by cutting unit size.

Cutting Unit Size	Minimum Number of Plots
Up to 40 acres	20 plots
40 to 100 acres	30 plots
Over 100 acres	30 plots plus an additional plot for every 10 acres over 100 acres

Plot locations will be random and determined by a non-biased method. The sampling will evaluate the criteria specified for each respective cutting unit.

Where a cutting unit does not meet the required quality standard due to a re-workable items such as leaving too many trees, contractor shall rework the unit. The unit will be re-inspected, and if deficient items are repaired, work will be accepted. Where cutting units do not meet the required quality standard due to too many trees cut, remedial actions may occur.

F.8.5 Timber Stand Improvement (TSI)

Performance of service items shall be in accordance with the following specifications:

The following table describes the requirements for cutting ponderosa pine greater than 6 feet tall and less than 6 inches dbh and juniper greater than 3 feet tall. The definitions below describe the difference between desirable and undesirable trees. Boles that are 6 feet long with 2" or greater at the small end shall be utilized as firewood. All remaining material shall be treated as logging slash and treated according to the specifications outlined in F.9.3.

Unit	TSI Treatment Cutting Guide	
	Ponderosa Pine	Juniper
1	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
2	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
3	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
4	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
5	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
6	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
7	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
8	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
9	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain and Utah juniper 5-24" drc, and all alligator juniper 5-12" drc.
10	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
11	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
12	Cut all ponderosa.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
13	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
14	Cut all ponderosa.	Cut all juniper <5" drc.

15	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain and Utah juniper 5-24" drc, and all alligator juniper 5-12" drc.
16	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
17	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
18	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
19	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
20	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
24	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
25	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
27	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
29	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, and all Rocky Mountain and Utah juniper 5-24" drc.
30	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
31	Cut all ponderosa.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
32	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
33	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,

34	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
35	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
36	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
40	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
50	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
51	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, and all Rocky Mountain and Utah juniper 5-24" drc.
52	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
53	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
54	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
56	Cut all ponderosa.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
58	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
60	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
62	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.
66	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,

67	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
68	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
69	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
70	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
71	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-24" drc,
72	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-12" drc.
73	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc and all Rocky Mountain juniper 5-12" drc.
351	Cut all undesirable ponderosa and all ponderosa located under the crowns of larger retained trees. In remainder of unit, thin desirable ponderosa to 12 x 12 foot spacing (bole to bole) ± 4 feet to select the most desirable tree.	Cut all juniper <5" drc, all Rocky Mountain juniper 5-24" drc, and all alligator juniper 5-12" drc.

Desirable Leave Tree Characteristics: Sub-merchantable/non-merchantable trees considered desirable have **all** of the following characteristics:

(a) Straight, vertical stem (leaning <15 degrees from vertical axis)

(b) Well-formed crown (wide, full, symmetrical)

(c) Live, single top with vigorous annual terminal growth

(d) Free of animal, insect or disease damage and/or symptoms, including dwarf mistletoe

(e) Absence of physical or mechanical damage

Undesirable Leave Tree Characteristics: Sub-merchantable/non-merchantable considered undesirable have **one or more** of the following characteristics:

(a) Leaning or bent (>15 degrees from vertical axis; often related to prolonged suppression)

(b) Any crook, sweep, or fork in stem

(c) Poor crown form (one-sided, narrow, or sparse)

(d) Multiple, dead, or broken tops

(e) Presence of insects, diseases, or animal damage, including any visible evidence of dwarf mistletoe (i.e, fruiting bodies)

(f) Any physical or mechanical damage

CONTROL OF OPERATIONS

F.9.1. Timing of Contract Operations

Unless otherwise agreed to in writing, CONTRACTOR's Operations shall be performed in accordance with the following table and as designated on the PAM:

TIMING OF SALE OPERATIONS TABLE-A		
Sub Division/ Units	**Operation Condition**	**Purpose**
Units 32, 33 and 68 As indicated on Sale Area Map.	No operations between March 1st and August 31st	Mexican Spotted Owl (MSO) Protected Activity Center (PAC)
Units 01-07, 25, 34, 52-54, 56, 58 and 72 As indicated on Sale Area Map.	No operations between March 1st and August 31st	Northern Goshawk PFA (Post Fledgling Area)
All of Unit 67	No operations within ¼ mile of nest core between March 1st and August 15th	Peregrine Falcon Nest Core
All	No operations allowed on holiday weekends or weekdays (calendar year dependent) for the following holidays: *Memorial Day (5 PM Friday- 4 PM Monday) *Fourth of July (5 PM Thursday- 4 PM Monday) If the legal holiday falls on Tuesday, Wednesday or Thursday, no operations will be permitted the day before beginning at 5 PM through the day after the legal holiday ending at 4PM *Labor Day (5 PM Friday- 4 PM Monday)	Protect high use recreation area.
All	No operations allowed during opening weekend for 6A Bull Elk Hunt. September 15 to September 28 and November 17 to November 23. Typically, the same weekend in Sept/Oct and Nov/Dec annually. *(Opening weekend 7 AM Friday - 5 PM Monday))	Opening weekend for 6A bull elk hunt. Safety and high use recreation.

F.9.2. CONDUCT OF ACTIVITY

Unless otherwise agreed in writing, silvicultural prescriptions and land management objectives shall be conducted and accomplished by the requirements, methods, and procedures in accordance with the following table:

TABLE B: CONDUCT OF ACTIVITY

CUTTING UNITS	CONDUCT OF ACTIVITY
All	1. The skid trail pattern shall be approved by CONTRACTOR and/or U.S. Forest Service in advance of felling and major trails, including go-back trails, shall be flagged on the ground in advance of felling.
All	2. CONTRACTOR and U.S. Forest Service will agree on felling lead at the time of approval of skid trails.
All	3. Trees shall be felled, insofar as safety permits, to angle in the direction of skidding.
All	4. CONTRACTOR shall remove from National Forest administered lands products meeting U.S. Forest Service utilization standards within 30 calendar days after felling from January 1 to June 30 and 60 calendar days after felling from July 1 to December 31. U.S. Forest Service may adjust these requirements based on environmental or other resource concerns.
All	5. Skid roads will be located, approved and constructed in advance of felling.
All	6. Logs shall be skidded with the leading end free of the ground.
All	7. Trees designated for cutting and/or logs will be left as rub trees along skid trails as needed to protect young growth and leave trees.
All	8. Known Cultural Resources are marked on the ground by white bands and/or pink flagging around trees on the perimeter of the site and shall be protected in accordance with F.9.5.
All	9. Keep roads open at all times unless agreed otherwise. Emergency vehicles are exempt and shall have access at all times.
All	10. Whole tree skidding.

F.9.3. Slash Treatment

All vegetative debris associated with construction of Specified Roads such as unutilized timber, brush and grubbed stumps is Construction Slash. Measures to be taken by Contractor for treatment of Construction Slash are set forth in the attached road construction specifications and in item (1) below.

Vegetative debris larger than 1 inch in diameter and 3 feet long resulting from Contractor's Operations, other than Construction Slash, is Logging Slash. In Required Disposal Strip along permanent roads, in areas of Temporary Road construction outside of Clearcutting Units, and in fuelbreaks, both hardwood trees and coniferous trees smaller than the minimum d.b.h. in Division A, over 3 feet in height and damaged beyond recovery by Contractors Operations shall be cut and treated as Logging Slash. Measures to be taken by

Contractor for treatment of Logging Slash are set forth below and in following Subsections unless otherwise agreed in writing.

Forest Service and Contractor shall jointly develop a schedule for completion of slash treatment on the various portions of Contract Area prior to Contractors Operations.

Specified slash treatment methods for each cutting unit shall be shown on Project Area Map and listed in the attached tables by the following symbols:

Slash Treatment Methods:

Method: BURYING Map Symbol: "Bury"

Definition and Specifications:

Logging Slash shall be buried where agreed in borrow areas, pits, trenches, or other locations reasonably near the area of origin. Logging Slash shall be matted down in layers and shall be covered with at least 2 feet of rock and soil so that the final surface is sloped to drain and relatively smooth.

Method: CHIPPING Map Symbol: "Chip"

Definition and Specifications:

Chippable Logging Slash up to 4 inches in diameter shall be processed through a chipping machine. Chips shall be scattered to a depth not exceeding 6 inches.
Method: REMOVING Map Symbol: "Remove"

Definition and Specifications:

Logging Slash shall be moved or hauled to locations shown on Contract Area Map and designated on the ground where it shall be piled.

Method: FELLING DAMAGED TREES Map Symbol: "Fell"

Definition and Specifications:

Damaged or destroyed trees are trees substandard because of size, which are over 3 feet in height, and/or species not included in Division A over 3 feet in height, knocked down or damaged to the extent that mortality or serious deterioration will occur, and such trees partially pushed over so as to result in permanent lean and visible damage to the root system, all as a result of the Contractor's operation. Such damaged or destroyed trees shall be felled and further treated by the slash treatment method specified for the area. Materials meeting the minimum piece specifications of Division A will be utilized by the Contractor according to A.6. Maximum stump height shall be that specified in Division A or on the Contract Area Map.

Method: BUCKING & PILING (Small Material) Map Symbol: "Buck"

Definition and Specifications:

Logging Slash smaller than **N/A** inches and larger than 4 inches in large end diameter shall be bucked into

lengths not to exceed **N/A** feet and left in place. Logging Slash 4 inches and smaller in large end diameter shall be hand Piled within Required Disposal Strip.

Method: DECKING LARGE MATERIAL Map Symbol: "Deck"

Definition and Specifications:

Logging Slash **N/A inches or larger in diameter and N/A** feet or more in length shall be Decked free of other slash by piling pieces parallel to each other.

Method: HAND PILING Map Symbol: "Hpile"

Definition and Specifications:

Logging slash smaller than **N/A inches in diameter and N/A** feet long shall be hand piled in accordance with the following specifications:

HAND PILING SPECIFICATIONS

LOCATION OF PILES: Piles shall be located within cleared areas of landings and Temporary Roads or within natural openings. The minimum spacing between edge of each pile and crown edge of adjacent live trees shall not be less than the average diameter of the pile.

Contractor shall not be required to move slash more than 75 feet to meet the above pile location requirement.

Piles shall not be made below high water mark of perennial or intermittent stream courses designated to be protected in accordance with Specification 44. Slash shall not be piled on or allowed to remain in drainage ditches of permanent roads.

CONSTRUCTION OF PILES. Piles shall be compact and dirt-free, with most small slash on the bottom to facilitate consumption during burning. Piles shall not exceed 10 feet in average diameter and pile height shall not be less than one-third the average pile diameter. All slash which protrudes 4-feet or more from outer edge of the pile shall be bucked off and placed on pile.

Method: MACHINE PILING Map Symbol: "Mpile"
Definition and Specifications:
Concentrations of logging slash, excluding scattered individual pieces, shall be machine piled by tractor equipped with brush rake as per Machine Piling Specifications.

Method: MACHINE PILING & LOPPING Map Symbol: "Mpile/lop"

Definition and Specifications:

Concentrations of slash marked on the ground by the Forest Service shall be machine piled by a tractor equipped with a brush rake as per Machine Piling Specifications. The remaining slash, not in concentrations, shall be lopped and scattered as per specification for "Lopping."

Machine Piling Specifications

Acceptable Equipment. Piling will be accomplished with a crawler tractor not to exceed overall width of **12** feet. Tractor will be equipped with a brush blade having teeth extending a minimum of 11 inches below the frame. The teeth shall number at **least 7 and no more than 14**. The teeth shall be of sufficient size and strength so that they shall not bend or break through normal slash piling.

Location of Piles. Piles shall be so located that burning will not damage standing live trees or physical improvements such as fences, poles, buildings, signs, tables, grills, and cattleguards. The minimum spacing between piles shall be equivalent to one and one-half the diameter of the adjacent pile.

If conditions make it impractical to locate piles where damage to live trees and physical improvements can be avoided, a space shall be cleared in a location designated by Forest Service.

Slash within partial cut areas and road construction clearings shall be moved to take advantage of previously constructed or natural clearings in order to minimize the construction of new clearings. Slash shall not be moved more than 120 feet to achieve the location requirement. Piles shall not be made on permanent roads, in drainage ditches, below high water marks of live streams, and in intermittent stream courses.

Piles shall not be constructed within a **30 foot strip along the top edge of the cutting unit or within a 30** foot strip along the remaining edges of the unit.

Construction of Piles. Machine piles shall be compacted by pushing slash from all sides towards the center of the pile. A machine pile will not exceed an average diameter of **50** feet and pile height shall not be less than one-third the average diameter of the pile. All slash which protrudes 4-feet or more from outer edge of the pile shall be bucked off and placed on pile.

Unmerchantable material may be left between piles to protect regeneration seedlings and for site protection purposes as specified in writing by Forest Service.

Piling shall be accomplished in a manner that will prevent the accumulation of dirt in the piles

Logs and tops from felled trees within leave groups of trees inside or outside the cutting unit shall be yarded out of such leave groups to approved locations and piled. Where there is danger of damaging leave trees, long material shall be end-lined out of leave groups.

Method: COVERING PILES Map Symbol: "Cover"

Definition and Specifications:

All slash piles shall be covered with a durable waterproof covering furnished by Contractor as approved by the Forest Service. The material shall be at least 6 feet in width. Piles shall not be less than one-third covered, with the covering extending not less than halfway down all sides. Pieces of burnable material shall be placed on top of the waterproof covering to keep it from blowing off the pile.

Method: SITE PREPARATION Map Symbol: "Mach"

Definition and Specifications:
In conjunction with machine slash piling, a minimum of **N/A percent and maximum of N/A** percent of the workable ground surface uniformly distributed over the unit area shall be scarified down to bare mineral soil. Scarified ground is here defined as bare mineral soil in patches exceeding **N/A feet by N/A** feet.

Method: SCATTERING Map Symbol: "Scat"

Definition and Specifications:

Contractor shall remove all slash greater than **N/A inches in diameter and/or N/A** feet long, a minimum of **N/A feet away from each leave tree N/A** inches d.b.h. and larger. Slash shall be placed upslope from, or along the upslope from, or along the contour from, leave trees. Slash shall not be placed down slope from leave trees.

Method: LOPPING Map Symbol: "Lop"

Definition and Specifications:

Slash shall be treated by limbing or severing, or both, and scattered as necessary to place slash within ___2 feet of the ground over entire area of cutting unit. Occasional slash which exceeds the maximum height, not to exceed 5 percent of slash to be lopped and scattered, is acceptable. When agreed in writing between Contractor and Forest Service, crushing or chopping with mechanized equipment is permissible, where residual trees will not be excessively damaged and ground conditions are suitable.

By agreement in writing, certain slash may be left for fuelwood. When the specified treatment is by a combination of methods, Logging Slash not treated by one of the methods shall be treated by the other(s).

(1) Treatment Along Permanent Roads. Permanent roads that require roadside slash treatment are listed in the attached table and shown on the Contract Area Map. All Logging and Construction Slash within Required Disposal Strips shall be treated by Contractor. "Required Disposal Strips" are those areas adjacent to permanent roads where slash treatment is required for resource objectives. The width of Required Disposal Strips is shown in the attached table and is measured in slope distance from Roadbed edges of permanent roads. By agreement, in Clearcutting Units, slash from Required Disposal Strips may be treated with other Logging Slash. By agreement, the location of Required Disposal Strips may be adjusted from side to side without materially changing the total work required.

Slash treatment in Required Disposal Strips shall be accomplished without affecting the proper functioning of channels leading to and from drainage structures.

(a) Slash shall be treated by Scattering, Removing, Burying, Chipping, Piling, Bucking and Piling, Machine Piling or a combination of these methods as shown in the attached table. Logging Slash larger than treatment size requirements of the specified method shall either be Scattered outside Required Disposal Strip, within Required Disposal Strip or Decked at agreed locations as shown in the attached table.

(b) Hardwood and coniferous trees within or extending over Required Disposal Strips and which have been partially knocked down by Contractor's Operations shall be felled and treated as Logging Slash. Damaged trees which cannot be felled with reasonable safety may be pushed or pulled down.

(2) Treatment Along Temporary Roads. Outside of Clearcutting Units, all hardwood and coniferous trees felled or pushed over and trees damaged beyond recovery by Temporary Road construction shall be felled, limbed to a stem diameter of approximately 3 inches, at which point the top shall be cut from the remainder of the stem, and stem shall be bucked into lengths not exceeding **3** feet. Such slash shall be Scattered free of soil to reduce concentrations unless treatment is required by another specified method.

(3) Landings and Disposal Sites. Unutilized logs accumulated at landings and disposal sites shall be Decked by Contractor. Other slash accumulated at landings and disposal sites shall be kept separate from unutilized logs and treated by the method shown in the attached table.
(4) View and Special Management Units. Areas identified as "VIEW" on the Contract Area Map are Travel and Water Influence Zones and Special Management Units which include roads, recreation trails, streamsides, lakeshores, and other view areas. The "VIEW" boundaries are identified on the ground or a distance limitation is specified on the Contract Area Map. Primary treatment shall be by Removing, Burying, Chipping, Hand Piling, Machine Piling, or a combination of these means unless a method is specified or prohibited on Contract Area Map. Logging Slash not readily treated by the selected or specified method shall be removed to designated areas or treated as agreed.

The following tables, where applicable and filled in, summarize slash requirements:

See Table A

TABLE-A			
R3 K-G.7# - SLASH TREATMENT			
TREATMENT ALONG PERMANENT ROADS			
Subdivision No. Or Road Junctions Road No. (From To)	**Width Of Required Disposal Strip**	**Specified Method**	**Slash Larger Than Treatment Size, Requirements Of Specified Method**
N/A			

See Table B

TABLE-B		
R3 K-G.7# - SLASH TREATMENT		
LANDING, DISPOSAL SITES AND OTHER SLASH		
Site	**Cutting Unit No.**	**Specified Method**
Landings	ALL	Machine Pile (Mpile)

See Table C

TABLE-C			
R3 K-G.7# - SLASH TREATMENT			
CONTRACTOR UNIT SLASH RESPONSIBILITY			
Description Of Cutting Unit	**Type Of Treatment**	**Acres**	**Remarks**
ALL	Fell	2,193	Fell Damaged Stems

ALL	Mpile/Lop	2,193	Lop and scatter to 2' mat where Mpile is not feasible Machine piles will be lined with a fuel break at least 8 feet wide clear of all material >1 inch. At least 24 inches of this line (closest to pile) will be made to bare mineral soil. Any down woody debris within two tree lengths from machine piles shall be placed in the pile or moved to an area at least two tree lengths away from piles in areas agree to by Contractor and Government.

F.9.3. EROSION CONTROL

Where other erosion control measures described in G.23 will not result in satisfactory control of soil movement, CONTRACTOR will seed areas of exposed soil on skid trails, landings, firebreaks, and Temporary Roads. Seed bed preparation shall consist of surface scarification on roads and landings sufficient for retention of seed

Where applicable, seed shall be broadcast evenly at the rate of 10 pounds of seed per acre. Application shall be during the period April 15th – November 30th unless otherwise approved. No application work shall be done during extremely windy or rainy weather, or when the ground is frozen or otherwise unsuitable.

The kinds and amounts of seed to be sown in terms of live pure seed shall be:

TABLE C: EROSION CONTROL SEEDING	
Species of Seed*	**Lbs. per Acre**
Arizona Fescue *Festuca arizonica*	4.00
Western Wheatgrass *Elymus smithii*	2.00
Bottlebrush Squirreltail *Elymus elimoides*	4.00
Total	**10.00**

*Seed mix must be state certified weed free live seed and free of all Penstemon Spp.

F.9.4. MEASURING

Common Species Name	Species Code	Model/Equation
Ponderosa pine	VPP,BPP,NPP,PP	Flewelling Profile Model (4) (5)
Southwestern White Pine	VWP,BWP,NWP,WP	Flewelling Profile Model (4) (5)
Douglas fir	VDF,BDF,NDF,DF	Flewelling Profile Model (4) (5)
White fir	VWF,BWF,NWF,WF	Flewelling Profile Model (4) (5)

Corkbark fir	VCF,BCF,NCF,CF	Flewelling Profile Model (4) (5)
Spruce,	VES,BES,NES,ES,	Hann and Bare Equation (3)
Aspen	VAS,BAS,NAS,AS	Hann and Bare Equation (3)
Juniper, Pinyon Pine, Oaks	JA,JO,JX,PN,PE,PX,OK	Hann and Bare Equation (2)

Volume estimators used for quantity estimates in A2 are listed below. Volume for trees added pursuant to B2.1 and B2.3, or other authorization hereunder, will be derived from the same volume estimators or from volume tables based on these estimators.

(1) The Eager Mill Study is not available as a published document.

(2) Hann, David W, and B. Bruce Bare. 1978, Comprehensive tree volume equations for major species of New Mexico and Arizona: I Results and Methodology.USDA Forest Service Research Paper INT-209.

(3) As a result of the FY87 DF validation project, reduce Douglas-fir Scibner volume for the APS, COC, COR, GIL, LIN, PRE, and TON Forests by multiplying the gross merchantable volume by 0.932.

(4) Flewelling, James W. and Lawrence M. Raynes. 1993. Variable-shape stem profile predictions for western hemlock. Part I: Predictions from DBH and total height. & Part II: Predictions form DBH, total height, and upper stem measurements. Can. J. For. Res.
Vol. 23. 1993. Attachment 1. R3 Ponderosa Pine Flewlling Profile Model volume Equation Validation and Biomass Study

(5) Flewelling, James W. and Lawrence M. Raynes. 1993. Variable-shape stem profile predictions for western hemlock. Part I: Predictions from DBH and total height. & Part II: Predictions form DBH, total height, and upper stem measurements. Can. J. For. Res.
Vol. 23. 1993. Attachment 2. R3 Santa Fe National Forest Biomass Study and Volume Validation.

Weight / Biomass Equations

(For All Forest)				
Species	Equation	Weight Factor	Moisture Content	Percent Removed(1)
PP	01	66.5	126.82	95 - Defect
WP	01	53.5	107.1	95- Defect
DF	01	60.5	84.35	95- Defect
WF	01	64.8	137.35	95- Defect
CF	01	64.8	137.35	95- Defect
ES	01	64.8	137.35	95- Defect
AS	01	64.8	137.35	95- Defect
JA/JO/JX	01	55.0	37	95- Defect
PN,PE,PX	01	55.0	37	95- Defect
OK	01	77.20	75	95- Defect

(1) The use of 95% minus the defect associated with the species In the cruise (R301 or VSM1 Report to get the Avg. Defect).

F.9.5. PROTECTION MEASURES NEEDED FOR PLANTS, ANIMALS, CULTURAL RESOURCES, AND CAVE RESOURCES

1. Areas, known by U.S. Forest Service prior to implementation, needing special measures for the protection of plants, animals, cultural resources, and/or cave resources are shown on the PAM and/or identified on the ground, and shall be treated as follows:

a. Unless agreed otherwise, wheeled or track laying equipment shall not be operated in areas identified as needing protection except on roads, landings, tractor roads, or skid trails. CONTRACTOR may be required to back blade skid trails and other ground disturbed CONTRACTOR's Operations within such areas in lieu of cross ditching.

b. Unless agreed otherwise, trees will not be felled into areas identified as needing protection.

c. CONTRACTOR shall conduct Operations in a manner that does not damage or disturb identified areas. If protective measures identified by the U.S. Forest Service are for any reason inadequate, Contracting Officer may delay or interrupt CONTRACTOR's Operations, under this agreement, and/or modify this agreement.

d. CONTRACTOR shall immediately notify the U.S. Forest Service if its Operations disturb or damage any area identified as needing protection and shall immediately halt its Operations in the vicinity of such area until the U.S. Forest Service authorizes continued Operations. If CONTRACTOR's Operations disturb or damage an area identified as needing protection, then CONTRACTOR shall reimburse the U.S. Forest Service for the full cost and expense of any evaluative and remedial measures undertaken by the U.S. Forest Service in connection with such disturbance or damage. Such payment shall not relieve CONTRACTOR from civil or criminal liability under applicable law.

2. Nothing contained in this clause shall establish or be deemed to establish any express or implied warranty on the part of the U.S. Forest Service that the U.S. Forest Service has identified all areas within the Project Area requiring protection, or that measures prescribed by the U.S. Forest Service for protection of such areas are adequate.

3. Following contract solicitation, additional areas needing special measures for protection may be discovered or identified; protective measures may be revised or newly prescribed; and, additional species of plants and/or animals may be added to federal lists of protected species. In such event, Contracting Officer may delay or interrupt CONTRACTOR's Operations, under this agreement, and/or modify this agreement.

4. Discovery, by either CONTRACTOR personnel or the U.S. Forest Service, of additional areas, resources, species, or members of species needing protection shall be promptly reported to the other party.

F.9.6. PROTECTION OF LAND SURVEY MONUMENTS

CONTRACTOR shall protect all known survey monuments, witness corners, reference monuments, and bearing trees against avoidable destruction, obliteration, or damage during Operations. If any known monuments, corners, or accessories are destroyed, obliterated, or damaged by Operations, CONTRACTOR shall hire the appropriate county surveyor or a registered land surveyor to reestablish or restore at the same location the monuments, corners, or accessories at no additional cost to the Government. Such surveyors shall use procedures in accordance with the Bureau of Land Management "Manual of Instructions for the Survey of the Public Lands of the United States" for General Land Office surveys and in accordance with State law for others. CONTRACTOR shall record such survey in appropriate county records.

F.10. ROADS.

CONTRACTOR is authorized to construct and maintain roads, bridges, and other transportation facilities, as needed for conducting treatments on National Forest and other lands where Forest Service has such authority. As used in this Supplemental Project Agreement, "construct" includes "reconstruct."

F.10.1. SPECIFIED ROADS

No specified road construction or reconstruction associated with this SPA.

F.10.2. USE OF ROADS BY CONTRACTOR

CONTRACTOR's use of existing roads identified on the PAM by the following codes is prohibited or subject to restrictive limitations, unless agreed to otherwise:

Code	Use Limitations
X	Hauling prohibited
R	Hauling restricted
U	Unsuitable for hauling prior to completion of agreed reconstruction
P	Use prohibited
A	Public use restriction
W	Regulation waiver

Roads coded A will be signed by the U.S. Forest Service to inform the public of use restrictions. CONTRACTOR's use of roads coded R, A, or W shall be in accordance with the following restrictions unless otherwise approved:

TABLE E: RESTRICTED ROADS LIST

ROAD NUMBER	ROAD NAME	TERMINI		MAP	DESCRIPTION OF RESTRICTIONS
		FROM	TO	LEGEND	
128B, 9477, 9478X, 9478Y, 9487T, Temps Rds		See PAM	See PAM	R	No hauling in Mexican Spotted Owl (MSO) habitat between March 1st and August 31st
9481Q, 9486R, Temps Rds		See PAM	See PAM	R	No Hauling in Northern Goshawk PFA between March 1 – August 31st
9487T, Temps Rds		See PAM	See PAM	R	No Hauling for Peregrine Falcon nest: March 1-August 15; within ¼ mile of PEFA nest.

F.10.3. ROAD MAINTENANCE REQUIREMENTS

CONTRACTOR shall maintain roads in accordance with the following Road Maintenance Requirements:

ROAD MAINTENANCE REQUIREMENTS SUMMARY

F.11. SCALING INSTRUCTIONS AND SPECIFICATIONS.

Name and Date of Governing Instructions:	Marshall SPA Appendix G, G.34 through G.45, all applicable Weighing Services Agreements with weighing locations used for Marshall SPA, Marshall SPA Appendix B, B.45. Governing instructions for products contained in F.2.

F.11.1. SCALING SERVICE,
Unknown at this time. To be determined and finalized at a pre-work conference, adjusted as needed, identified on Weight Scale Information form and adjustments made to form as needed.

F.11.2. TITLE PASSAGE

SCALED
All right, title, and interest in and to any included timber shall remain with the U.S. Forest Service until it has been cut, scaled, and removed from the Stewardship Project Area or other authorized cutting area, and paid for, at which time title shall then vest with CONTRACTOR. Timber cut under cash deposit or acceptable payment guarantee shall be considered to have been paid for. Title to any included timber that has been cut, scaled and paid for, but not removed from the Stewardship Project Area or other authorized cutting area by CONTRACTOR on or prior to the termination date, shall remain with the NFF.

F.12. - ADVANCE DEPOSITS
CONTRACTOR agrees to make advanced deposits in advance of cutting. These deposits may be in the form of cash, acceptable payment bond, or any combination thereof. Advanced deposits will be in such amounts as to maintain an unobligated balance sufficient enough to cover the value of timber to be cut in the next 60 days. Forest Service, NFF, and CONTRACTOR will agree on a systematic approach to provide sufficient advanced deposits.

If the credit balance in the IRSA is less than the amount due for timber, the NFF and/or Forest Service will suspend all or any part of CONTRACTOR's operations until payment or acceptable payment guarantee is received.

F.13. LIABILITY

LIABILITY FOR LOSS.
If Included Timber is destroyed or damaged by an unexpected event that significantly changes the nature of Included Timber, such as fire, wind, flood, insects, disease, or similar cause, the party holding title shall bear the timber value loss resulting from such destruction or damage; except that such losses after removal of timber from the Stewardship Project Area, but before scaling, shall be borne by CONTRACTOR at current SPA Rates and Required Deposits. Deterioration or loss of value of salvage timber is not an unexpected event.

In the event Included Timber to which Forest Service holds title is destroyed, CONTRACTOR will not be obligated to remove and pay for such timber. In the event Included Timber to which Forest Service holds title is damaged, the Forest Service shall make an appraisal to determine for each species the difference between the appraised unit value of Included Timber immediately prior to the value loss and the appraised unit value of timber after the loss. Current SPA Rates in effect at the time of the value loss shall be adjusted by differences to become the redetermined rates. There shall be no obligation for the Forest Service or NFFSca to supply, or for CONTRACTOR to accept and

pay for, other timber in lieu of that destroyed or damaged. This Subsection shall not be construed to relieve either party of liability for negligence.

Limited Liability for Operations Fires.

Maximum Amount of CONTRACTOR's Obligation per Operation's Fire. Entry should be determined as follows and rounded up to the nearest $100. The minimum amount will be $1,000.00. If State statute or law defines limited liability, use that determination (e.g. Oregon), otherwise calculate the amount using the following formula:

[(1) x (2) + (3) x (4)] x (5) = Maximum Amount of Cooperator's Obligation per Operations Fire. Round up to the next $100.

(1) Equals the number of workers normally required to operate the size of proposed project.

_____4_____ Workers

(2) Equals the daily (12 hour) wage rate for semi-skilled (AD-1) firefighter.

$_____21___/Hr. x 12 hours = $_____252_____

(3) Equals the number of pieces of equipment normally required to operate the size of proposed project that can effectively cut and clear fire lines.

____2_____ Pieces of equipment

(4) Average daily rate for each piece of equipment, including cost of operator, from current local engineering cost guide.

$____225____/Hr. x 12 hours = $_____2700_____/12hr.

(5) Equals the number of days normally required to control and mop up such fires to a point where control lines can reasonably be expected to hold under foreseeable conditions. Minimum is one day and maximum is 10.

_____4_____days

Cooperator's Obligation per Operations Fire, Maximum Amount: $ 25,632

APPENDIX G
GUIDELINES FOR OPERATIONS
Marshall Hazardous Fuels Reduction Project

The following Guidelines for Operations apply to activities under this SPA, when relevant to the project. These guidelines are intended to clarify the expectations of the parties related to these specific areas of operations.

G.1. STEWARDSHIP PROJECT AREA MAP (PAM)

This is the boundary of the Stewardship Project Area as shown in Appendix C and designated on the ground by the Forest Service to meet the anticipated needs of the parties. The following are identified on the Map:

a) Boundaries of all harvest and stewardship treatment units.
b) Areas where leave trees are marked to be left uncut.
c) Specified roads.
d) Sources of base course, surface rock, and rock riprap listed in the Schedule of Items: **N/A**
e) Roads where log hauling or use is prohibited or restricted.
f) Roads and trails to be kept open.
g) Improvements to be protected.
h) Locations of known wildlife or plant habitat and cave resources to be protected.
i) Locations of areas known to be infested with specific invasive species of concern.
j) Skidding methods.
k) Streamcourses to be protected.
l) Locations of meadows requiring protection.
m) Locations of wetlands requiring protection.
n) Locations of temporary roads to be kept open.
o) Payment units, if required

G.2. USE OF ROADS BY THE PARTNER

CONTRACTOR is authorized to use existing National Forest system roads and specified roads. The Parties will determine that such use will not cause damage to the roads or National Forest resources.

G.3. PLAN OF OPERATIONS FOR ROADS

Annually, prior to start of operations, CONTRACTOR will prepare a supplement to the Technical Proposal that shall include a schedule of proposed maintenance and construction progress and a description of planned measures to be taken to provide erosion control for work in progress, including special measures to be taken on any segments of construction not substantially completed prior to periods of seasonal precipitation or runoff. CONTRACTOR shall submit a revised schedule when they propose a significant deviation from the progress schedule. Prior to beginning construction on any portion of specified roads identified as sensitive on plans, the parties shall agree on the proposed method of construction and maintenance.

G.4. PROTECTION OF RESIDUAL TREES

CONTRACTOR's operations shall not unnecessarily damage young growth or other trees to be reserved.

G.5. SAFETY

CONTRACTOR's operations shall facilitate the Forest Service's safe and practical inspection of CONTRACTOR's operations and conduct of other official duties on the Stewardship Project Area. CONTRACTOR has all responsibility for compliance with safety requirements for CONTRACTOR's employees.

When operations are in progress adjacent or on Forest Service controlled roads and trails open to public travel, CONTRACTOR shall furnish, install, and maintain all temporary traffic controls that provide the user with adequate warming of hazardous or potentially hazardous conditions associated with operations occurring in the area. The parties shall agree to a specific traffic control plan prior to commencement of work. Devices shall be appropriate to current conditions and shall be covered or removed when not needed.

During periods of general recreation activity within Stewardship Project Area or vicinity, the Forest Service may restrict road construction, timber cutting, yarding, and other harvesting operations to days other than Saturdays, Sundays, and holidays.

G. 5.1. LOGGING AND MAINTENANCE OPERATIONS SIGNING STANDARDS

All signs must be manufactured & installed as specified in the FHWA "**Manual on Uniform Traffic Control Devices**" (MUTCD) & FS publication "**Standards for Forest Service Signs & Posters**"(EM 7100-15).

G.5.2. SIGN STANDARDS

SHAPE & COLOR: Generally, signs for logging and maintenance operations are either diamond- shaped or rectangular. All signs are ***reflective orange background with black legend and border*** unless shown otherwise. Handpainted, homemade signs are not legal. Fluorescent paint is not reflectorized.

SUBSTRATE: Sign substrate material may be High Density Overlay (HDO) Plywood, Aluminum, Fiberglass Reinforced Plastic, Corrugated Plastic or Roll-up Fabrics.

SIGN SIZE: Sign size is a factor of speed and MUTCD & FS standards. Where conditions of speed, volume, or special hazard require greater visibility or emphasis, larger signs should be used. Minimum sizes for the most common signs can be found in MUTCD. Refer to the EM-7100-15 for additional sign sizes.

LEGEND: All lettering shall be Series "C" alphabet, conforming to Standard Alphabets for Highway Signs. Letter size is also a function of speed - use letter size and word messages as specified in MUTCD and EM-7100-15.

SIGN PLACEMENT

Signs are to be installed in locations as agreed to in the traffic control plan. All signs are to be removed, covered, or folded when operations are not in progress or the sign message is not applicable. Signs should generally be located on the right-hand side of the roadway. When special emphasis is needed, signs may be placed on both the left and right sides of the road. Sign message shall be clearly visible to road users, mounted on posts or portable sign stands.

LATERAL CLEARANCE

From the edge of the road - 2 foot minimum, where slope limits to less than 6 feet. 6-12 foot preferred.

HEIGHT

Minimum of 7 feet, measured from the bottom of the sign to the near edge of the travelway. The height to the bottom of a supplemental sign mounted below the primary sign will be 6 feet.

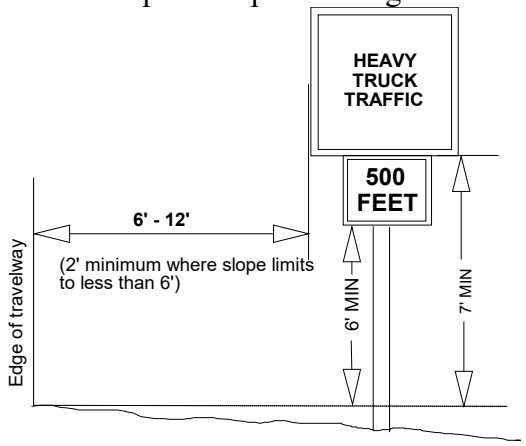


Figure 1: Sign Placement Dimensions

PLACEMENT DISTANCE

Signs must be located 100-500 feet prior to the activity, (both ends if a through road) and maintained at that distance. This distance is based on speed. Refer to Figure 2 , Table II-1, MUTCD, a portion of which is reproduced here, to determine correct placement distance.

Posted or 85 percentile speed MPH	Decelaration to listed advisory speed MPH				
	10	**20**	**30**	**40**	**50**
20	NA				
25	100				
30	150	100			
35	200	175			
40	275	250	175		
45	350	300	250		
50	425	400	325	225	
55	500	475	400	300	
60	575	550	500	400	300
65	650	625	575	500	375

Figure 2: A Portion of MUTCD TABLE II-1

SIGN SUPPORTS

POSTS: Signs are to be mounted on separate posts. Supplemental signs such as Speed Advisory plates are to be mounted on the same post as the primary sign. ***Do not mount signs on trees or other signs.*** Posts may be wood, metal, carsonite or similar material. Where sign supports cannot be sufficiently offset from the road edge, supports will meet breakaway standards. Single wood posts with less than 24 square inches do not require breakaway design.

TEMPORARY/PORTABLE SUPPORTS: Portable supports may be used for short-term, short-duration, and mobile conditions. MUTCD defines this time period as one work shift, 12 hours or

less. All portable supports must meet MUTCD standards, including breakaway. These must be a minimum of 1 foot above the road surface or more if visibility requires it.

SIGN SUPPORTS

POSTS: Signs are to be mounted on separate posts. Supplemental signs such as Speed Advisory plates are to be mounted on the same post as the primary sign. ***Do not mount signs on trees or other signs.*** Posts may be wood, metal, carsonite or similar material. Where sign supports cannot be sufficiently offset from the road edge, supports will meet breakaway standards. Single wood posts with less than 24 square inches do not require breakaway design.

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Portable supports may be used for short-term, short-duration, and mobile conditions. MUTCD defines this time period as one work shift, 12 hours or less. All portable supports must meet MUTCD standards, including breakaway. These must be a minimum of 1 foot above the road surface or more if visibility requires it.

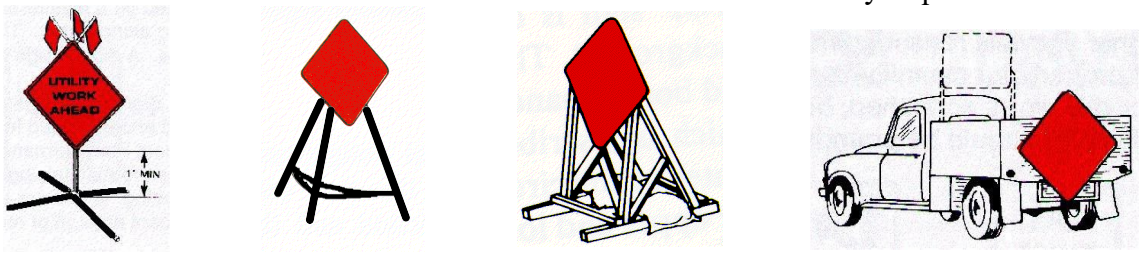

Figure 9: Examples of Temporary/Portable Supports

G.5.3. SIGNS

The following signs meet the intent of the Safety standard. ***This is not a complete listing of signs that may be needed.***

FG20-1-48*

FG20-2-48

FG20-3-42*

FG20-3a-42

FW22-3-30

FW20-1-30*

W21-3-30*

FW21-4a-30

FW11-7-24
W22-1-36*

FW8-6-24 FW11-9a-24 W20-7aP-24* W7-3a-24* W13-1-18**

Figure 10: Signs *** Specify Distance** **** Specify Speed**

BM-L-O BM-R-O

Figure 11: Barricade Markers (See MUTCD for length and stripe size)

G.6. SAFETY (TIMBER HAULING.

CONTRACTOR shall secure all products transported by truck with at least two chain or cable wrappers over the load, such wrappers being securely fastened to effectively contain every bolt or log in at least two places.

G.7. ACCIDENT AND INJURY NOTIFICATION

CONTRACTOR shall notify Forest Service of any lost time personal injury accident or any accident or vandalism resulting in personal property damage over $400 in value that occurs as a result of or is associated with CONTRACTOR's Operations.

CONTRACTOR shall notify Forest Service within 8 hours of any personal injury accident. For vandalism and personal property accidents, CONTRACTOR shall notify Forest Service at the same time notification is given to the state and local law enforcement authorities.

CONTRACTOR shall take all reasonable measures after an accident or vandalism event to preserve the scene of the incident and provide information to facilitate a Forest Service investigation.

G.8. SANITATION AND SERVICING

CONTRACTOR shall take all reasonable precautions to prevent pollution of air, soil, and water by CONTRACTOR's operations. Precautions shall include if facilities for employees are established on the Stewardship Project Area, they shall be operated in a sanitary manner. The parties shall agree to the cleanup and restoration of a polluted site. CONTRACTOR shall maintain all equipment operating on Stewardship Project Area in good repair and free of abnormal leakage of lubricants, fuel, coolants, and

hydraulic fluid. CONTRACTOR shall not service tractors, trucks, or other equipment on National Forest lands where servicing is likely to result in pollution to soil or water. CONTRACTOR shall furnish oil-absorbing mats for use under all stationary equipment or equipment being serviced to prevent leaking or spilled petroleum-based products from contaminating soil and water resources. CONTRACTOR shall remove from National Forest lands all contaminated soil, vegetation, debris, vehicle oil filters (drained of free-flowing oil), batteries, oily rags, and waste oil resulting from use, servicing, repair, or abandonment of equipment.

G.9. PREVENTION OF OIL SPILLS

If CONTRACTOR maintain(s) storage facilities for oil or oil products on the Stewardship Project Area, CONTRACTOR shall take appropriate preventive measures to ensure that any spill of such oil or oil products does not enter any stream or other waters of the United States or any of the individual States. If the total oil or oil products storage exceeds 1,320 gallons in containers of 55 gallons or greater, CONTRACTOR shall prepare a Spill Prevention Control and Countermeasures Plan. Such plan shall meet applicable EPA requirements (40 CFR 112), including certification by a registered professional engineer. CONTRACTOR shall notify the Forest Service and appropriate agencies of all reportable (40 CFR 110) spills of oil or oil products on or in the vicinity of the Stewardship Project Area that are caused by CONTRACTOR's employees, agents, contractors or their employees or agents, directly or indirectly, as a result of CONTRACTOR's operations. CONTRACTOR will take whatever initial action may be safely accomplished to contain all spills.

G.10. HAZARDOUS SUBSTANCES

CONTRACTOR shall notify the National Response Center and Forest Service principal contact of all releases of reportable quantities of hazardous substances on or in the vicinity of the Stewardship Project Area that are caused by CONTRACTOR's employees, agents, contractors or their employees or agents, directly or indirectly, as a result of CONTRACTOR's operations, in accordance with 40 CFR 302.

G.11. WASHING EQUIPMENT

In order to prevent the spread of noxious weeds into the Stewardship Project Area, CONTRACTOR shall be required to clean all off-road logging and construction equipment **prior** to entry on to the Stewardship Project Area. This cleaning shall remove all soil, plant parts, seeds, vegetative matter, or other debris that could contain or hold seeds. Only logging and construction equipment so cleaned and inspected by the CONTRACTOR will be allowed to operate within the Stewardship Project Area. All subsequent move-ins of equipment to the Stewardship Project Area shall be treated in the same manner as the initial move in. "Off-road equipment" includes all logging and construction machinery, except for log trucks, chip vans, service vehicles, water trucks, pickup trucks, cars, and similar vehicles.

CONTRACTOR shall employ whatever cleaning methods are necessary to ensure that off-road equipment is free of noxious weeds. Equipment shall be considered free of soil, seed, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools is not

required.

As agreed upon, CONTRACTOR shall inspect equipment at cleaning location, and provide documentation of inspection to the Forest Service.

New infestations of noxious weeds, of concern to Forest Service and identified by either CONTRACTOR or Forest Service, on the Stewardship Project Area or on the haul route, shall be promptly reported to the other party. CONTRACTOR and Forest Service shall agree on treatment methods to reduce or stop the spread of noxious weeds when new infestations are found. A current list of noxious weeds of concern to Forest Service is available at each Forest Service office.

G.12. CONDUCT OF LOGGING

Unless otherwise specifically provided herein, CONTRACTOR shall fell trees designated for cutting and shall remove the portions that meet Utilization Standards, prior to acceptance of work for completion of logging and stewardship projects. Forest Service may make exceptions for occasional trees inadvertently not cut or trees or pieces not removed for good reason, including possible damage to forest resources or gross economic impracticability at the time of removal of other timber.

G.13. FELLING AND BUCKING

Felling shall be done to minimize breakage of included timber and damage to residual timber. Unless agreed otherwise, felling shall be done by saws or shears. Bucking shall be done to permit removal of all minimum pieces. CONTRACTOR may buck out cull material when necessary to produce pieces meeting utilization standards. Such bucked out material shall contain a minimum amount of sound wood, not in excess of the net scale in percentage of gross scale, or based on the merchantability factor. If necessary to assess extent of defect, CONTRACTOR shall make sample saw cuts or wedges.

G.14. FELLING IN CLEARINGS

Insofar as ground conditions, tree lean, and shape of clearings permit, trees shall be felled so that their tops do not extend outside clearcutting units, construction clearings, and areas of regeneration cutting.

G.15. STUMP HEIGHTS

Stumps shall not exceed, on the side adjacent to the highest ground, the maximum heights set forth in F.4. except that occasional stumps of greater heights are acceptable when CONTRACTOR determine(s) that they are necessary for safe and efficient conduct of logging. Unless otherwise agreed, CONTRACTOR shall re- cut high stumps so they will not exceed heights specified in F.4. and shall dispose of severed portions in the same manner as other logging debris. The stump heights shown in F.4. were selected with the objective of maximum reasonable utilization of the timber, unless the Map shows special areas where stump heights are lower for aesthetic, land treatment, or silvicultural reasons.

G.16. BUCKING LENGTHS

Trees shall be bucked in various lengths to obtain the greatest utilization of material

meeting utilization standards.

G.17. LIMBING
CONTRACTOR shall cut exposed limbs from products prior to skidding, as necessary to minimize damage to the residual stand during skidding. CONTRACTOR may leave uncut those limbs that cannot be cut with reasonable safety.

G.18. SKIDDING AND YARDING
Methods of skidding or yarding specified for particular areas, if any, are indicated on the Map. Outside units and construction clearings, insofar as ground conditions permit, products shall not be skidded against reserve trees or groups of reproduction and tractors shall be equipped with a winch to facilitate skidding.

G.19. RIGGING
N/A.

G.20. LANDINGS AND SKID TRAILS
Location of all landings, tractor roads, and skid trails shall be agreed upon prior to their construction. The cleared or excavated size of landings shall not exceed that needed for efficient skidding and loading operations.

G.21. ARCHES AND DOZER BLADES
Skidding tractors equipped with pull-type arches or dozer blades wider than tractor width or C- frame width, whichever is greater, shall not be used in residual timber outside clearcutting units and other authorized clearings, except on constructed tractor roads or landings, unless there is written agreement that residual timber will not be damaged materially by such use.

G.22. PROTECTION OF STREAMCOURSES
CONTRACTOR's Operations shall be conducted to prevent debris from entering streamcourses, except as may be authorized under paragraph (d). In event CONTRACTOR causes debris to enter streamcourses in amounts that may adversely affect the natural flow of the stream, water quality, or fishery resource, CONTRACTOR shall remove such debris as soon as practicable, but not to exceed 2 days, and in an agreed manner that will cause the least disturbance to streamcourses.

a) Culverts or bridges shall be required on Temporary Roads at all points where it is necessary to cross Streamcourses. Such facilities shall be of sufficient size and design and installed in a manner to provide unobstructed flow of water and to minimize damage to streamcourses. Trees or products shall not be otherwise hauled or yarded across streamcourses unless fully suspended.
b) Wheeled or track-laying equipment shall not be operated in streamcourses, except at crossings agreed to by CONTRACTOR and the Forest Service or as essential to construction or removal of culverts and bridges.
c) Flow in streamcourses may be temporarily diverted only if such diversion is

necessary for CONTRACTOR's planned construction and Forest Service gives written authorization. Such flow shall be restored to the natural course as soon as practicable and, in any event, prior to a major storm runoff period or runoff season.

G.23. EROSION PREVENTION AND CONTROL

CONTRACTOR's operations shall be conducted reasonably to minimize soil erosion. Equipment shall not be operated when ground conditions are such that excessive damage will result. CONTRACTOR shall adjust the kinds and intensity of erosion control work done, to ground conditions and weather conditions and the need for controlling runoff. Erosion control work shall be kept current immediately preceding expected seasonal periods of precipitation or runoff.

Prior to periods of accelerated water runoff, especially during the spring runoff and periods of heavy rainfall, CONTRACTOR shall inspect and open culverts and drainage structures, construct special cross ditches for road runoff, and take other reasonable measures needed to prevent soil erosion and siltation of streams.

Unless otherwise agreed in writing, CONTRACTOR shall complete erosion prevention and control work, including streamcourse protection, within 15 calendar days after completion of skidding and/or yarding operations for each landing.

Designation of on the ground work shall be done as promptly as feasible unless it is agreed that the location of such work can be established without marking on the ground.

When operations are active, erosion control work will be kept current and will be completed as soon as practicable.

G.24. PROTECTION OF IMPROVEMENTS

So far as practicable, CONTRACTOR shall protect specified roads and other improvements (such as roads, trails, telephone lines, ditches, and fences):

a) Existing in the operating area,
b) Determined to have a continuing need or use, and
c) Designated on the PAM.

CONTRACTOR shall keep roads and trails needed for fire protection or other purposes and designated on the Map reasonably free of equipment and products, slash, and debris resulting from CONTRACTOR's operations. CONTRACTOR shall make timely restoration of any such improvements damaged by CONTRACTOR's operations and, when necessary because of such operations, shall move such improvements.

G.25. MEADOW PROTECTION

Reasonable care shall be taken to avoid damage to the cover, soil, and water in meadows shown on the Map. Vehicular or skidding equipment shall not be used on meadows, except where roads, landings, and tractor roads are approved. Unless

otherwise agreed, trees felled into meadows shall be removed by endlining. Resulting logging slash shall be removed where necessary to protect cover, soil, and water.

G.26. WETLANDS PROTECTION

Wetlands requiring protection under Executive Order 11990 are shown on the Map. Vehicular or skidding equipment shall not be used in such wetlands, except where roads, landings, and tractor roads are approved.

G.27. TEMPORARY ROADS

As necessary to attain stabilization of roadbed and fill slopes of temporary roads, CONTRACTOR shall employ such measures as outsloping, drainage dips, and water-spreading ditches. After a temporary road has served CONTRACTOR's purpose, CONTRACTOR shall give notice to the Forest Service and shall remove bridges and culverts, eliminate ditches, outslope roadbed, remove ruts and berms, effectively block the road to normal vehicular traffic where feasible under existing terrain conditions, and build cross ditches and water bars, as staked or otherwise agreed to. When bridges and culverts are removed, associated fills shall also be removed to the extent necessary to permit normal maximum flow of water.

G.28. TEMPORARY ROADS TO REMAIN OPEN

All bridges and culverts shall remain in place and ditches shall not be eliminated on Temporary Roads, shown as "Remained Open" on the PAM. All drainage structures shall be left in functional condition.

G.29. LANDINGS

After landings have served CONTRACTOR's purpose, CONTRACTOR shall ditch and slope them to permit water to drain or spread. Unless agreed to otherwise, cut and fill banks around landings shall be sloped to remove overhangs and otherwise minimize erosion.

G.30. SKID TRAILS AND FIRE LINES

CONTRACTOR shall construct cross ditches and water-spreading ditches on tractor roads and skid trails, where needed to prevent erosion. By agreement, CONTRACTOR may use other comparable erosion control measures, such as backblading skid trails, in lieu of cross ditching.

G.31. CURRENT OPERATING AREAS

Where logging, road construction, or other stewardship project work is in progress but not completed, unless agreed to otherwise, CONTRACTOR shall, before operations cease annually, remove all temporary log culverts and construct temporary cross drains, drainage ditches, dips, berms, culverts, or other facilities needed to control erosion. Such protection shall be provided, for all disturbed, unprotected ground that is not to be disturbed further prior to end of operations each year, including roads and associated fills, tractor roads, skid trails, and fire lines. When weather permits operations, CONTRACTOR shall keep such work on any additional disturbed areas as up to date

as practicable.

G.32. EROSION CONTROL STRUCTURE MAINTENANCE

During the period of this SPA, CONTRACTOR shall provide maintenance of soil erosion control structures constructed by CONTRACTOR until they become stabilized, but not for more than one year after their construction.

G.33. SLASH DISPOSAL

CONTRACTOR's timing of product removal and preparatory work shall not unnecessarily delay slash disposal. Specific slash disposal measures to be employed by CONTRACTOR are stated in E.5.

G.34. SCALING

Scaling includes:

a) Various volume determination methods, such as log rule, sampling, measuring, linear measuring, counting, weighing, or another method or combination of methods;
b) Various sites, such as truck Scaling stations, rollways, weighing stations, woods landings, water Scaling stations, or other sites.
c) Various geographic locations.

G.35. SCALING SERVICES

Scaling services shall be performed by Forest Service personnel or parties under contract to Forest Service, except that weighing services may be performed by personnel or parties approved by the Forest Service. Scaling shall be provided in accordance with the instructions and specifications in Appendix F. Scalers shall be currently certified to perform accurate Scaling services. The scaling services provided shall be selected exclusively by the Forest Service. Scaling services may be continuous, intermittent, or extended.

a) Continuous scaling services is scaling at one site five (5) 8-hour shifts a week, exclusive of Sundays and Federal holidays.
b) Intermittent scaling services are non-continuous scaling services.
c) Extended scaling services are scaling services exceeding continuous scaling services and may include Sundays and designated Federal holidays.

As mutually agreed to by the parties, the Forest Service may provide other services, such as but not limited to grading, tagging, or marking of Scaled logs.

G.36. SCALING LOCATION

The Forest Service shall provide scaling services at the scaling site(s) shown in F.11. The Scaling site(s) shown in F.11. normally will be a non-exclusive site where more than one National Forest contract/agreement may be served. CONTRACTOR may request, in writing, an alternate scaling site, such as at a private mill yard, private truck ramp, or a privately operated log transfer facility. The NFF and Forest Service may approve an alternate scaling site, when the Forest Service determines that scaling conditions at an alternate site are acceptable. Such conditions shall include at a minimum:

a) Scaler safety and comfort,
b) Product accountability and security,
c) Facilities and practices conducive to accurate and independent Scaling, and
d) The ability to provide for remote check Scaling.

Upon approval of an alternate scaling site, the Forest Service, NFF, and CONTRACTOR shall enter into a written memorandum of agreement governing Scaling at that alternate location. CONTRACTOR agrees that Forest Service personnel or persons under contract with the Forest Service shall perform scaling services at an alternative scaling site. In no instance shall CONTRACTOR perform scaling services.

G.37. SCALING ADJUSTMENTS

The Forest Service shall check the accuracy of the scaling performed on National Forest logs. Scaling will be satisfactory if performed within the accuracy standards in governing instructions identified in F.11. In the event the Forest Service check scale(s) shows a variance in net scale in excess of the allowable variance, an adjustment to volume reported scaled may be made by the Forest Service. Such adjustment will be based on the difference between Forest Service check Scale(s) and original Scale for SPA volume Scaled within the adjustment period. The volume to which this difference will be applied will be:

a) One-half of the volume Scaled between the last satisfactory check Scale and the first unsatisfactory check Scale or, if a period of 120 days or more occurs without Scaling National Forest timber for stumpage, the adjustment will be applied to 100 percent of the volume Scaled after this period and
b) 100 percent of the volume Scaled between unsatisfactory check Scales and
c) One-half of the volume Scaled between the last unsatisfactory check Scale and the next satisfactory check Scale, or if no satisfactory check Scale is completed and a period of 120 days or more occurs without Scaling of National Forest timber for stumpage, the adjustment will be applied to 100 percent of the volume Scaled since the last unsatisfactory check Scale.

Adjustments may increase or decrease the original Scaled volume. Adjustments will be applied to Integrated Resource Account to correct charges for Included Timber, plus deposits, Scaled during the adjustment period.

G.38. WEIGHING SERVICES

Weighing services for stumpage payment purposes may be provided by either public or privately owned and operated weighing facilities. A "Weighing Services Agreement," approved by the Forest Supervisor, must be executed at each weighing facility providing weighing services.

Scales used to weigh National Forest products for payment purposes must be a currently certified scale in accordance with State law and be capable of weighing the entire load of logs in a single operation. The weighing of less than the entire load or weighing two loads at once is prohibited. Unless otherwise agreed, the minimum sized

weighing facility shall be a 60-ton capacity scale with a 10 foot by 70 foot platform or larger. The weighmaster must work in a position where it is possible to verify that the truck wheels are on or off the scales.Weighing facilities shall meet the following minimum requirements:

a) Be an electronic design,
b) Use electronic load cells or have a fully enclosed and sealed weigh-beam,
c) Have digital weight meters sealed with a seal approved by the State,
d) Have a zero interlocking device on the printer,
e) Have an automatic zero-setting mechanism,
f) Have an automatic motion-detecting device,
g) Be shielded against radio or electromagnetic interference, and
h) Have a date and time stamp and gross and tare weights that print electronically with each weighing. The Forest Service may waive electronic printing for public or third party weighing facilities. CONTRACTOR shall bear all charges or fees for weighing services.

G.39. PRESENTATION FOR SCALING

CONTRACTOR shall present products so that they may be Scaled in an economical and safe manner.

G.40. ACCOUNTABILITY

When Scaling is performed away from Stewardship Project Area, products shall be accounted for in accordance with Forest Service written instructions, as follows:

a) CONTRACTOR shall plainly mark or otherwise identify products prior to hauling;
b) Forest Service shall issue removal receipts to CONTRACTOR;
c) CONTRACTOR shall assign a competent individual at the landing to complete removal receipts and attach them to each load of products removed from Stewardship Project Area;
d) Removal receipts shall be returned to Forest Service at periodic intervals;
e) When products are in transit, the truck driver shall possess or display removal receipt and show it upon request as evidence of authority to move products;
f) The scaler's portion of removal receipt shall be surrendered at point of Scaling, the unloading point, or as requested by Forest Service; and
g) CONTRACTOR shall notify Forest Service of lost or off-loaded logs and their location within 12 hours of such loss. CONTRACTOR shall not place products in storage for deferred Scaling until an accountability system has been agreed to in writing for a stated period.

G.41. ROUTE OF HAUL

As part of the annual Operating Schedule, CONTRACTOR shall furnish a map showing the route of haul over which unscaled products will be transported from the Stewardship Project Area to the approved Scaling location. Such route of haul shall be the shortest, most economical haul route available between the points.

Upon advance written agreement, other routes may be approved. All unscaled products

removed from Stewardship Project Area shall be transported over the designated routes of haul. CONTRACTOR shall notify Forest Service when a load of products, after leaving Stewardship Project Area, will be delayed for more than 12 hours in reaching Scaling location.

CONTRACTOR shall require truck drivers to stop, if requested by Forest Service, for the following reasons:

a) For accountability checks when products are in transit from Stewardship Project Area to the designated Scaling location or
b) For a remote check Scale when products are in transit after being truck Scaled at the designated Scaling location.

CONTRACTOR and Forest Service shall agree to locations for accountability checks and remote check Scales in advance of haul. Such locations shall be established only in areas where it is safe to stop trucks. The Forest Service shall notify CONTRACTOR of the methods to be used to alert truck drivers of an impending stop.

G.42. PRODUCT IDENTIFICATION

Before removal from the Stewardship Project Area, unless the Forest Service determines that circumstances warrant a written waiver or adjustment, CONTRACTOR shall:

a) Hammer brand all products that are eight (8) feet or more in length and one-third (1/3) or more sound, on each end that is seven (7) inches or more in diameter.
b) West of the 100th meridian, paint with a spot of highway-yellow paint all domestic processing products that are eight (8) feet or more in length and one-third (1/3) or more sound, on each end that is seven (7) inches or more in diameter. Each paint spot must be not less than three (3) square inches in size.

The Forest Service shall assign brands and, if the Stewardship Project Area is within a State that maintains a log brand register, brands shall be registered with the State. CONTRACTOR shall use assigned brand exclusively on logs under this SPA until Forest Service releases brand. CONTRACTOR will furnish and apply highway-yellow paint of a lasting quality (oil-base or equivalent).

All hammer brands and/or highway-yellow paint must remain on logs until they are domestically processed. CONTRACTOR shall replace identifying marks if they are lost, removed, or become unreadable. CONTRACTOR may remanufacture products into different log lengths. Except for logs remanufactured as part of the mill infeed process immediately before processing, remanufactured products must be rebranded with the assigned SPA brand and repainted with highway-yellow paint, unless otherwise agreed to in writing by the Forest Service Representative. For such remanufactured products, Forest Service may approve use of a brand to be used exclusively as a catch brand, in lieu of the assigned SPA brand.

G.43. SCALING LOST PRODUCTS

The volume of lost products shall be determined by the best methods currently

available, using data from the records for the period in which the loss occurred or the most applicable period if loss should occur substantially after cutting. In the absence of specific information indicating size or species of lost products, species distribution and volume for entire truckloads shall be assumed to be the same as the average volume Scaled per truck during the report period, and for individual products it shall be assumed that the volume and species were the average volume of the highest priced species Scaled during the report period.

G.44. SCALING LOST SAMPLE LOADS

If Scaling is being done by sampling loads of logs, CONTRACTOR shall present such sample loads for Scaling by Forest Service. If loads of logs selected to be sample Scaled are placed in the decks before they are Scaled, they will be considered as lost sample loads. It will be difficult, if not impossible, to determine the volume and species contained in such loads for payment purposes. Therefore, lost sample loads will be deemed to have a Scale volume and species composition equal to that of the highest value load Scaled during the sampling period, as established by Forest Service. If no sample loads were Scaled during the period, the Scale data for the high valued load will be taken from the most current preceding sampling period with Scale. Sample loads lost as a result of Forest Service actions shall be treated as non-Scaled loads.

G.45. SCALE REPORTS

The Forest Service shall provide CONTRACTOR a copy of Forest Service scaler's record, if requested in writing.

G.46. FIRE PRECAUTIONS AND CONTROL

a) **Plans.** Prior to initiating CONTRACTOR's operations during Fire Precautionary Period, CONTRACTOR shall file with Forest Service a Fire Prevention and Control Plan providing for the prevention and control of fires on the Stewardship Project Area and other areas of CONTRACTOR's Operations. Such plan shall include a detailed list of personnel and equipment at CONTRACTOR disposal for implementing the plan. This requirement may be met by preparing a single plan for more than one SPA.

b) **Fire Precautions.** Specific fire precautionary measures listed in this Appendix shall be applicable during CONTRACTOR's Operations in "Fire Precautionary Period" described. The dates of Fire Precautionary Period may be changed by agreement, if justified by unusual weather or other conditions. Required tools and equipment shall be kept in serviceable condition and immediately available for fire fighting at all times during CONTRACTOR's operations in Fire Precautionary Period.

c) **Substitute Precautions.** The Forest Service may authorize substitute measures or equipment, or waive specific requirements by written notice, if substitute measures or equipment will afford equal protection or some of the required measures and equipment are unnecessary.

d) **Emergency Precautions.** The Forest Service may require the necessary shutting down of equipment on portions of CONTRACTOR's Operations, as specified by the emergency fire precautions schedule. Under such conditions, after CONTRACTOR cease(s) active operations, CONTRACTOR shall release for hire by Forest Service, if needed, CONTRACTOR's shutdown equipment for fire standby on the Stewardship Project Area or other areas of CONTRACTOR's Operations and personnel for fire standby or fire patrol, when such personnel and equipment are not needed by CONTRACTOR for other fire fighting or protection from fire. Equipment shall be paid for at fire fighting equipment rates common in the area or at prior agreed rates and, if CONTRACTOR request(s), shall be operated only by personnel approved by the CONTRACTOR. Personnel so hired shall be subject to direction and control by Forest Service and shall be paid by Forest Service at fire fighting rates common in the area or at prior agreed rates.

e) **Fire Precautionary Period and Fire Precautions.** Specific fire precautionary measures are set forth below. Upon request of Forest Service, CONTRACTOR shall permit and provide an individual to assist in periodic testing and inspection of required fire equipment. CONTRACTOR shall promptly remedy deficiencies found through such inspecting and testing.

1. The following requirements shall apply during the period of 4/15 – 11/30 and during other such periods as specified by Forest Service.

Industrial Fire plan

Contractor will restrict operations in accordance with the following Emergency Fire Precaution Schedule. When there is a predicted change, Forest Service shall inform the Contractor by 6:00 pm, Mountain Standard Time (7:00 pm MDT), of the predicted change in the Industrial Fire Precaution Plan. The procedure for the Forest Service to notify the Contractor of a change shall be stated in the contract fire plan. The Contracting Officer may, after consultation with the Forest Supervisor, adjust the predicted Industrial Fire Precaution Plan for local weather conditions on Sale Area. Changes in the predicted Industrial Fire Precaution Plan shall be agreed to in writing.

EMERGENCY FIRE PRECAUTION SCHEDULE	
FIRE RESTRICTION/CLOSURE "STAGE"	
"STAGED" RESTRICTION LEVELS	INDUSTRIAL FIRE RECAUTION PLAN
NO RESTRICTIONS	A
STAGE I	B
STAGE II	C
STAGE III (PARTIAL FOREST CLOSURE) **	C or D

STAGE IV (TOTAL FOREST CLOSURE)	D
RED FLAG WARNING (Issued by National Weather Service)	D

**** Partial Forest Closure:** Contract areas which are outside the boundaries of the partial forest closure may continue to operate under Industrial Fire Precaution Plan "C" operating criteria as agreed upon between the CO and Contractor in writing. Contract areas within the boundaries of the proclaimed partial forest closure area are to operate under Industrial Fire Precaution Plan "D". Staged restriction levels are determined by the Line Officer in conjunction with Fire Management Officer(s) and Contracting Officer(s). The process is a mix of quantitative and subjective measures which allows Line Officers a broad level of discretion considering local conditions and issues when deciding to implement fire restrictions and/or area closures.

Industrial Fire Precaution Plan – Description

A - Normal Fire Precautions: No fire guard required.
B - Normal Fire Precautions except designated areas for smoking and warming or cooking fires require a written permit. Contractor will provide fire guard.
C - All power saws and mechanical fellers except for mechanical fellers equipped with hydraulic shears will shut down from 9:00 am until 8:00 pm Mountain Standard Time (10:00 am to 9:00 pm MDT), except chainsaws may be used from 9:00 am until 2:00 pm Mountain Standard Time (10:00 am to 3:00 pm MDT), for limbing on landings cleared to mineral soil. Loading is authorized to continue from 12:00 noon until 2:00 pm, Mountain Standard Time (1:00 pm to 3:00 pm MDT), on landings cleared to mineral soil. Product removal vehicles must be out of the Sale Area to a surfaced road by 2:00 pm, Mountain Standard Time (3:00 pm MDT). Shutdown from 12:00 noon until 8:00 pm Mountain Standard Time (1:00 pm to 9:00 pm MDT); all machine treatment of slash; mechanical equipment used for shearing, bunching, or delimbing; skidding; cable yarding; blasting; welding; metal cutting; and clearing. Operations on mineral soil involving road excavation, watering, grading, surfacing, rock crushing, and/or other equipment maintenance may continue. No smoking, warming or cooking fires are permitted at any time. Contractor will provide fire guard.
D - Shutdown all operations; except operations on mineral soil involving road excavation, watering, grading, gravel surfacing, and rock crushing may continue with special Forest Service permit. Contractor will provide fire guard.

Fire Precautions and Control

Contractor shall provide the personnel, tools and equipment to take the following precautionary measures:

Smoking and Lunch Fire Restrictions: Contractor shall prohibit smoking and building of camp and lunch fires by persons engaged in Contractor's operations, except at established camps or in areas that Forest Service may designate. Smoking may be permitted at these designated areas only after all flammable material has been cleared to mineral soil. All fires and smoking materials shall be completely extinguished at end of lunch or smoking period.

Fire Tools: Contractor shall furnish and maintain; i.e., cutting edges sharp, handles sanded and tightly fitted, clean of rust and foreign material; fires tools to be used only for suppressing forest fires. Each logging operation shall be provided with one firefighting tool per man to equip 100 percent of the personnel engaged in Contractor's operations. Approved firefighting tools are: double-bit axe; brushhook; pulaski; McLeod; and round-pointed, size 0 or larger lady shovel. The proper tool mix will be stipulated in the contract Fire Plan. These tools are required separate from, and in addition to, the tools required in the section, "Fire Tools on Equipment," and for Fire Guards. Fire tools for firefighting purposes for use of personnel engaged in all phases of the logging operations shall be located in the active operating area of the sale or as stated in the fire plan.

Burning of Refuse: No camp refuse of slash or other debris, such as that resulting from clearing around camps or on right-of-way, shall be burned without the written consent of the Forest Service.

Spark Arresters and Mufflers: Each internal combustion engine shall be equipped with a spark arrester qualified and rated under USDA Forest Service Standard (Spark Arrester Guide) 5100-1a or the latest revision of Society of Automotive Engineers "medium size engine, SAE recommended practice J350" unless it is:
(a) Equipped with a turbine-driven exhaust supercharger such as the turbocharger. There shall be no exhaust bypass.
(b) A multi-position engine, such as on power saws purchased after 6/30/77 which must meet the performance levels set forth in the Society of Automotive Engineers "multi-positioned small engine exhaust fire ignition standard, SAE recommended practice J335B" as now or hereafter amended. Those purchased prior to the above date shall be equipped with an approved spark arrester/muffler containing a 0.023 inch mesh screen in good condition.
(c) A passenger carrying vehicle or light truck, or medium truck up to 40,000 GVW, used on roads and equipped with a factory designed muffler and an exhaust system in good working condition.
(d) A heavy duty truck, such as a dump or log truck, or other vehicle used for commercial hauling, used only on roads and equipped with a factory designed muffler and with a vertical stack exhaust system extending above the cab.

Exhaust equipment described in this Subsection, including spark arresters and mufflers, shall be properly installed and constantly maintained in serviceable condition.

Powersaws: During periods of use, each powersaw operator shall have readily available for use one long-handled round-pointed shovel and one chemical-pressurized fire extinguisher of not less than 8-ounce capacity by weight. Muffler, extinguisher, and shovel shall be maintained in good working order at all times. Any fueling or refueling of a powersaw shall be done in an area which has been cleared of material which will carry fire. Powersaws shall be moved at least 10 feet from the place of fueling or refueling before starting.

Fire Tools on Equipment: Each internal combustion fuel carrying truck, loader, skidder, heavy truck, and tractor shall be provided with one long-handled round-pointed shovel, and one 5-pound capacity ABC dry chemical fire extinguisher. Passenger carrying vehicles, including light pickup trucks shall be equipped with one (1) long-handled round-pointed shovel and one (1) ABC chemical fire extinguisher not less than 2 1/2 pounds capacity. Shovels and fire extinguishers shall be so mounted as to be readily reached from the ground.

Inspection Requirements for Internal-Combustion Engines: Each internal-Combustion motor vehicle or item of equipment shall be inspected and approved in advance of use by Forest Service. Contractor shall require that all persons engaged in Contractor's operations submit all internal-combustion motors and equipment for inspection and approval prior to use in Contractor's operations on National Forest lands. Vehicles and equipment not approved for use shall be repaired to meet existing standards, reinspected, and approved by Forest Service prior to use.

Blasting: Use of fuses in blasting shall not be permitted. A long-handled round-pointed shovel and 5-gallon backpack pump with attached handpump filled with water shall be available at all times. During periods when Fire Precaution Plan B or C is in effect, a fire guard shall remain on duty for at least one hour after blasting is finished and shall be equipped with a shovel and backpack. Blasting is prohibited under Fire Precaution Plan D.

Tractor Lights: All crawler tractors and rubber-tired skidders suitable for fire suppression work, and with power source, shall be equipped with two (2) factory type headlights and one (1) backup light, or brackets mounted for portable self-contained battery operated lights. These portable lights shall be furnished and maintained by the Contractor at a location agreed by the Forest Service.

Cable Yarding: Tail and corner blocks shall be located to prevent cables from rubbing against trees, snags, and down logs. Areas adjacent to tail and corner blocks shall be cleared of flammable material within a 5-foot radius. One 5-gallon standard backpack water container (filled at all times and with handpump attached), one shovel, and one pulaski, shall be maintained within 10 feet of each block.

Gas and Oil Storage and Service Areas: The location of equipment service areas and gas and oil storage areas shall be approved in writing by Contracting Officer. All areas shall be cleared of brush, litter, grass or other flammable debris for a radius of 50 feet.

Welding: An area within a 10 foot radius shall be cleared down to mineral soil before welding operations are started. Prior to welding, Contractor shall have available a round-pointed long-handled shovel, a 5-gallon backpack pump filled with water with attached hand pump, and a 5-pound fire extinguisher at each welding site. A fire guard will remain on duty for at least one (1) hour after welding is completed during periods when Fire Precaution Plan B or C is in effect. Welding is prohibited under Fire Precaution Plan D.

Fire Guards: Contractor shall designate at least one representative to train and supervise each woods-working group of men in fire prevention, detection, and suppression. Each such representative shall be named in the fire plan. To prevent, detect, and suppress fire, Contractor shall provide a trained fire guard at each operating area where power-driven equipment has been operated during the day. The fire guards shall constantly perform their duties during operating hours and for three (3) hours after the woodswork stops for the day, when the Fire Precaution Plan is Plan B, C, or D. Fire guard service on one operating area shall satisfy the requirements on adjacent areas if the travel time with available transportation is not in excess of ten (10) minutes to any of the other areas requiring such service. Each fire guard shall be physically able, vigilant, and trained to prevent, detect, and report any fires and to promptly and efficiently take suppression

action with available required firefighting equipment and men on any fire that starts on project area. Each fire guard shall be equipped with a vehicle and a fire tool cache consisting of a cache box, 2 four-to-five gallon backpack pumps filled with water, 2 size 0 shovels, 2 Pulaskis, and 2 McLeod tools maintained in serviceable condition.

RED FLAG EVENTS

A "Red Flag Event" by definition, is a combination of environmental factors that can lead to extreme wildland fire behavior. The criteria for a Red Flag Event include a combination of sustained high winds, low relative humidity, and dry fuels. The thresholds for Red Flag Events are established by the local National Weather Service office. Red Flag Events are categorized in the following order:

- FIRE WEATHER WATCH is issued to alert the possibility of the development of conditions that would lead to a Red Flag Alert.
- RED FLAG WARNING is issued to warn of a predicted, impending or ongoing event that will meet the criteria of a Red Flag Alert within the next 24 hour period. This warning will generally precede a full alert.
- RED FLAG ALERT is the most critical stage and implemented when conditions are extreme

When a Red Flag Alert is issued by the National Weather Service, all authorized user operations will adhere to Industrial Fire Precaution Plan "**D**"

G.47. FIRE CONTROL

CONTRACTOR shall, both independently and in cooperation with Forest Service, take all reasonable and practicable action to prevent and suppress fires resulting from CONTRACTOR's Operations and to suppress any forest fire on Stewardship Project Area. CONTRACTOR's independent initial fire suppression action on such fires shall be immediate and shall include the use of all necessary personnel and equipment at CONTRACTOR's disposal on Stewardship Project Area or within the distance of Stewardship Project Area: ***10 miles*.**

- **CONTRACTOR's Reinforcement Obligations.** Whenever an Operations Fire or Negligent Fire, whether on or off Stewardship Project Area or any other forest fire on Stewardship Project Area, has not been suppressed by initial action and appreciable reinforcement strength is required, Forest Service may require further actions by CONTRACTOR until such fire is controlled and mopped up to a point of safety. Such actions may include any or all of the following as necessary to fight such fire:

  a. **Suspend Operations.** To suspend any or all of CONTRACTOR's Operations.
  b. **Personnel.** To release for employment by Forest Service any or all of CONTRACTOR's personnel engaged in CONTRACTOR's Operations or timber processing within the distance of Stewardship Project Area: ***50 miles*.** Any organized crew so hired shall include CONTRACTOR's supervisor, if any. Personnel so employed shall be paid at Forest Service standard emergency fire fighting rates.
  c. **Equipment.** To make available for Forest Service rental at fire fighting

equipment rates common in the area or at prior agreed rates any or all of CONTRACTOR's equipment suitable for fire fighting and currently engaged in CONTRACTOR's Operations within the distance of Stewardship Project Area: ***50 miles***. Equipment shall be operated only by personnel approved by CONTRACTOR, if so requested by CONTRACTOR.

G.48. TEMPORARY ROADS AND SKID TRAILS

CONTRACTOR shall locate Temporary Roads and Skid Trails on locations approved by the Forest Service. Such location shall include the marking of road centerline or grade-line and the setting of such construction stakes as are necessary to provide a suitable basis for economical construction and the protection of National Forest lands.

Temporary road surface width shall be limited to truck bunk width plus four (4) feet, except for needed turnouts which shall not exceed two (2) times the bunk width plus four (4) feet. If shovels or cranes with revolving carriage are used to skid or load, temporary road surface width equal to track width plus tail swing shall be permitted.

As necessary to attain stabilization of roadbed and fill slopes of Temporary Roads, CONTRACTOR shall employ such measures as out sloping, drainage dips, and water-spreading ditches.

Appendix H: Designation by Prescription Cutting Guide

Within Subdivision(s) or cutting unit(s) 1, 2, 3, 4, 5, 6 ,7, 8 ,9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 24, 25, 27, 29, 30, 32, 33, 34, 35, 351, 36, 40, 51, 53, 54, 58, 62, 66, 68, 72, 73, as shown on Contract Area Map, the following criteria shall be used by Contractor to designate trees and other products for cutting and removal.

(a) Specific designation guides are listed below by cutting unit
Cutting units with an * have digital prescription guide available.

Cutting Units 1*, 2*, 4*, 5*, 6*, 7*, 25, 32, 33, 34, 53, 54 (Goshawk PFA)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, regardless of form, health and vigor (see yellow pine/old tree description).
- Cut all ponderosa pine 6-18" DBH within 33' of large oaks >12" DRC and large alligator juniper >24" DRC. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine >6" DBH, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to 1 acre in size, with an average group size of .25 acres. At least one group 1 acre in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet. Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups with some trees arranged in clumps with nearly touching or interlocking crowns.
- Where most of the trees are greater than 12" DBH, basal area (BA) shall range from 50 to 100 ft^2/ac, with an average of 70 ft^2/ac. Where most of the trees are less than 12" DBH, BA shall range from 30 to 70 ft^2/ac with an average of 50 ft^2/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" DBH (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine >6" DBH (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" DBH (avoid groups dominated by 16"+ DBH trees).
  - In areas that contain desirable trees less than 6" DBH which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-2 acres, average opening size is about one acre.

- Openings should have a maximum width of 200 feet.
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).
- All trees within identified Archeological sites will be left.
- Utilize the existing groups of large trees, particularly trees greater than 16" DBH, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.
- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Units 8, 9, 15, 19, 20, 24, 27, 29, 36, 51, 58, 62, 66 (Goshawk Foraging Area)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, regardless of form, health and vigor (see yellow pine/old tree description).
- Cut all ponderosa pine 6-18" DBH within 33' of large oaks >12" DRC and large alligator juniper >24" DRC. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine >6" DBH, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to.7 acres in size, with an average group size of .25 acres. At least one group of .7 acres in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet**.** Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups. Where possible, in each group some trees should be arranged in clumps with nearly touching or interlocking crowns.
- Where most of the trees are greater than 12" DBH, basal area (BA) shall range from 40 to 90 ft^2/ac, with an average of 50 ft^2/ac. Where most of the trees are less than 12" DBH BA shall range from 30 to 60 ft^2/ac, with an average of 40 ft^2/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" DBH (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine >6" DBH (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" DBH (avoid groups dominated by 16"+ DBH trees).
  - In areas that contain desirable trees less than 6" DBH which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-4 acres, average opening size is about one acre.
- Openings should have a maximum width of 200 feet.
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).

- All trees within identified Archeological sites will be left.
- Utilize the existing groups of large trees, particularly trees greater than 16" DBH, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.
- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Units 10, 11, 13, 16, 17, 18, 30, 35, 40, 68, 72, 73, 351 (Goshawk Foraging Area / MSO Restricted with 24" upper diameter limit)

Cutting Guide (in order of priority)

Forested Matrix:

- Leave all Yellow Pines and Gambel oak, and **all other ponderosa pine >24" DBH** regardless of form, health and vigor (see yellow pine/old tree description).
- Cut all ponderosa pine less than 6-18" DBH within 33' of large oaks >12" DRC and large alligator juniper >24" DRC. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Elsewhere in the stand, thin ponderosa pine 6-24" DBH, leaving trees in irregularly shaped groups (see Figure 1).
- Vary group size from 2-40 trees and from .05 to.7 acres in size, with an average group size of .25 acres. At least one group of .7 acres in size will be left for every 10 acres treated.
- Vary spacing between groups from 50 to 80 feet**.** Spacing should be greater between larger groups and less between small groups. Spacing is measured from drip line to drip line.
- Vary spacing of trees within groups. Where possible, in each group some trees should be arranged in clumps with nearly touching or interlocking crowns.
  Where most of the trees are greater than 12" DBH, basal area (BA) shall range from 40 to 90 ft^2/ac, with an average of 50 ft^2/ac. Where most of the trees are less than 12" DBH BA shall range from 30 to 60 ft^2/ac, with an average of 40 ft^2/ac. When calculating BA, include oak and retained juniper.
- Leave mostly desirable and acceptable trees as described in Table 1. When appropriate, non-desirable trees may be left; typical reasons would be to achieve the targeted stocking level, for the creation of a future wildlife tree, to preserve the horizontal continuity or vertical canopy structure of an already well-formed group, and/or where the removal of the tree would cause unacceptable damage to a leave tree. Tree groups may be even-aged or uneven-aged.
- Where available, leave up to two wildlife trees per acre greater than 18" DBH (see Table 1).

Regeneration Openings:

- Create regeneration openings across approximately 15-20% of the cutting unit by cutting all ponderosa pine 6-24" DBH (except Yellow Pines and reserve trees as described below).
- Priorities for opening placements:
  - In areas of dense pole stands dominated by trees from 6-16" DBH (avoid groups dominated by 16"+ DBH trees).
  - In areas that contain desirable trees less than 6" DBH which can be left in the openings as advance regeneration.
  - In areas with little to no new-Mexican locust.
- Openings will vary in shape and size from ½-4 acres, average opening size is about one acre
- Openings should have a maximum width of 200 feet
- One clump of reserve trees, 3 to 5 trees will be left per acre if the opening is greater than an acre in size.

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- Basal Area is assessed at the Group (not the Stand).

- All trees within identified Archeological sites will be left.
- Utilize the existing groups of large trees, particularly trees greater than 16" DBH, to select the initial leave groups and work with them to space out the other groups. This is not a diameter cap, but rather an emphasis on retaining larger trees.
- Utilize existing openings as part of the acreage needed for regeneration openings and for defining tree groups.
- Key in on using squirrel nests to create a clump of trees with interlocking crowns within a group. This means leaving about 3-5 trees that surround the nest tree. It is not a requirement to retain all squirrel nest trees, but it is good practice.
- In groups and areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

Within Aquatic Management Zones (AMZs), favor retention of trees which contribute to stream bank stabilization and trees which are leaning towards the stream.

Cutting Unit 3 (Goshawk Nest Stand / MSO Restricted with 24" upper diameter limit)

Cutting Guide (in order of priority)

Forested Area:

- Leave all Yellow Pines and Gambel oak, and **all other ponderosa pine >24" DBH** regardless of form, health and vigor (see yellow pine/old tree definition).
- Leave all desirable and acceptable ponderosa pine ≥ 18" DBH.
- Cut all ponderosa pine less than 6-18" DBH within 33' of large oaks >12" DRC and large alligator juniper >24" DRC. Leave pine in or near oaks/juniper where removing the pine would cause significant damage to the oak/juniper.
- Thin from below ponderosa pine 6-24" DBH to 65 ft^2/acre (~80 ft^2/acre overall, including oak and juniper), focusing on the removal of intermediate and overtopped trees, followed by non-desirable co-dominant/dominant trees if needed (*see Table 1*). Residual trees should be irregularly spaced.
- In some areas, there may not be enough trees in the dominant/co-dominant size class to reach the targeted stocking level. In this case, leave additional desirable or acceptable trees from smaller size classes to increase stocking.
- Where available, leave up to two wildlife trees per acre greater than 18" DBH (*see Table 1*).

Discussion and other considerations:

- Only live trees will be cut under this prescription.
- All trees within identified Archeological sites will be left.
- In areas infected with mistletoe, focus on leaving the largest and least infected trees. Retain lightly infected dominant or co-dominant trees versus intermediate or suppressed trees that appear to have no infection. Again, refer to Table 1 for description of acceptable versus non-desirable trees infected with mistletoe.

Special Instructions:

None

Yellow Pine/Old Tree Description

Old trees (approximately >150 years old) should be retained, with few exceptions, regardless of their diameter. Removal of old trees would be rare. Exceptions would be made for threats to human health and safety, and those rare circumstances where the removal of an old tree is necessary in order to prevent additional habitat degradation. Old trees should not be cut for forest health issues or to balance age or size class distributions.

One example of a situation where the removal of an old tree is necessary to prevent additional habitat degradation is in the rare case of an old tree growing on the side of an existing curve in a road. Logging equipment may require a wider turning radius. The options are to relocate the road or cut the old tree and widen the curve to accommodate the larger turning radius. Relocating the road would result in a larger area of the forest being permanently disturbed, versus cutting the large tree and widening the curves radius. This is an example where cutting the old tree would result in less habitat degradation then relocating a road.

Old trees would be determined by the following characteristics described by Thomson (1940) as age class 3 (intermediate-mature) and age class 4 (mature-overmature).

Age – Approximately 150 years and older.

DBH – Site dependent.

Bark – ranging from reddish brown, shading to black in the top with moderately large plates between the fissures to reddish brown to yellow, with very wide, long, and smooth plates.

Tops – ranging from pyramidal or rounded (occasionally pointed) to flat (making no further height growth).

Branching – ranging from upturned in upper third of the crown, horizontal in the middle third, and drooping in the lower third of the crown to mostly large, drooping, gnarled, or crooked. Branch whorls range from incomplete and indistinct except at the top to completely indistinct and incomplete.

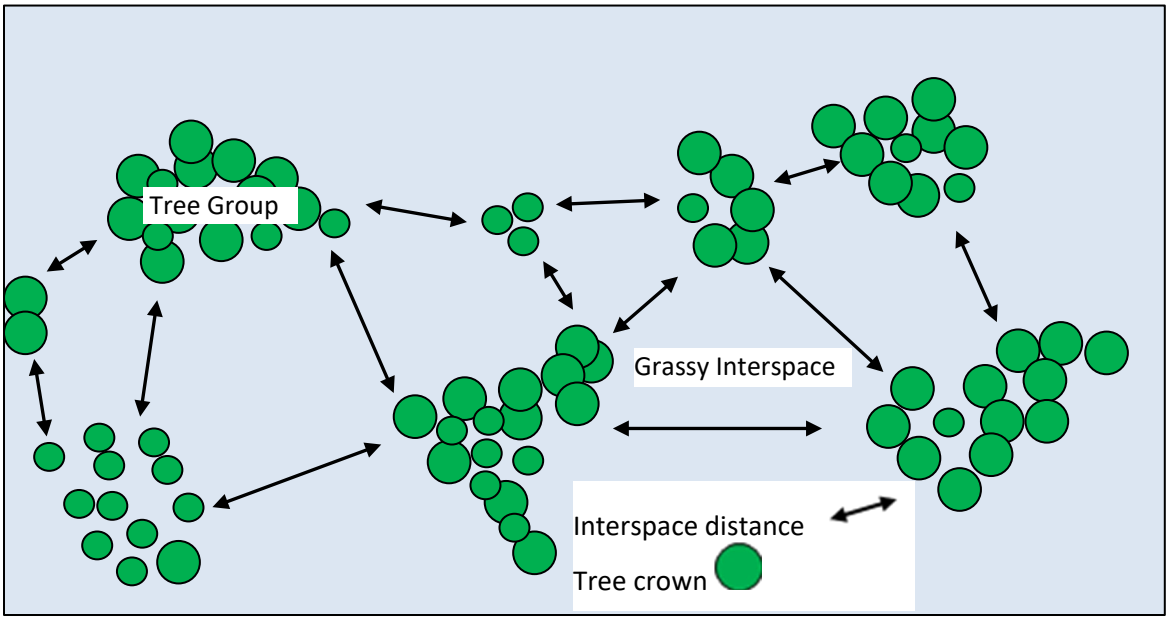

Figure 1. An example of tree groups surrounded by interspaces.

Table 1: Tree Quality Standards

Guidelines for Choosing Leave Trees			
EVALUATION CRITERIA	**DESIRABLE (usually leave)**	**ACCEPTABLE (leave or cut, usually leave when in deficient size classes)**	**NON- DESIRABLE (usually cut)**
LIVE CROWN RATIO	>40% for ponderosa pine	25-40% for ponderosa pine	<25% for ponderosa pine
CROWN CLASS	dominants and co-dominants	co-dominants better intermediates	intermediates and suppressed/over-topped, poor form
INSECTS, ANIMAL, FIRE, MISC. DISEASE (see next row for mistletoe)	NONE	Minor insect or animal defoliation (< 25% live crown ratio). Missing bark of ponderosa pine < 50% of bole circumference. Fire kill of cambium < 50% of bole circumference or the scorch is on the lower 2/3 of the crown.	Any successful bark beetle attacks. Defoliation >25% of live crown. Barking of ponderosa pine >50% of bole circumference. Any significant top killing. Fire kill of cambium >50 % of bole circumference, or the scorch reaches into the upper 1/3 of the crown. Any conks on stem which indicate rot.
HAWKSWORTH DWARF MISTLETOE RATING (DMR)	NONE	Pines 6-9" DBH with a DMR rating of 2 or less Pines 9+" DBH with a DMR rating of 3 or less	Pines <6" DBH with any sign of infection Pines 6-9" DBH with a DMR rating >2 Pines 9+" DBH with a DMR rating from 4-6, unless classified as wildlife trees.
FORM DEFECTS	NONE	MINOR (no significant weakening of the tree anticipated. Minor crooks, sweeps, and tight forks which are <30% of total tree height are acceptable if the tree is dominant or co-dominant and otherwise has good vigor).	MAJOR (weakening of tree or multiple tops)
SOUNDNESS DEFECTS	NONE	NONE	ANY
WILDLIFE TREES	Trees greater than 18" with fading crowns, existing cavities, dead tops, and/or lightning scars for current wildlife benefit and/or future snag recruitment		

(a) Additional trees to be cut, if any, are Marked by Forest Service with 2/ BLUE tracer paint.

(b) Cutting unit boundaries and other trees that shall be left uncut are Marked by Forest Service with 2/ ORANGE tracer paint.

Contractor may select cut trees in cutting units 3/ 1, 2, 3, 4, 5 ,6 ,7, 8 ,9, 10, 11, 13, 15, 16, 17, 18, 19, 20, 24, 25, 27, 29, 30, 32, 33, 34, 35, 351, 36, 40, 51, 53, 54, 58, 62, 66, 68, 72, 73, without pre-harvest marking in accordance with the criteria in (a). If specified in (a) Contractor shall Mark leave trees in cutting units __N/A_____ with Contractor's non-tracer _N/A_____ paint for inspection and approval by Forest Service prior to cutting.

APPENDIX I

Firewood Delivery Locations and Contacts 2024

Community	Contact	Phone	Pin	Notes
First Mesa	Alan Chavez	928-737-9556	https://goo.gl/maps/aCd41MYxUEKA5	Site subject to change – hoping to combine with Sichomovi site
Sichomovi	Fred Adams	928-737-0446		New site – no pin yet
Second Mesa	Shawn Namoki	928-737-2570	https://maps.app.goo.gl/tMWoo9h3wiCyt3y47	New site
Hotevilla	Lillian Gomez	928-514-1373 ; 928-734-0040	https://goo.gl/maps/ZjrZdFqu9hbVfU6Y7	Repeat
Old Oraibi	Derrick Davis	928-255-3534	https://maps.app.goo.gl/1FGCfXS2aF13RFRn9	Repeat
Bacavi	Theresa Siweumptewa	928-497-1663 ; (928) 734-9360	https://maps.app.goo.gl/xKXFqjDuVEenxdbu5	New site / Alt contact Aiden Nachie (928) 714-8022
Koho4Hopi	Matt Honanie	480-236-8122	https://goo.gl/maps/S5CRYFeao11tD99	Repeat / All Kiva logs to be delivered
Pikunivi Wood Haulers	Charlie Lewis	928-450-7565	https://goo.gl/maps/wtgjJMGka5B94VCb9	Repeat
Kykotsmovi	Mark Talayumptewa	928-405-2657 ; 928-734-2474	https://maps.app.goo.gl/U9wkYe6STcinEgvA8	Same location as Koho/Matt's site, but deliveries are considered separate: Delivery site will be inside the fencing North of Matt's site

Moenkopi	TBD	TBD	https://maps.app.goo.gl/xJewXGaT2jfLpnaK7	New site
Yuwehloo Pahki	Jarvis Namoki	928-622-9633	https://maps.app.goo.gl/iFqq4ERuTXrdQ4sc8	New site / Kathryn Honie alt contact 928-814-4200 ypcbustech@hopitelecom.net
Dine Baadeiti	Ames Meyers	928-225-7448	https://goo.gl/maps/FvdgzSwTd36iN5TH6	Repeat
Tolani Lake	Jonathan Yazzie	928-613-8877	https://goo.gl/maps/PE31d5cyQ9PiQH	Repeat / Text Preferred
Leupp Chapter	Randy White	928-233-1293	https://maps.app.goo.gl/irdDcFVY2gYvdTn1A	Repeat / Gate; Use Onsite Contact
Coalmine Chapter	Michelle Billy	928-814-8805 ; 928-283-3341	https://goo.gl/maps/nzCCBBxQeYAWve2Z7	Repeat / Gate; Alt contact Rena Dodson (928) 640-1433
Lechee Chapter	Renee Tsosie	928-698-2802	https://maps.app.goo.gl/ptAn8XYoWkinJFUs8	New site / Secondary contacts: JoAnn Catron 928-698-2805 ; Cassie Scott 928-698-2805
Bodaway/Gap Chapter	Andrea Dawes	928-450-0902	https://maps.app.goo.gl/vFDBdyU32Lw9rpsbA	New site / Chelsea and Aaron will be the secondary contacts at office number 928-283-3493
Nahata Dziil	Patricia Bitsue	505-728-0335 , 928-688-5099	https://maps.app.goo.gl/qSY4etS6quFmcNRa7	New site

Bird Springs	Irene Bahe	928-600-1876	https://goo.gl/maps/NX2hL15BigCTbD1u9?coh=178571&entry=tt	New site
United Natives	Andrew Robarge	703-477-4411	https://goo.gl/maps/NP1Tp5XhR7215dSNA	Repeat / Only drop on the left side of the lot, call 1-2 days in advance before delivering, noon will be best drop off time (in town so very short drive)
Leupp	Monica Harvey	928-637-3223	https://goo.gl/maps/u9q472h1Wa9Edrj88	Turnoff to the right between milepost 7-8 on Navajo Route west of Leupp, Az. Then about 3/4 mile south. Once over the pipeline the road will fork, keep to the right. You'll see a big yellow trailer.
Wide Ruins	Miranda Mullett	508-524-6360	TBD	Will only need a limited amount of cords, how much TBD once site is secured

Potential Sites to be Added:

Community	**Name**	**Phone**	**Pin**	**Notes**
Tuba City	Durann Begay	928-283-3285		
Navajo Nation Department of Health	Dariel Yazzie	928-255-3539		
Cameron	Billie Baldwin	928-266-2578 ; 928-679-2323		
Rough Rock				
Hard Rock				

Nazlini				
Dennehotso				

Appendix J
Flowdown Provisions

NFF Funding Code: 1596021
NFF Funding Name: Mexican Spotted Owl Protected Activity Ctr Thinning Project

Funder Agreement ID: N62473-21-2-0015

CARGO PREFERENCE

The Cooperator agrees that it will comply with the Cargo Preference Act of 1954 (46 U.S.C. 1241), as implemented by Department of Transportation regulations at 46 CFR 381.7, which require that at least 50 percent of equipment, materials or commodities procured or otherwise obtained with U.S. Government funds under this Cooperative agreement, and which may be transported by ocean vessel, shall be transported on privately owned U.S.-flag commercial vessels, if available.

PREFERENCE FOR U. S. FLAG AIR CARRIERS

Travel supported by U.S. Government funds under this Cooperative agreement shall use U.S.-flag air carriers (air carriers holding certificates under 49 U.S.C. 41 I02) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) and the interpretative guidelines issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision BI38942.

Insurance

Each policy of insurance required under this Paragraph shall contain an endorsement reading as follows:

"The insurer waives any right of subrogation against the United States of America which might arise by reason of any payment made under this policy."

EXECUTIVE COMPENSATION AND FIRST-TIER SUBCONTRACT REPORTING

Section 2(d) of the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282), as amended by section 6202 of the Government Funding Transparency Act of 2008 (Pub. L. 110-252), requires the Contractor to report information on subcontract awards. The law requires all reported information be made public, therefore, the Contractor is responsible for notifying its subcontractors that the required information will be made public.

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of award of a fast-tier subcontract with a value of $25,000 or more, (and any modifications to these subcontracts that change previously reported data), the Contractor shall report the following information at http://www.fsrs.gov for each first-tier subcontract:

a. Unique identifier (DUNS Number) for the subcontractor receiving the award and for the subcontractor's parent company, if the subcontractor has one.
b. Name of the subcontractor.
c. Amount of the subcontract award.

d. Date of the subcontract award.
e. A description of the products or services (including construction) being provided under the subcontract, including the overall purpose and expected outcomes or results of the subcontract.
f. Subcontract number (the subcontract number assigned by the Contractor).
g. Subcontractor's physical address including street address, city, state, and country. Also include the nine-digit zip code and congressional district.
h. Subcontractor's primary performance location including street address, city, state, and country. Also include the nine-digit zip code and congressional district.
i. The prime contract number, and order number if applicable.
j. Awarding agency name and code.
k. Funding agency name and code.
    a. Government contracting office code.
l. Treasury account symbol (TAS) as reported in FPDS.
m. The applicable North American Industry Classification System (NAICS) code.

By the end of the month following the month of a contract award, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for the Contractor's preceding completed fiscal year at http://www.ccr.gov, if-

(a) In the Contractor's preceding fiscal year, the Contractor received -

(i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and Cooperative Agreements; and

(ii) $25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and Cooperative Agreements; and

(b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at http://www.sec.gov/answers/execomp.htm).

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of a first-tier subcontract with a value of $25,000 or more, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for each first-tier subcontractor for the subcontractor's preceding completed fiscal year at http://www.fsrs.gov, if

(a) In the Subcontractor's preceding fiscal year, the Subcontractor received -

(i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and Cooperative Agreements; and

(ii) $25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and Cooperative Agreements; and

(b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at http://www.sec.gov/answers/execomp.htm).

If the Contractor in the previous tax year had gross income, from all sources, under $300,000, the Contractor is exempt from the requirement to report subcontractor awards. Likewise, if a subcontractor in the previous tax year had gross income from all sources under $300,000, the Contractor does not need to report awards to that subcontractor.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT, 2 CFR § 200.216

a. Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
   (1) Procure or obtain;
   (2) Extend or renew a contract to procure or obtain; or
   (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law I 15-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
      (i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
      (ii) Telecommunications or video surveillance services provided by such entities or using such equipment.
      (iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
b. In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.
c. See Public Law 115-232, section 889 for additional information.

d. See also §200.471.
https://www.ecfr.gov/current/tit!e-2/subtitle-A/chapter-II/part-200/subpatt-C/section-200.216

Appendix K
Flowdown Provisions

NFF Funding Code: 1596070
NFF Funding Name: SA SPA Coconino NF REPI

Funder Agreement ID: 23-SA-11030400-298

U.S. FOREST SERVICE ACKNOWLEDGED IN PUBLICATIONS, AUDIOVISUALS AND ELECTRONIC MEDIA.

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