



TIMBER NOTICE OF SALE

SALE NAME: MIDDLE MAY

AGREEMENT NO: 30-100161

AUCTION: November 30, 2020 starting at 10:00 a.m., **COUNTY:** Snohomish
Northwest Region Office, Sedro Woolley, WA

SALE LOCATION: Sale located approximately 5 miles northeast of Gold Bar, WA.

**PRODUCTS SOLD
AND SALE AREA:**

All timber bounded by white timber sale boundary tags and property lines, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Unit #1 (collectively labelled 1A and 1B).

All timber bounded by white timber sale boundary tags, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Units #2 and #3.

All timber bounded by orange right of way tags, except that title to the timber within the right of way tags is not conveyed to the Purchaser unless the road segment is actually constructed.

The above described products

All forest products above located on part(s) of Sections 3 and 4 all in Township 27 North, Range 9 East, Sections 33 and 34 all in Township 28 North, Range 9 East, W.M., containing 193 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: PwC-SFIFM-513)

ESTIMATED SALE VOLUMES AND QUALITY:

Species	Avg DBH	Ring Count	Total MBF	Total \$/MBF	MBF by Grade								
					1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	22	8	6,644				78	673		4,309	1,331	229	24
Hemlock	17	8	1,614							958	508	71	77
Red cedar	16		637								499	138	
Maple	16		490							229	90	89	82
Cottonwood	28		126							111		13	2
Red alder	17		66							19	21	16	10
Sale Total			9,577										

MINIMUM BID: \$0/MBF (est. value \$0.00) **BID METHOD:** Sealed Bids

PERFORMANCE SECURITY: \$100,000.00 **SALE TYPE:** MBF Scale

EXPIRATION DATE: March 31, 2024 **ALLOCATION:** Export Restricted

BIDDABLE SPECIES: Douglas fir



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BID DEPOSIT: \$0.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Cable; shovel on sustained slopes 35% or less; a self-leveling self-leveling harvester/feller-buncher on sustained slopes 55% or less; tethered harvester/feller-buncher and/or shovel may be used for falling and pre-bunching only (See H-141 for restrictions); a feller-buncher may be utilized on sustained slopes 35% or less. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

ROADS: 219.97 stations of required construction. 33.80 stations of required reconstruction. 56.04 stations of optional construction. 177.00 stations of required prehaul maintenance. 31.40 stations of abandonment. 56.04 stations of abandonment, if built.
5 Bridge installations. Two 50-foot bridges supplied by the State, see road plan p. 28 (50' by 14' wood deck modular steel bridge on precast footings and 50' by 16' gravel deck modular steel bridge on precast footings). Acquisition of 3 bridges: 15' by 16' precast concrete bridge slab; 60' by 14' modular steel bridge on precast footings with steel tower assembly; 78' by 14' gravel deck modular steel bridge with precast concrete footings. Installation of a gate; gate supplied by the State. Additionally, Purchaser provides 8 contingency culverts.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: MY-0430 (Proposed) at station 156+70 of the MY-04 Road. MY-2100 (Proposed) at station 1+56 of the MY-21 Road.

Development of new rock source(s) will involve clearing, stripping, drilling, shooting, and processing rock to generate riprap, shot rock, and 3-inch-minus ballast rock.

An estimated total quantity of rock needed for this proposal: 1,555 cubic yards of riprap, 1,300 cubic yards of shot rock and 28,560 cubic yards of ballast rock.

In addition, acquisition of 150 cubic yards of 1 1/2-inch-minus crushed surfacing rock from a commercial source.

Additional restrictions apply, see Remarks section below.

Road work and the hauling of rock will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation.

Additional restrictions apply, see Remarks section below.

ACREAGE DETERMINATION

CRUISE METHOD: Acres determined by GPS traverse for the units. Cruise was conducted via variable plot sample type in units and fixed plot in right-of-way. See Cruise Narrative for further details. Shapefiles of units are available upon request after the BNR meeting in which the sale is presented.

FEES: \$162,809.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.



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- SPECIAL REMARKS:**
1. Trees marked with red paint represent the last take tree along property line boundaries.
 2. HQ DF noted within the sale area. See cruise for further details (approximately 1,605 mbf of the above listed DF 2S and 128 mbf of the above listed DF 3S are deemed high quality by the Department).
 3. Poles were noted within the sale area, redcedar poles estimated at 65 mbf and Douglas-fir poles estimated at 350 mbf. No formal cruise was conducted for poles.
 4. The MY-12 Road may not overwinter for more than 1 season and must be abandoned within 60 days of Unit 3 timber removal. See road plan Section 9-21, p.35.
 5. Road work and hauling restriction – closure to prevent damage (e.g. rutting, weather conditions, etc.). See road plan p.7
 6. A portion of road work (MY-ML) is in close proximity to known utilities (BPA).
 7. Road work includes down log in-stream placement in accordance with the RFRS.
 8. Road work associated with bridge installations shall occur between 7/1 and 10/1, see road plan p.6.
 9. Road work associated with the MY-21 (23+63 - 38+63) and the MY-2106 (0+00 – 0+92) shall occur between 6/14- 10/14, unless authorized by the Contract Administrator, to protect WMZ function. See road plan p.6.

TIMBER SALE MAP

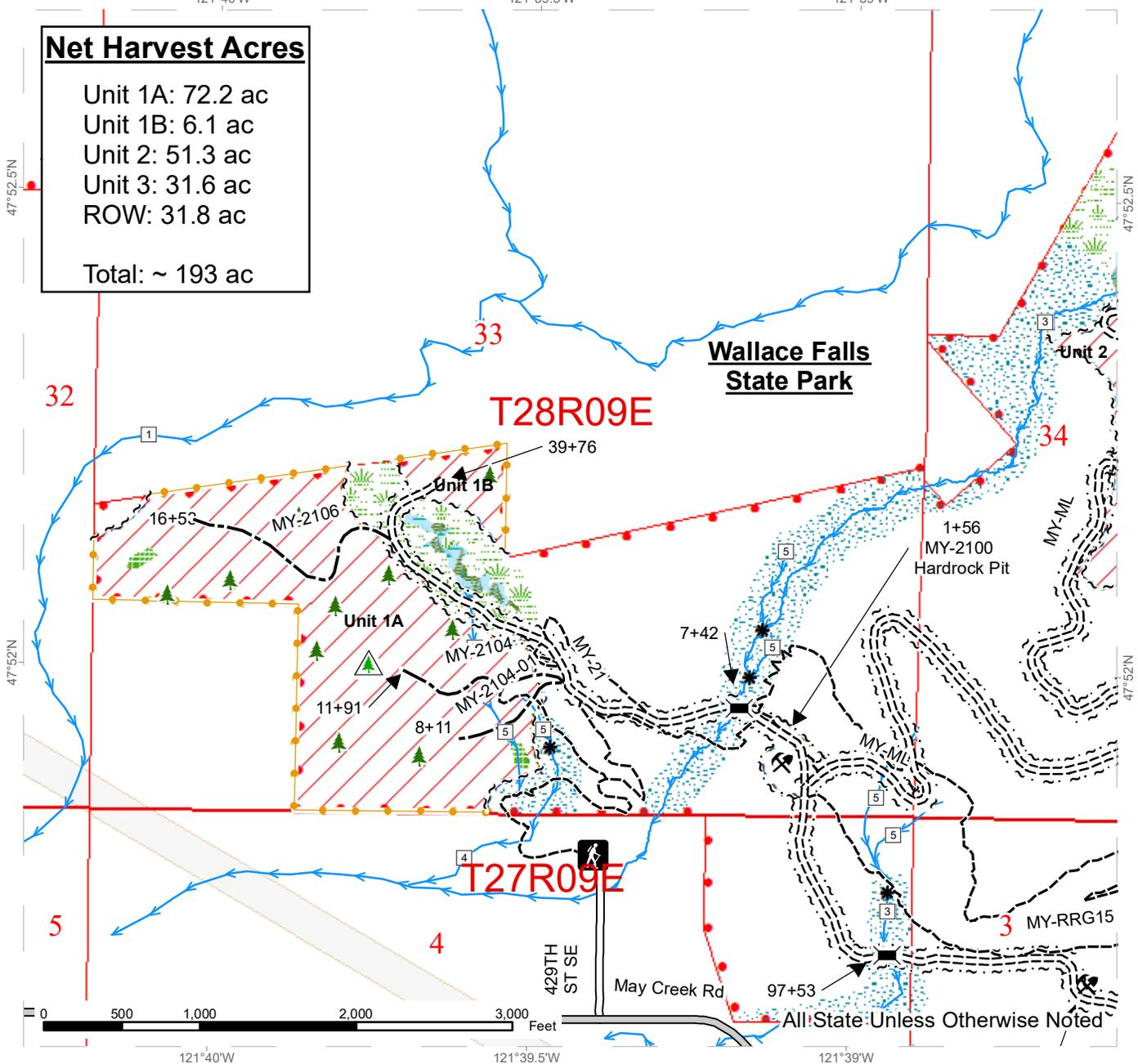
SALE NAME: MIDDLE MAY
AGREEMENT #: 30-100161
TOWNSHIP(S): T27R9E, T28R9E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Snohomish
ELEVATION RGE: 360-1880

Net Harvest Acres

Unit 1A: 72.2 ac
 Unit 1B: 6.1 ac
 Unit 2: 51.3 ac
 Unit 3: 31.6 ac
 ROW: 31.8 ac

 Total: ~ 193 ac



TIMBER SALE MAP

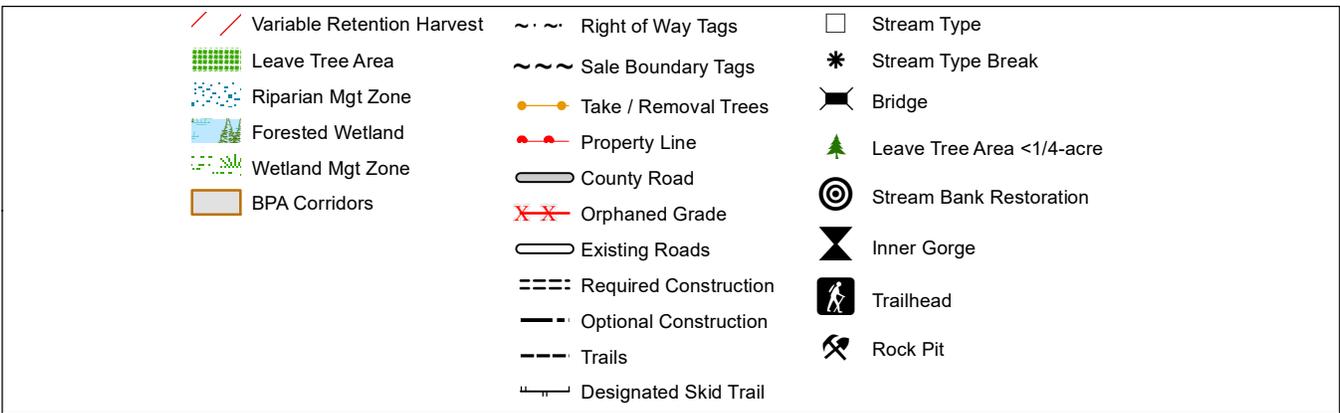
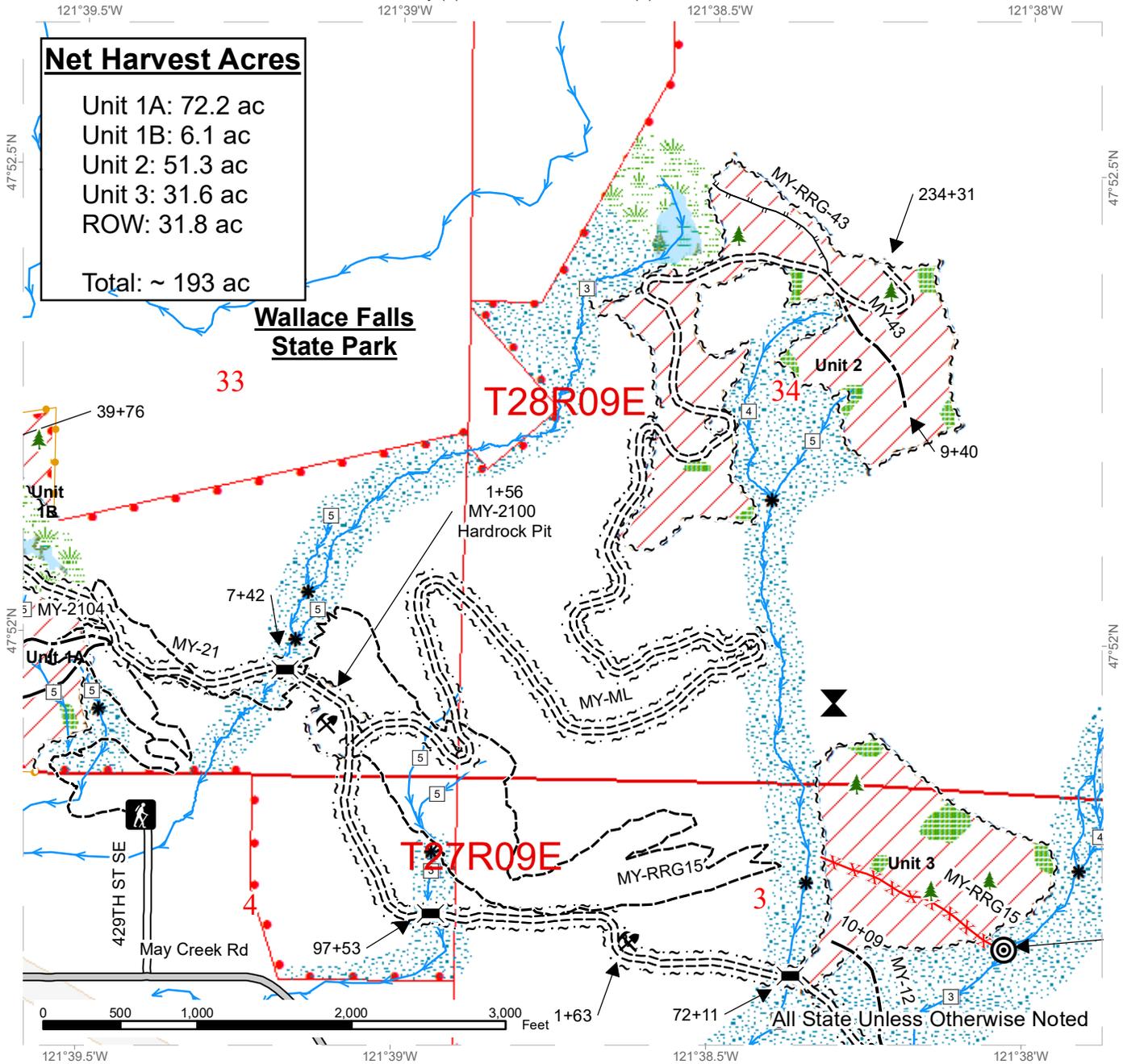
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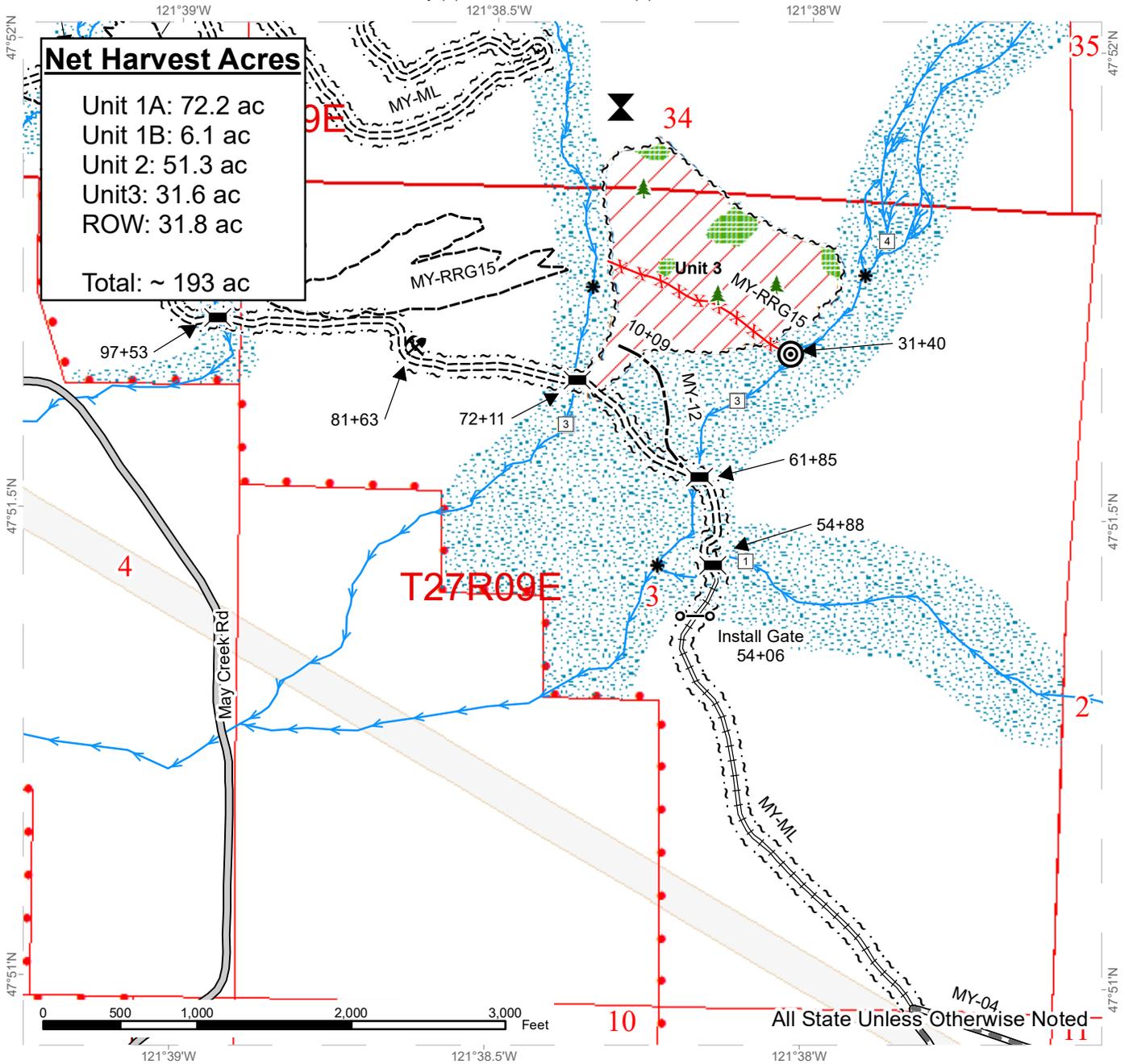
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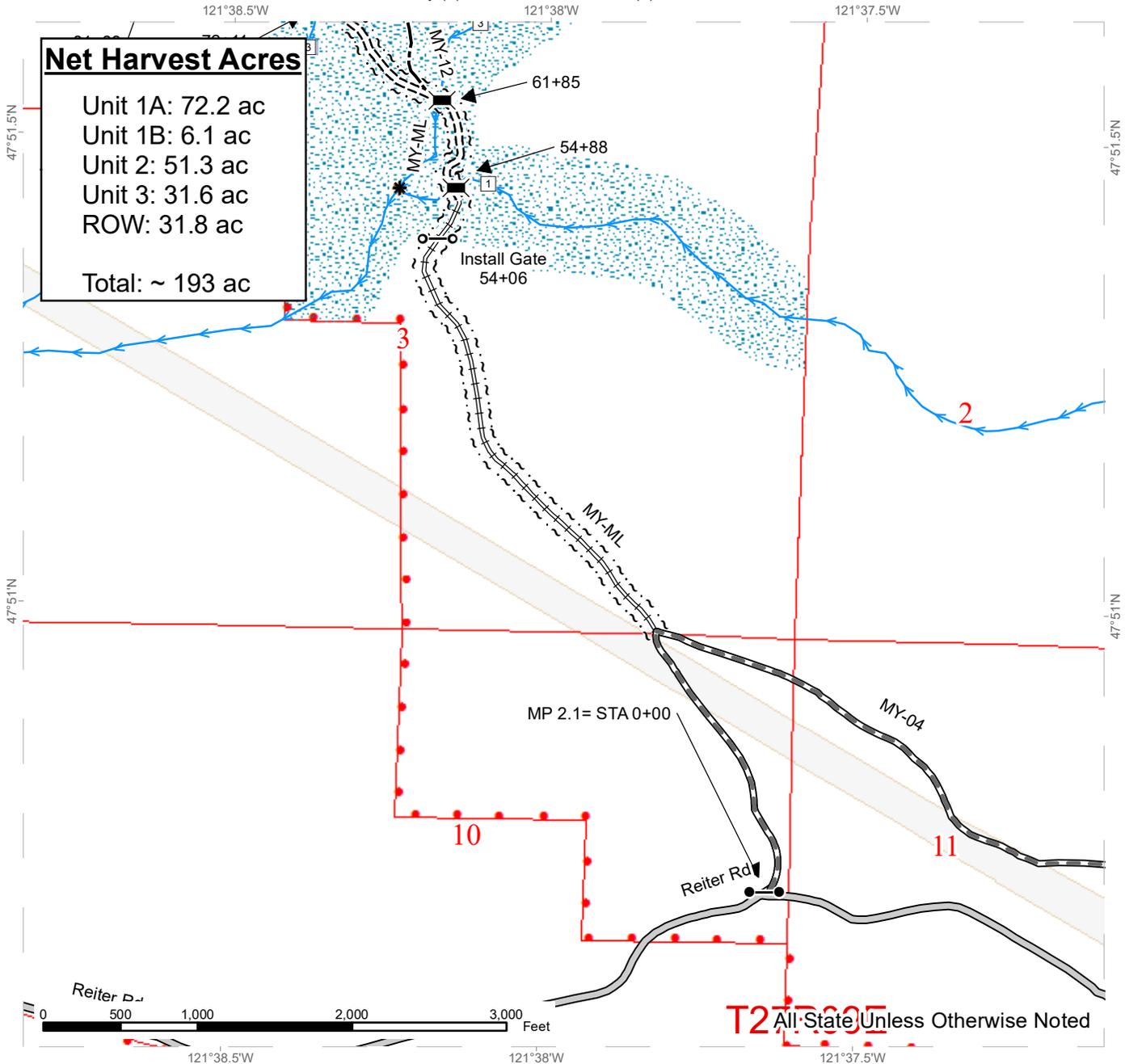


Variable Retention Harvest	Right of Way Tags	Stream Type
Leave Tree Area	Sale Boundary Tags	Stream Type Break
Riparian Mgt Zone	Take / Removal Trees	Bridge
BPA Corridors	Property Line	Gate Installation
County Road	Required Reconstruction	Leave Tree Area <1/4-acre
Existing Roads	Orphaned Grade	Stream Bank Restoration
Required Pre-Haul Maintenance	Required Construction	Inner Gorge
Optional Construction	Trails	Rock Pit
Streams		

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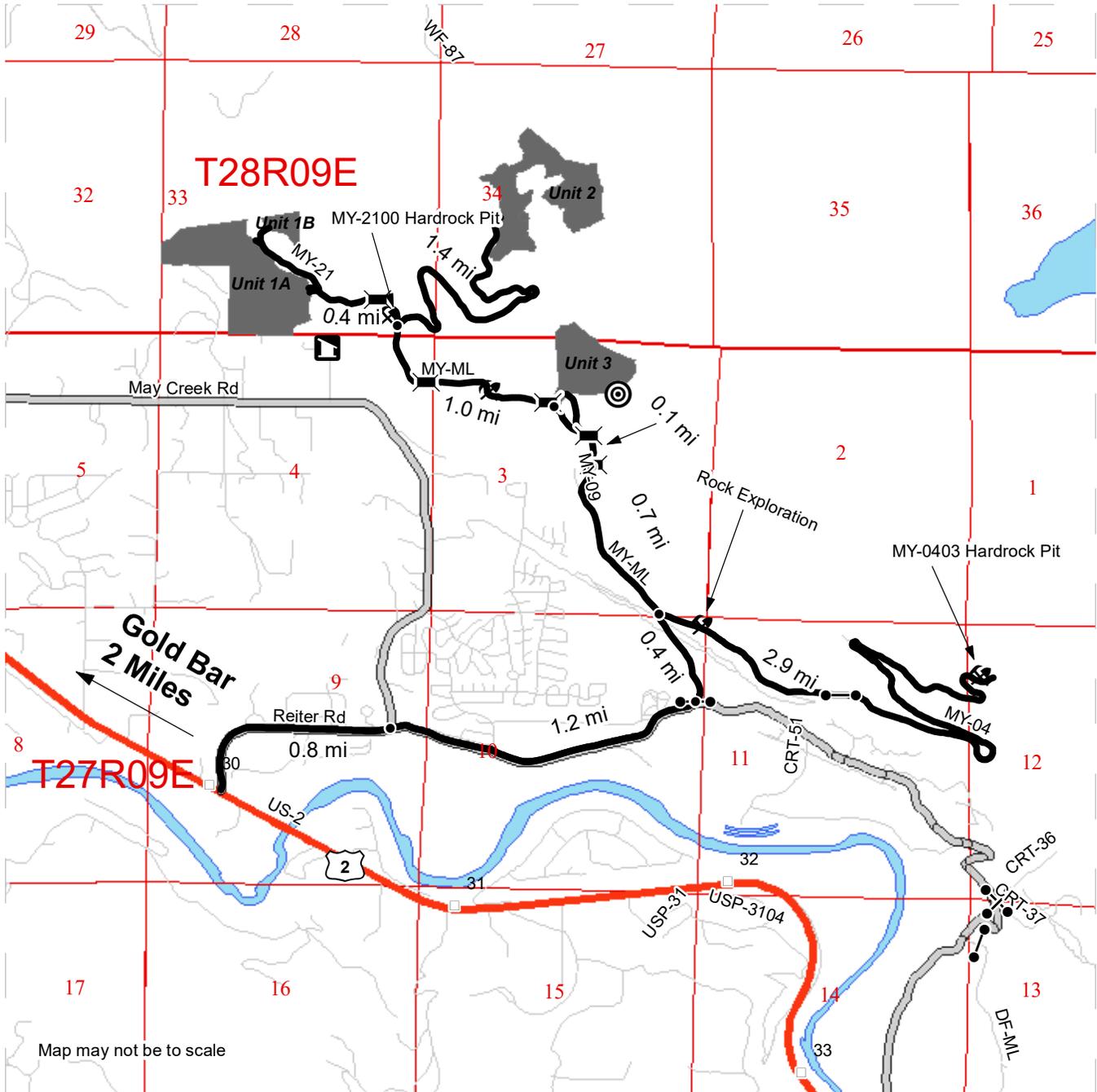
Riparian Mgt Zone	Right of Way Tags	Stream Type
BPA Corridors	Sale Boundary Tags	Stream Type Break
Take / Removal Trees	Property Line	Bridge
County Road	Required Reconstruction	Gate (<<Lock Type>>)
Existing Roads	Required Pre-Haul Maintenance	Gate Installation
Required Construction	Optional Construction	
Optional Construction	Streams	



DRIVING MAP

SALE NAME: MIDDLE MAY
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TOWNSHIP(S): T27R9E, T28R9E
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REGION: Northwest Region
COUNTY(S): Snohomish
ELEVATION RGE: 360-1880



Map may not be to scale

- Timber Sale Unit
- Haul Route
- Milepost Markers

DRIVING DIRECTIONS: From US-2 at the town of Gold Bar, turn north onto Reiter Rd. Travel 0.8 mi. Keep straight to stay on Reiter Rd. Travel 1.2 mi. Turn left at yellow gate (F1-3 lock) onto MY-ML. Travel 0.4mi.

To MY-0403 hard rock pit: Turn right onto MY-04. Travel 2.9 mi.

To Unit 3: Turn left to stay on MY-ML. Travel 0.7 mi (beginning of road construction). Cross May Creek on foot. Travel 0.1 mi. Arrive at Unit 3.

See timber sale map for access to Units 1 and 2.

See precruise narrative for alternate viewing routes.



**STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES**

**BILL OF SALE AND CONTRACT FOR
FOREST PRODUCTS**

Export Restricted MBF Scale AGREEMENT NO. 30-0100161

SALE NAME: MIDDLE MAY

**THE STATE OF WASHINGTON DEPARTMENT OF NATURAL
RESOURCES, HEREINAFTER ACTING SOLELY, IN ITS PROPRIETARY
CAPACITY, STATE, AND PURCHASER, AGREE AS FOLLOWS:**

Section G: General Terms

G-001 Definitions

The following definitions apply throughout this contract;

Bill of Sale and Contract for Forest Products: Contract between the Purchaser and the State, which sets forth the procedures and obligations of the Purchaser in exchange for the right to remove forest products from the sale area. The Bill of Sale and Contract for Forest Products may include a Road Plan for any road construction or reconstruction, where applicable.

Contract Administrator: Region Manager's designee responsible for assuring that the contractual obligations of the Purchaser are met.

Forest Product: Any material derived from the forest for commercial use.

Purchaser: The company or individual that has entered into a Bill of Sale and Contract for Forest Products with the State for the right to harvest and remove forest products from the timber sale area.

Road Construction: Includes building new and maintaining existing forest roads and associated work that may be optional or required as described in the Road Plan.

State: The Washington State Department of Natural Resources, landowner and seller of Forest Products from the timber sale area. The State is represented by the Region Manager as designated on the contract signature page. Contractual obligations to the State are enforced by the Region Manager or the designated Contract Administrator.

Subcontractor: Individual or company employed by the Purchaser to perform a portion or all of the services required by The Bill of Sale and Contract for Forest Products. The Purchaser is responsible for independently negotiating, procuring and paying for all subcontracted services rendered.

G-010 Products Sold and Sale Area

Purchaser was the successful bidder on November 30, 2020 and the sale was confirmed on _____. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase, cut, and remove the following forest products: All timber bounded by white timber sale boundary tags and property lines, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Unit #1 (collectively labelled 1A and 1B).

All timber bounded by white timber sale boundary tags, except cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Units #2 and #3.

All timber bounded by orange right of way tags, except that title to the timber within the right of way tags is not conveyed to the Purchaser unless the road segment is actually constructed.

The above described products, located on approximately 193 acres on part(s) of Sections 3, and 4 all in Township 27 North, Range 9 East, Sections 33, and 34 all in Township 28 North, Range 9 East W.M. in Snohomish County(s) as shown on the attached timber sale map and as designated on the sale area.

All forest products described above from the bole of the tree that meet or exceed 2 inches diameter inside bark on the small end are eligible for removal. Above ground components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, stumps, are not eligible for removal under the terms of this contract.

Forest products purchased under a contract that is designated as export restricted shall not be exported until processed. Forest products purchased under a contract that is designated as exportable may be exported prior to processing.

G-020 Inspection By Purchaser

Purchaser hereby warrants to the State that they have had an opportunity to fully inspect the sale area and the forest products being sold. Purchaser further warrants to the State that they enter this contract based solely upon their own judgment of the value of the forest products, formed after their own examination and inspection of both the timber sale area and the forest products being sold. Purchaser also warrants to the State that they enter this contract without any reliance upon the volume estimates, acreage estimates, appraisals, pre-bid documentation, or any other representations by the State Department of Natural Resources.

G-030 Contract Term

Purchaser shall remove the forest products conveyed and complete all work required by this contract prior to March 31, 2024.

G-040 Contract Term Adjustment - No Payment

Purchaser may request an adjustment in the contract term. A claim must be submitted in writing and received by the State within 30 days after the start of interruption or delay. The claim must also indicate the actual or anticipated length of interruption or delay. The State may grant an adjustment without charge only if the cause for contract term adjustment is beyond Purchaser's control. The cause must be one of the following and the adjustment may be granted only if operations or planned operations under this contract are actually interrupted or delayed:

- a. Road and bridge failures which deny access.
- b. Access road closures imposed by road owner.
- c. Excessive suspensions as provided in clause G-220.
- d. Regulatory actions not arising from Purchaser's failure to comply with this contract which will prevent timber harvest for a period less than 6 months.

G-050 Contract Term Extension - Payment

Extensions of this contract term may be granted only if, in the judgment of the State, Purchaser is acting in good faith and is endeavoring to remove the forest products conveyed. The term of this contract may be extended for a reasonable time by the State if all of the following conditions are satisfied:

- a. A written request for extension of the contract term must be received prior to the expiration date of the contract.
- b. Completion of all required roads and compliance with all contract and regulatory requirements.
- c. For the first extension, not to exceed 1 year, payment of at least 25 percent of the contract value based on the contract payment rate and advertised volume.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the contract value based on the contract payment rate base and advertised volume.

The payments shall not include the initial deposit which shall be held according to the provisions of RCW 79.15.100.

- d. Payment of an amount based on 12 percent interest per annum on the unpaid portion of the timber value of the contract.

To determine the unpaid portion of the contract, multiply the contract payment rate for each item by the remaining volume for each item based on the volumes from the Timber Notice of Sale. In addition, all cash deposits that can be used for timber payments, except the initial deposit, will be deducted from the unpaid portion of the contract.

- e. Payment of \$16.00 per acre per annum for the acres on which an operating release has not been issued in the sale area.
- f. In no event will the extension charge be less than \$200.00.
- g. Extension payments are non-refundable.

G-053 Surveys - Sensitive, Threatened, Endangered Species

Whenever the State determines that a survey for sensitive, threatened, or endangered species is prudent, or when Purchaser determines a survey is prudent and the State agrees, Purchaser shall perform such surveys at Purchaser's expense and to the standards required by the State. The survey information shall be supplied to the State.

G-060 Exclusion of Warranties

The PARTIES AGREE that the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED from this transaction and shall not apply to the goods sold. For example, THE FOLLOWING SPECIFIC MATTERS ARE NOT WARRANTED, and are EXCLUDED from this transaction:

- a. The MERCHANTABILITY of the forest products. The use of the term "merchantable" in any document is not intended to vary the foregoing.
- b. The CONDITION of the forest products. The forest products will be conveyed "AS IS."
- c. The ACREAGE contained within any sale area. Any acreage descriptions appearing in the timber notice of sale, timber sale contract, or other documents are estimates only, provided solely for administrative and identification purposes.

- d. The VOLUME, QUALITY, OR GRADE of the forest products. The State neither warrants nor limits the amount of timber to be harvested. The descriptions of the forest products to be conveyed are estimates only, made solely for administrative and identification purposes.
- e. The CORRECTNESS OF ANY SOIL OR SURFACE CONDITIONS, PRE-SALE CONSTRUCTION APPRAISALS, INVESTIGATIONS, AND ALL OTHER PRE-BID DOCUMENTS PREPARED BY OR FOR THE STATE. These documents have been prepared for the State's appraisal purposes only.
- f. THAT THE SALE AREA IS FREE FROM THREATENED OR ENDANGERED SPECIES or their habitat. The State is not responsible for any interference with forestry operations that result from the presence of any threatened or endangered species, or the presence of their habitat, within the sale area.
- g. THAT THE FORESTRY OPERATIONS to be performed under this contract WILL BE FREE FROM REGULATORY ACTIONS by governmental agencies. The State is not responsible for actions to enforce regulatory laws, such as the Washington Forest Practices Act (chapter 76.09 RCW), taken by the Department of Natural Resources or any other agency that may affect the operability of this timber sale.
- h. Items contained in any other documents prepared for or by the State.

G-062 Habitat Conservation Plan

The State has entered into a Habitat Conservation Plan (HCP) with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to address state trust land management issues relating to compliance with the Federal Endangered Species Act. The activities to be carried out under this contract are located within the State's HCP area and are subject to the terms and conditions of the HCP, and the Services' Incidental Take Permit Nos. TE812521-1 and 1168 (collectively referred to as ITP), or as amended hereafter by the Services. The ITP authorizes the incidental take of certain federally listed threatened and endangered species, as specified in the ITP conditions. All HCP materials, including the ITP, are available for review at the State's Regional Offices and the administrative headquarters in Olympia, Washington.

By signing this contract, Purchaser agrees to comply with the terms and conditions of the ITP, and the HCP, which shall become terms of this contract. The State agrees to authorize the lawful activities of the Purchaser carried out pursuant to this contract, PROVIDED the Purchaser remains in compliance with the terms and conditions of both the HCP and ITP. The requirements set forth in this contract are intended to comply with the terms and conditions of the HCP and ITP. Accordingly, non-compliance with the terms and conditions of the HCP and ITP will render the authorization provided in this paragraph void, be deemed a breach of the contract and may subject Purchaser to liability for violation of the Endangered Species Act.

Any modifications to the contract shall be proposed in writing by Purchaser, shall continue to meet the terms and conditions of the HCP and ITP, and shall require the prior written approval of the Region Manager before taking effect.

G-063 Incidental Take Permit Notification Requirements

- a. Purchaser shall immediately notify the Contract Administrator of new locations of permit species covered by the Incidental Take Permits (ITP) that are discovered within the area covered by the State's Habitat Conservation Plan (HCP), including, but not limited to: locations of occupied murrelet habitat; spotted owl nest sites; wolves; grizzly bears; nests, communal roosts, or feeding concentrations of bald eagles; peregrine falcon nests; Columbian white-tailed deer; Aleutian Canada geese; Oregon silverspot butterflies; and additional stream reaches found to contain bull trout. Purchaser is required to notify the Contract Administrator upon discovery of any fish species found in streams or bodies of water classified as non-fish bearing. In all circumstances, notification must occur within a 24 hour time period.
- b. Upon locating any live, dead, injured, or sick specimens of any permit species covered by the ITP, Purchaser shall immediately notify the Contract Administrator. Purchaser shall notify the Contract Administrator if there is any doubt as to the identification of a discovered permit species. Purchaser may be required to take certain actions to help the Contract Administrator safeguard the well-being of any live, injured or sick specimens of any permit species discovered, until the proper disposition of such specimens can be determined by the Contract Administrator. Any such requirements will be explained to Purchaser by the Contract Administrator during the Pre-Work Conference. In all circumstances, notification must occur within a 24 hour time period.
- c. Purchaser shall refer to a specific ITP number, ITP TE812521-1 or ITP 1168 (copies which are located in the region office) in all correspondence and reports concerning permit activities.
- d. Provisions and requirements of the ITP shall be clearly presented and explained to Purchaser by Contract Administrator during the Pre-Work Conference as per contract clause G-330. All applicable provisions of the ITP and this schedule must be presented and clearly explained by Purchaser to all authorized officers, employees, contractors, or agents of Purchaser conducting authorized activities in the timber sale area. Any questions Purchaser may have about the ITP should be directed to the Contract Administrator.

G-064 Permits

Purchaser is responsible for obtaining any permits not already obtained by the State that relate to Purchaser's operation. Forest Practice Application / Hydraulic Project Approval permits obtained by the State shall be transferred to Purchaser. Purchaser is responsible for all permits, amendments and renewals.

G-065 Regulatory Disclaimer

The State disclaims any responsibility for, or liability relating to, regulatory actions by any government agency, including actions pursuant to the Forest Practices Act, Ch. 76.09 RCW that may affect the operability of the timber sale.

G-066 Governmental Regulatory Actions

a. Risk

Purchaser shall be responsible for any increased operational costs arising from any applicable foreign or domestic governmental regulation or order that does not cause contract performance to become commercially impracticable or that does not substantially frustrate the purpose of the contract. If impracticability or frustration results from Purchaser's failure to comply with this contract, Purchaser shall remain responsible for payment of the total contract price notwithstanding the impracticability or frustration.

b. Sale Area

When portions of the sale area become subject to a foreign or domestic governmental regulation or order that will likely prevent timber harvest for a period that will exceed the expiration date of this contract, and Purchaser has complied with this contract, the following shall apply:

i. RCW 79.15.140 shall govern all adjustments to the contract area.

c. Adjustment of Price

The State shall adjust the total contract price by subtracting from the total contract price an amount determined in the following manner: The State shall cause the timber sale area subject to governmental regulation or order to be measured. The State shall calculate the percentage of the total sale area subject to the governmental regulation or order. The State shall reduce the total contract price by that calculated percentage. However, variations in species, value, costs, or other items pertaining to the affected sale area will be analyzed and included in the adjustment if deemed appropriate by the State. The State will further reduce the total contract price by the reasonable cost of unamortized roads Purchaser constructed but was unable to fully use for removing timber. A reduction in total contract price terminates all of the Purchaser's rights to purchase and remove the timber and all other interest in the affected sale area.

G-070 Limitation on Damage

In the event of a breach of any provision of this contract by the State, the exclusive remedy available to Purchaser will be limited to a return of the initial deposit, unapplied payments, and credit for unamortized improvements made by Purchaser.

The State shall not be liable for any damages, whether direct, incidental or consequential.

G-080 Scope of State Advice

No advice by any agent, employee, or representative of the State regarding the method or manner of performing shall constitute a representation or warranty that said method, manner or result thereof will conform to the contract or be suitable for Purchaser's purposes under the contract. Purchaser's reliance on any State advice regarding the method or manner of performance shall not relieve Purchaser of any risk or obligation under the contract. Purchaser retains the final responsibility for its operations under this contract and State shall not be liable for any injuries resulting from Purchaser's reliance on any State advice regarding the method or manner of performance.

G-090 Sale Area Adjustment

The Parties may agree to adjustments in the sale area boundary. The cumulative changes to the sale area during the term of the contract shall not exceed more than four percent of the original sale area. If the sale area is increased, added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-100 Forest Products Not Designated

Any forest products not designated for removal, which must be removed in the course of operations authorized by the State, shall be approved and designated by the Contract Administrator. Added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-105 Adding Naturally Damaged Forest Products

Any forest products not designated for removal that are seriously damaged by disease, insects or wind, or that may contribute seriously to the spread of insect or disease damage may be added to this sale by the Contract Administrator. Additions must be in unlogged areas of the sale and added volume shall not exceed an amount equal to 10 percent of the original advertised volume. Added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-110 Title and Risk of Loss

Title to the forest products conveyed passes at confirmation of the sale. Purchaser bears the risk of loss of or damage to and has an insurable interest in the forest products in this contract from the time of confirmation of the sale of forest products. In the event of loss of or damage to the forest products after passage of title, whether the cause is foreseeable or unforeseeable, the forest products shall be paid for by Purchaser. Breach of this contract shall have no effect on this provision. Title to the forest products not removed from the sale area within the period specified in this contract shall revert to the State as provided in RCW 79.15.100.

G-116 Sustainable Forestry Initiative® (SFI) Certification

Forest products purchased under this contract are certified as being in conformance with the Sustainable Forestry Initiative program Standard under certificate number: PwC-SFIFM-513.

Purchaser shall have at least one person regularly on-site during active operations that have completed training according to the requirements outlined within the SFI® program Standard. Purchaser shall designate in writing the name(s) of the individual(s) who will be on-site and provide proof of their successful completion of an approved training program prior to active operations.

G-120 Responsibility for Work

All work, equipment, and materials necessary to perform this contract shall be the responsibility of Purchaser. Any damage to improvements, except as provided in clause G-121 or unless the State issues an operating release pursuant to clause G-280, shall be repaired promptly to the satisfaction of the State and at Purchaser's expense.

G-121 Exceptions

Exceptions to Purchaser's responsibility in clause G-120 shall be limited exclusively to the following. These exceptions shall not apply where road damage occurs due to Purchaser's failure to take reasonable precautions or to exercise sound forest engineering and construction practices.

The State will bear the cost to repair damages caused by a third party. In all other cases, the Purchaser shall bear responsibility for the costs as described below.

Road is defined as the road bed, including but not limited to its component parts, such as cut and fill slopes, subgrade, ditches, culverts, bridges, and cattle guards.

For the purposes of this clause, damage will be identified by the State and is defined as:

1. Failure of (a) required improvements or roads designated in clause C-050, or (b) required or optional construction completed to the point that authorization to haul has been issued;
2. Caused by a single event from forces beyond the control of Purchaser, its employees, agents, or invitees, including independent contractors; and
3. Includes, but is not limited to natural disasters such as earthquakes, volcanic eruptions, landslides, and floods.

The repair work identified by the State shall be promptly completed by Purchaser at an agreed price. The State may elect to accomplish repairs by means of State-provided resources.

For each event, Purchaser shall be solely responsible for the initial \$5,000 in repairs. For repairs in excess of \$5,000, the parties shall share equally the portion of costs between \$5,000 and \$15,000. The State shall be solely responsible for the portion of the cost of repairs that exceed \$15,000.

Nothing contained in clauses G-120 and G-121 shall be construed as relieving Purchaser of responsibility for, or damage resulting from, Purchaser's operations or negligence, nor shall Purchaser be relieved from full responsibility for making good any defective work or materials. Authorization to haul does not warrant that Purchaser built roads are free from material defect and the State may require additional work, at Purchasers expense regardless of cost, to remedy deficiencies at any time.

G-140 Indemnity

To the fullest extent permitted by law, Purchaser shall indemnify, defend and hold harmless State, agencies of State and all officials, agents and employees of State, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this contract means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Purchasers' obligations to indemnify, defend, and hold harmless includes any claim by Purchasers' agents, employees, representatives, or any subcontractor or its employees. Purchaser expressly agrees to indemnify, defend, and hold harmless State for any claim arising out of or incident to Purchasers' or any subcontractors' performance or failure to perform the contract. Purchasers' obligation to indemnify, defend, and hold harmless State shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials. Purchaser waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless State and its agencies, officials, agents or employees.

G-150 Insurance

Purchaser shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in a breach and/or termination of the contract at State's option. State may suspend Purchaser operations until required insurance has been secured.

All insurance and surety bonds should be issued by companies admitted to do business within the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

The State of Washington, Department of Natural Resources region office of sale origin shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications:

1. Insurers subject to Chapter 48.18 RCW (admitted and regulated by the Insurance Commissioner): The insurer shall give the State 45 days advance notice of cancellation or non-renewal. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.
2. Insurers subject to Chapter 48.15 RCW (surplus lines): The State shall be given 20 days advance notice of cancellation. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.

Before starting work, Purchaser shall furnish State of Washington, Department of Natural Resources with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the contract. Insurance coverage shall be obtained by the Purchaser prior to operations commencing and continually maintained in full force until all contract obligations have been satisfied or an operating release has been signed by the State.

Purchaser shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Purchaser's liability or responsibility.

The State of Washington, Department of Natural Resources, its elected and appointed officials, agents and employees shall be named as an additional insured via endorsement on all general liability, excess, umbrella, and property insurance policies.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by State. Purchaser waives all rights against State for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this contract.

By requiring insurance herein, State does not represent that coverage and limits will be adequate to protect Purchaser and such coverage and limits shall not limit Purchaser's liability under the indemnities and reimbursements granted to State in this contract.

The limits of insurance, which may be increased as deemed necessary by State of Washington, Department of Natural Resources, shall not be less than as follows:

Commercial General Liability (CGL) Insurance. Purchaser shall maintain general liability (CGL) insurance, and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence. If such CGL insurance contains aggregate limits, the General Aggregate limit shall be at least twice the "each occurrence" limit. CGL insurance shall have products-completed operations aggregate limit of at least two times the "each occurrence" limit. CGL coverage shall include a Logging and Lumbering Endorsement (i.e. Logger's Broad-Form) to cover the events

that include, but are not limited to, fire suppression expenses, accidental timber trespasses, and wildfire property damage with limits of not less than \$2,000,000.00 each occurrence.

CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 (or a substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract), and contain separation of insured (cross liability) condition.

Employer's Liability "Stop Gap" Insurance. Purchaser shall buy employers liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000.00 each accident for bodily injury by accident or \$1,000,000.00 each employee for bodily injury by disease.

Workers' Compensation Coverage. Purchaser shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of Purchaser and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which exists out of or in connection with the performance of this contract. Except as prohibited by law, Purchaser waives all rights of subrogation against State for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability, or commercial umbrella liability insurance.

If Purchaser, subcontractor or sub-subcontractor fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Purchaser shall indemnify State. Indemnity shall include all fines, payment of benefits to Purchaser or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees.

Business Auto Policy (BAP). Purchaser shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit not less than \$1,000,000.00 per accident. Such insurance shall cover liability arising out of "Any Auto". Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01. Purchaser waives all rights against State for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

G-160 Agents

The State's rights and duties will be exercised by the Region Manager at Sedro Woolley, Washington. The Region Manager will notify Purchaser in writing who is responsible for administering the contract. The Region Manager has sole authority to

waive, modify, or amend the terms of this contract in the manner prescribed in clause G-180. No agent, employee, or representative of the State has any authority to bind the State to any affirmation, representation, or warranty concerning the forest products conveyed beyond the terms of this contract.

Purchaser is required to have a person on site during all operations who is authorized to receive instructions and notices from the State. Purchaser shall inform the State in writing who is authorized to receive instructions and notices from the State, and any limits to this person's authority.

G-170 Assignment and Delegation

No rights or interest in this contract shall be assigned by Purchaser without prior written permission of the State. Any attempted assignment shall be void and ineffective for all purposes unless made in conformity with this paragraph. Purchaser may perform any duty through a delegate, but Purchaser is not thereby relieved of any duty to perform or any liability. Any assignee or delegate shall be bound by the terms of the contract in the same manner as Purchaser.

G-180 Modifications

Waivers, modifications, or amendments of the terms of this contract must be in writing signed by Purchaser and the State.

G-190 Contract Complete

This contract is the final expression of the Parties' agreement. There are no understandings, agreements, or representations, expressed or implied, which are not specified in this contract.

G-200 Notice

Notices required to be given under the following clauses shall be in writing and shall be delivered to Purchaser's authorized agent or sent by certified mail to Purchaser's address of record:

G-210 Violation of Contract

G-220 State Suspends Operations

All other notices required to be given under this contract shall be in writing and delivered to the authorized agent or mailed to the Party's post office address. Purchaser agrees to notify the State of any change of address.

G-210 Violation of Contract

- a. If Purchaser violates any provision of this contract, the Contract Administrator, by written notice, may suspend those operations in violation. If the violation is capable of being remedied, Purchaser has 30 days after receipt of a suspension notice to remedy the violation. If the violation cannot be remedied (such as a violation of WAC 240-15-015) or Purchaser fails to remedy the violation within 30 days after receipt of a suspension notice, the

State may terminate the rights of Purchaser under this contract and collect damages.

- b. If the contract expires pursuant to clause G-030 or G-031 without Purchaser having performed all its duties under this contract, Purchaser's right to operate is terminated and Purchaser shall not have the right to remedy the breach. This provision shall not relieve Purchaser of any payment obligations.
- c. The State has the right to remedy the breach in the absence of any indicated attempt by Purchaser or if Purchaser is unable, as determined by the State, to remedy the breach. Any expense incurred by the State shall be charged to Purchaser and shall be paid within 30 days of receipt of billing.
- d. If Purchaser's violation is a result of a failure to make a payment when due, in addition to a. and b. above, interest shall accrue on the unpaid balance at 12 percent per annum, beginning the date payment was due.

G-220 State Suspends Operation

The Contract Administrator may suspend any operation of Purchaser under this contract when the State is suffering, or there is a reasonable expectation the State will suffer environmental, monetary, or other damage if the operation is allowed to continue.

Purchaser shall be in breach of this contract if the operation continues after the suspension notice or if the operation resumes without prior approval and notice from the Contract Administrator.

Purchaser may request a modification of a suspension within 30 days of the start of suspension through the dispute resolution process in clause G-240. If this process results in a finding that the suspension exceeded the time reasonably necessary to stop or prevent damage to the State, Purchaser is entitled to request a contract term adjustment under clause G-040.

If it reasonably appears that the damage that the State is suffering, or can reasonably be expected to suffer if the operation is allowed to continue, will prevent harvest for a period that will exceed 6 months, and Purchaser has complied with this contract, the provisions of clause G-066 shall govern just as if the harvest was prevented by an applicable foreign or domestic governmental regulation or order.

G-230 Unauthorized Activity

Any cutting, removal, or damage of forest products by Purchaser, its employees, agents, or invitees, including independent contractors, in a manner inconsistent with the terms of this contract or State law, is unauthorized. Such activity may subject Purchaser to liability for triple the value of said forest products under RCW 79.02.320 or RCW 79.02.300 and may result in prosecution under RCW 79.02.330 or other applicable statutes.

G-240 Dispute Resolution

The following procedures apply in the event of a dispute regarding interpretation or administration of this contract and the parties agree that these procedures must be followed before a lawsuit can be initiated.

- a. In the event of a dispute, Purchaser must make a written request to the Region Manager for resolution prior to seeking other relief.
- b. The Region Manager will issue a written decision on Purchaser's request within ten business days.
- c. Within ten business days of receipt of the Region Manager's decision, Purchaser may make a written request for resolution to the Deputy Supervisor - Uplands of the Department of Natural Resources.
- d. Unless otherwise agreed, a conference will be held by the Deputy Supervisor - Uplands within 30 calendar days of the receipt of Purchaser's request for review of the Region Manager's written decision. Purchaser and the Region Manager will have an opportunity to present their positions. The Deputy Supervisor - Uplands will issue a decision within a reasonable time of being presented with both Parties' positions.

G-250 Compliance with All Laws

Purchaser shall comply with all applicable statutes, regulations and laws, including, but not limited to; chapter 27.53 RCW, chapter 68.50 RCW, WAC 240-15 and WAC 296-54. Failure to comply may result in forfeiture of this contract.

G-260 Venue

This contract shall be governed by the laws of the State of Washington. In the event of a lawsuit involving this contract, venue shall be proper only in Thurston County Superior Court.

G-270 Equipment Left on State Land

All equipment owned or in the possession of Purchaser, its employees, agents, or invitees, including independent contractors, shall be removed from the sale area and other State land by the termination date of this contract. Equipment remaining unclaimed on State land 60 days after the expiration of the contract period is subject to disposition as provided by law. Purchaser shall pay to the State all costs of moving, storing, and disposing of such equipment. The State shall not be responsible for any damages to or loss of the equipment or damage caused by the moving, storing or disposal of the equipment.

G-280 Operating Release

An operating release is a written document, signed by the State and Purchaser, indicating that Purchaser has been relieved of certain rights or responsibilities with regard to the entire or a portion of the timber sales contract. Purchaser and State may agree to an operating release for this sale, or portion of this sale, prior to the contract

expiration, when all contract requirements pertaining to the release area have been satisfactorily completed. Upon issuance of a release, Purchaser's right to cut and remove forest products on the released area will terminate.

G-310 Road Use Authorization

Purchaser is authorized to use the following State roads and roads for which the State has acquired easements and road use permits; MY-ML, MY-04, MY-12, MY-RRG15, MY-21, MY-2104, MY-2104-01, MY-2106, MY-43. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

G-330 Pre-work Conference

Purchaser shall arrange with the Contract Administrator to review this contract and to examine the sale area before beginning any operations. A plan of operations shall be developed and agreed upon by the Contract Administrator and Purchaser before beginning any operations. To the extent that the plan of operations is inconsistent with the contract, the terms of the contract shall prevail. State's acceptance and approval of Purchaser's plan of operations shall not be construed as any statement or warranty that the plan of operations is adequate for Purchaser's purposes or complies with applicable laws.

G-340 Preservation of Markers

Any legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed, the Purchaser shall, at the Purchaser's own expense, re-establish them through a licensed land surveyor in accordance with U.S. General Land Office standards. Corners and/or witness objects that must be disturbed or destroyed in the process of road construction or logging shall be adequately referenced and/or replaced in accordance with RCW 58.24.040(8). Such references must be approved by the Contract Administrator prior to removal of said corners and/or witness objects.

G-360 Road Use Reservation

The State shall have the right to use, without charge, all existing roads and any road constructed or reconstructed on State lands by Purchaser under this contract. The State may extend such rights to others. If the State grants such rights to others, the State shall require performance or payment, as directed by the State, for their proportionate share of maintenance based on their use.

G-430 Open Fires

Purchaser shall not set, or allow to be set by Purchaser's employees, agents, invitees and independent contractors, any open fire at any time of the year without first obtaining permission, in writing, from the Contract Administrator.

G-450 Encumbrances

This contract and Purchaser's activities are subject to the following:

DATA MISSING

Section P: Payments and Securities

P-010 Initial Deposit

Purchaser paid DATA MISSING initial deposit, which will be maintained pursuant to RCW 79.15.100(3). If the operating authority on this contract expires without Purchaser's payment of the full amount specified in the 'Payment for Forest Products' clause, the initial deposit will be immediately forfeited to the State, and will be offset against Purchaser's remaining balance due. Any excess initial deposit funds not needed to ensure full payment of the contract price, or not needed to complete any remaining obligations of the Purchaser existing after contract expiration, will be refunded to the Purchaser.

P-021 Payment for Forest Products

Purchaser agrees to pay the following rates per MBF Scribner net log scale for forest products conveyed and cut or removed from the sale area plus \$162,809.00 on day of sale and \$9.00 per MBF upon removal in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause.

DATA MISSING

Species that are conveyed but are not listed in the table above shall be paid for at a rate to be determined by the State.

Utility logs, special cull and peelable cull logs of all species, included on loads of logs that are required to be removed and scaled per clause H-150 will be paid for on an adjusted gross scale basis at the rate of DATA MISSING per MBF plus fees.

P-027 Payment for Removal of Optional Forest Products

Purchaser agrees to weigh all loads and pay the rate of DATA MISSING per ton for forest products approved for removal from the sale area under clause H-157.

P-040 Weighing and Scaling Costs

Purchaser agrees to pay for all scaling and weighing costs for logs and other products sold under this contract. Purchaser also agrees to pay for all costs associated with the transmission and reporting of scale or weight data.

P-045 Guarantee of Payment

Purchaser will pay for forest products prior to cutting or will guarantee payment by posting an approved payment security. The amount of cash or payment security shall be determined by the State and shall equal or exceed the value of the cutting proposed by Purchaser.

P-050 Billing Procedure

The State will compute and forward to Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the State on or before the date shown on the billing statement.

P-052 Payment Procedure

If a third party Log and Load Reporting Service (LLRS) is required by this contract the State will compute and forward to the Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the DATA MISSING region office on or before the date shown on the billing statement.

If a third party LLRS is not required by this contract, Purchaser shall pay for forest products removed on a monthly basis. Payments will be submitted to the office listed above on or before the fourteenth of the month following the month in which the timber was removed or, according to an alternate payment schedule as approved by the State with at least one payment each month for timber removed. The alternate payment schedule, once approved by the State, shall become part of this contract and may be changed only with written approval of the State.

Payment will be based on the contract rate multiplied by the tons (tonnage contracts) or volume (mbf contracts) removed during the month or payment period. Included with the payment will be a summary report along with all related load tickets and the corresponding certified weight tickets for the payment period. The summary report will be generated using a computer spreadsheet and list the load tickets in ascending numerical order with the corresponding ticket number and weight or volume for each load.

P-070 Payment for Products: Damage, Theft, Loss, or Mismatch

Forest products included in this agreement which are destroyed, damaged, stolen, lost, or mismatched shall be paid for by Purchaser on demand of the State. The rates contained in clause P-021 shall apply.

P-080 Payment Account Refund

Advance payments made under P-045 or P-045.2 remaining on account above the value for the charges shall be returned to Purchaser within 30 days following the final report of charges. Refunds not made within the 30 day period will accrue interest at the interest rate, as established by WAC 332-100-030, computed on a daily basis until paid.

P-090 Performance Security

Purchaser agrees to furnish, within 30 days of the confirmation date, security acceptable to the State in the amount of \$100,000.00. The Security provided shall guarantee performance of all provisions of this contract and payment of any damages caused by operations under this contract or resulting from Purchaser's noncompliance with any rule or law. Acceptable performance security may be in the form of a performance bond, irrevocable letter of credit, cash, savings or certificate of deposit account assignments, and must name the State as the obligee or beneficiary. A letter of credit must comply with Title 62A RCW, Article 5. Performance security must remain in full force over the duration of the contract length. Surety bonds issued shall conform to the issuance and rating requirements in clause G-150. The State shall retain the performance security pursuant to RCW 79.15.100. Purchaser shall not operate unless the performance security has been accepted by the State. If at any time the State

decides that the security document or amount has become unsatisfactory, Purchaser agrees to suspend operations and, within 30 days of notification, to replace the security with one acceptable to the State or to supplement the amount of the existing security.

P-100 Performance Security Reduction

The State may reduce the performance security after an operating release has been issued if the State determines that adequate security exists for any remaining obligations of Purchaser.

Section L: Log Definitions and Accountability

L-010 Forest Products Conveyed

Forest products conveyed are all logs or parts of logs described by the 'Products Sold and Sale Area' (G-010) clause meeting the removal requirements listed in the 'Required Removal of Forest Products' (H-150) clause.

L-020 Short Logs - Peeler Blocks

Logs or parts of logs which are removed from the sale area that fail to meet the minimum gross length requirements shall be scaled and graded as short logs or peeler blocks. Such material shall be paid for at the forest products rates specified in this contract.

L-040 Utility Logs

Utility logs are logs that meet the minimum utility log standards as described by the log scaling rules applicable for this contract.

L-060 Load Tickets

Purchaser shall complete and use load tickets as directed by the Contract Administrator and, if required, use other identification as directed by the State to ensure accounting of forest products removed from the sale area. A load ticket must be fixed, as designated by the Contract Administrator, to each truck and trailer load prior to leaving the landing.

Purchaser shall account for all load tickets issued by the Contract Administrator and return unused tickets at termination of the contract, or as otherwise required by the Contract Administrator. Unused tickets not returned shall be subject to liquidated damages per clause D-030.

The State may also treat load tickets either not accounted for or not returned as lost forest products per clause P-070. All costs associated with computing the billings for lost forest products shall be borne by Purchaser

L-071 Log and Load Reporting Service

This contract requires the use of a State approved third party Log and Load Reporting Service (LLRS). Purchaser shall ensure log volume measurement data and/or load and weight data is received by the LLRS within 1 business day of logs being measured or weighed. Purchaser agrees to pay the LLRS for log and load data supplied to the State.

If during the term of this contract, the State discontinues use of the LLRS, the State will notify the Purchaser in writing and the Purchaser will then be responsible to send log scale and/or weight information to the State.

L-080 Scaling Rules

Determination of volume and grade of any forest products shall be conducted by a state approved third party scaling organization and in accordance with the Westside log scaling and grading rules and Scribner Volume Table, revised July 1, 1972, contained in the Northwest Log Rules Eastside and Westside Log Scaling Handbook (developed and produced by the Northwest Log Rules Advisory Group) and in effect on the date of confirmation of this contract.

Special scaling specifications shall be noted on the State's Brand Designation form which is hereby incorporated to this contract by reference.

L-110 State Approval of Log Scaling and Weighing Locations

Forest Product measurement and weighing facilities required by this contract must be approved by the State. Forest products sold under the contract which require log scaling shall be scaled, measured, or counted by a State approved third party log scaling organization. Forest products sold under the contract which require weighing shall be weighed at a location that meets Washington State Department of Agriculture approval.

Prior to forest products being hauled, the Contract Administrator must authorize in writing the use of State approved measurement and/or weighing facilities that are at or en-route to final destinations. Forest products from this sale shall be measured or weighed at facilities, which are currently approved for use by the State and are currently authorized for this sale. The State reserves the right to verify load volume and weights with State employees or contractors at the State's own expense. The State reserves the right to revoke the authorization of previously approved measurement locations.

L-120 Long Log Taper Distribution

Forest products over 40 feet long plus trim shall be segment scaled and the lower segment diameters shall be determined using actual taper. In order to utilize taper rules for determining segment diameters for poles and pilings greater than 40 feet in length plus trim, Purchaser must request use of a Pole and Piling Scaling Specification Agreement on file in the region office. Approval for usage of a special Pole and Piling Scaling Specification Agreement may be granted at the sole discretion of the State.

Following State approval for usage of the Pole and Piling Scaling Specification Agreement, the Brand Designation form shall be amended to incorporate the long log taper rules. The volume reported by the scaling organization for forest products over 40 feet plus trim will be expanded by 5 percent and the additional 5 percent volume shall be billed to the purchaser at the contract rate.

L-130 Conversion Factors

Forest products removed from the sale area that are not measured in units specified in the 'Payment for Forest Products' clause of this contract shall be converted to board feet using Department of Natural Resources' standard conversion factors.

Section H: Harvesting Operations**H-001 Operations Outside the Sale Boundaries**

No operations shall occur outside the sale boundaries, as described within the contract, unless approved in writing by the State.

H-010 Cutting and Yarding Schedule

Falling and Yarding will not be permitted from November 1 to March 31 BY GROUND-BASED EQUIPMENT unless authorized in writing by the Contract Administrator.

H-013 Reserve Tree Damage Definition

Reserve trees are trees required and designated for retention within the sale boundary. Purchaser shall protect reserve trees from being cut, damaged, or removed during operations.

Reserve tree damage exists when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 200 square inches.
- b. A reserve tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A reserve tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a reserve tree has been cut or damaged, the Purchaser shall provide a replacement reserve tree of like condition, size, and species within the sale unit containing the damaged leave tree, as approved by the Contract Administrator. Purchaser may be required to pay liquidated damages for Excessive Reserve Tree Damage as detailed in clause D-041.

Removal of designated reserve trees from the sale area is unauthorized, and may invoke the use of the G-230 'Trespass and Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

H-015 Skid Trail Requirements

A skid trail is defined as an area that is used for more than three passes by any equipment.

Purchaser shall comply with the following during the yarding operation:

- a. Skid trails will not exceed 12 feet in width, including rub trees.
- b. Skid trails shall not cover more than 15 percent of the total acreage on one unit.
- c. Skid trail location will be pre-approved by the Contract Administrator.
- d. Except for rub trees, skid trails shall be felled and yarded prior to the felling of adjacent timber.
- e. Rub trees shall be left standing until all timber tributary to the skid trail has been removed.
- f. Excessive soil damage is not permitted. Excessive soil damage is described in clause H-017.
- g. Skid trails will be water barred at the time of completion of yarding, if required by the Contract Administrator.

Purchaser shall not deviate from the requirements set forth in this clause without prior written approval from the Contract Administrator.

H-017 Preventing Excessive Soil Disturbance

Operations may be suspended when soil rutting exceeds 8 inches as measured from the natural ground line. To reduce soil damage, the Contract Administrator may require water bars to be constructed, grass seed to be placed on exposed soils, or other mitigation measures. Suspended operations shall not resume unless approval to do so has been given, in writing, by the Contract Administrator.

H-025 Timing Requirements for Timber Removal

All logs must be removed within 8 weeks of being felled.

H-030 Timber Falling

Trees shall be felled and logs shall be bucked to obtain the greatest practicable utilization of forest products and other valuable materials conveyed.

H-040 Purchaser Harvest Plan

Purchaser shall, as part of the plan of operations, prepare an acceptable harvest plan for sale area. The plan shall address the falling, yarding and hauling of forest products, which are part(s) of this contract. The harvest plan shall be approved by the Contract Administrator prior to beginning the harvest operation. Purchaser shall not deviate from the harvest plan without prior written approval by the Contract Administrator.

H-052 Branding and Painting

Forest products shall be branded with a brand furnished by the State prior to removal from the landing. All purchased timber shall be branded in a manner that meets the requirements of WAC 240-15-030(2)(a)(i). All timber purchased under a contract designated as export restricted shall also be painted in a manner that meets the requirements of WAC 240-15-030(2)(a)(ii).

For pulp loads purchased under a contract designated as export restricted, Purchaser shall brand at least 3 logs with legible brands at one end. Also, 10 logs shall be painted at one end with durable red paint.

H-080 Snags Not to be Felled

Snags not required to be felled for safety reasons may be left standing. Snags felled for safety reasons shall not be removed and must remain where felled.

H-110 Stump Height

Trees shall be cut as close to the ground as practicable. Stump height shall not exceed 12 inches in height measured on the uphill side, or 2 inches above the root collar, whichever is higher.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using cable; shovel on sustained slopes 35% or less; a self-leveling self-leveling harvester/feller-buncher on sustained slopes 55% or less; tethered harvester/feller-buncher and/or shovel may be used for falling and pre-bunching only (See H-141 for restrictions); a feller-buncher may be utilized on sustained slopes 35% or less. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities.

H-126 Tailholds on State Land

If Purchaser tailholds on State land, methods to minimize damage to live trees outside the sale area shall be employed and must be approved in writing by the Contract Administrator.

H-130 Hauling Schedule

The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

A. The following types of equipment are considered ground-based equipment:

SHOVEL is defined as a low ground pressure track-mounted machine with hydraulic boom and grapple capable of picking up one end of the largest log 25 feet from the center of the machine.

LOG PROCESSOR/DE-LIMBER is defined as a mobile machine with a hydraulic boom capable of simultaneously bucking, delimiting and/or debarking and chipping whole trees while sitting stationary at the landing.

FELLER-BUNCHER/HARVESTER is defined as a track mounted machine with hydraulic boom and cutter head capable of felling, bucking, limbing, and decking logs in one operation.

- B. Equipment shall remain at least 30 feet from all water courses or areas of wet/soft soils, except as necessary to cross at approved locations. Water course crossing structures must be approved by the Contract Administrator.
- C. When yarding and loading operations are occurring simultaneously, an additional shovel shall be required for loading to avoid extra trips to the landing. Shovel yarding shall not be allowed to create ruts or soil puddling. Shovel routes should be dispersed to prevent creation of definable trails.
- D. Equipment crossings on designated recreation trails are not allowed except within road right of way and that portion of MY-RRG15 used as access to the stream bank restoration work described below.
- E. Purchaser is responsible for all notification signage relating to logging or road construction activity provided and posted at the Purchaser's expense.
- F. Operations are not allowed on weekends or state recognized holidays unless authorized in writing by the Contract Administrator. Authorization requires the Purchaser to provide public notification no fewer than two weeks prior to operation.
- G. Trees must be felled away from all property lines unless it is determined to be unsafe to do so.
- H. No operations are allowed outside of designated harvest boundaries. The exceptions are as follows:
 - a. Tail holds and yarding corridors outside of designated harvest boundaries may be necessary to remove timber from Unit 3.
 - b. Stream bank restoration work is required on an orphaned grade MY-RRG15. This work must be completed prior to harvesting timber in Unit 3.

- I. Purchaser shall mark tail holds and have them approved by the Contract Administrator prior to cable yarding operations.
- a. If tailholds are needed on or near the cliff face adjacent to Unit 3, an onsite consultation with a DNR region wildlife biologist is required for the tailhold locations prior to operations.
- J. If yarding corridors are necessary outside of the harvest boundaries, Purchaser shall mark these and have them approved by the Contract Administrator prior to operations.
- K. Any trees that need to be felled outside of the harvest boundaries must be limited to only those necessary for feasible operations with prior written approval from the Contract Administrator.
- L. Trees shall be felled away from stream channels and any standing water or wet swales when feasible.
- M. Intermediate supports, if necessary for yarding, shall be marked by the Purchaser and approved by the Contract Administrator prior to felling unit timber.
- N. Ground-based yarding shall not exceed 800 feet from any road unless authorized in writing by the Contract Administrator.
- O. All gates used to access the work area must remain closed during operations including hauling. Gates must be locked at the end of each operational period.
- P. Any signs or structures that are damaged or moved shall be repaired or replaced at the Purchaser's expense and must be approved by the Contract Administrator.
- Q. Maintain a 30-foot equipment limitation zone on either side of all type-5 streams.
- R. Purchaser shall clean and maintain any designated recreational trails impacted by harvest operations before contract termination. This does not apply to trails impacted by road construction. (See S-150)
- S. Trees must be felled away from the power line right-of-way.

Permission to do otherwise must be granted in writing by the Contract Administrator.

H-141 Additional Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

- A. A copy of the timber sale map and contract shall be present on site during active operations.
- B. Purchaser must obtain prior written approval from the Contract Administrator for areas as to where to utilize tethered harvester/feller-buncher and/or shovel equipment prior to use. Trees may be felled and pre-bunched by the equipment but must be yarded by cable, if authorized by the Contract Administrator.
- C. No operations are allowed within Wallace Falls State Park. Should any portion of a felled tree land within the State Park, the entire tree will remain where it lies.
- D. Do not remove any forest products from outside of designated harvest boundaries.
- E. The Purchaser must obtain written confirmation from the Contract Administrator that the abandonment of MY-12 was completed to satisfactory standards. This confirmation must be received within 18 months of the start of MY-12 construction and within 60 days of final timber removal from Unit 3.
 - a. Abandonment of this road requires a pre-work meeting with the operator, Contract Administrator, road engineer, state lands geologist, and forest practices forester.
- G. This project requires stream bank restoration work on a portion of an orphaned grade MY-RRG15. This work requires a pre-work meeting with the operator, Contract Administrator, state lands geologist, and forest practices forester. See road plan for more details.
- H. If any trees are required to be felled within a CMZ for operational feasibility, they will be left on site.
- I. Should any designated trails be impacted by operations, repairs shall be completed by the Purchaser to the satisfactory standards determined by the recreation staff.

Permission to do otherwise must be granted in writing by the State.

H-150 Required Removal of Forest Products

Purchaser shall remove from the sale area and present for scaling or weighing all forest products conveyed in the G-010 clause that meet the following minimum dimensions:

Species	Net bd ft	Log length (ft)	Log dib
All Species	10	12	5

The State may treat failure to remove forest products left on the sale area that meet the above specifications as a breach of this contract. At the State's option, forest products that meet the above specifications and are left on the sale area may be scaled for volume or measured and converted to weight by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling, measuring and computing the billing will be borne by the Purchaser.

H-157 Optional Removal of Forest Products Not Designated

If in the course of operations, Purchaser decides to remove forest products that are below the minimum designated removal specifications per the 'Required Removal of Forest Products' (H-150), the payment rates in clause P-027 shall apply.

Forest products designated as optional shall be decked separately from forest products designated as required for removal. Prior to removal from the sale area, optional forest products as described in this clause must be inspected and approved by the Contract Administrator. Optional forest products may not be mixed with forest products that are required for removal by this contract and shall be removed from the sale area in separate truck loads using load tickets specified by the Contract Administrator.

All material removed under this clause is subject to the same log and load accountability rules as defined in the Log Definitions and Accountability section of this contract. Purchaser shall follow the payment procedures as required in the P-052 clause and will submit a separate summary report for all forest products removed from the sale area under the authority of this clause.

H-160 Mismatch

Mismatch is defined as forest products remaining on the sale area that would have met the specifications in clause H-150 if bucking lengths had been varied to include such products.

The State may treat mismatch as a breach of this contract. At the State's option, forest products that are left on the sale area may be scaled for volume by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling and computing the billing will be borne by Purchaser.

H-180 Removal of Specialized Forest Products or Firewood

Prior to the removal of conveyed specialized forest products or firewood from the sale area, Purchaser and the State shall agree in writing to the method of accounting for/and removal of such products.

H-190 Completion of Settings

Operations begun on any setting of the sale area shall be completed before any operation begins on subsequent settings unless authorized in writing by the Contract Administrator.

H-220 Protection of Residual or Adjacent Trees

Unless otherwise specified by this contract, the Contract Administrator shall identify damaged adjacent or leave trees that shall be paid for according to clause G-230.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 11/1/2019 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on MY-ML, MY-04, MY-12, MY-RRG15, MY-21, MY-2104, MY-2104-01, MY-2106, MY-43 roads. All work shall be completed to the specifications detailed in the Road Plan.

C-130 Dust Abatement

Purchaser shall abate dust on the on the MY-ML 0+00 to 234+31 and the MY-04 0+00 to 156+70, as directed by the Contract Administrator.

Section S: Site Preparation and Protection

S-001 Emergency Response Plan

An Emergency Response Plan (ERP) shall be provided to the Contract Administrator containing but not limited to, valid contact numbers and procedures for medical emergencies, fire, hazardous spills, forest practice violations and any unauthorized or unlawful activity on or in the vicinity of the sale area. The Contract Administrator and the State shall be promptly notified whenever an incident occurs requiring an emergency response.

The ERP must be presented for inspection at the prework meeting and kept readily available to all personnel, including subcontractors, on site during active operations.

S-010 Fire Hazardous Conditions

Purchaser acknowledges that operations under this Contract may increase the risk of fire. Purchaser shall conduct all operations under this agreement following the requirements of WAC 332-24-005 and WAC 332-24-405 and further agrees to use the highest degree of care to prevent uncontrolled fires from starting.

In the event of an uncontrolled fire, Purchaser agrees to provide equipment and personnel working at the site to safely and effectively engage in first response fire suppression activity.

Purchaser's failure to effectively engage in fire-safe operations is considered a breach and may result in suspension of operations.

S-030 Landing Debris Clean Up

Landing debris shall be disposed of in a manner approved in writing by the Contract Administrator.

S-035 Logging Debris Clean Up

Slash and debris created from harvest activities shall be treated in a manner approved in writing by the Contract Administrator.

S-050 Cessation of Operations for Low Humidity

When the humidity is 30 percent or lower on the sale area, all operations must cease unless authority to continue is granted by the State in writing.

S-060 Pump Truck or Pump Trailer

Purchaser shall provide a fully functional pump truck or pump trailer equipped to meet the specifications of WAC 332-24-005 and WAC 332-24-405 during the "closed season" or as extended by the State and shall provide trained personnel to operate this equipment on the sale area during all operating periods.

S-100 Stream Cleanout

Slash or debris which enters any stream, excluding the log placement in stream for RFRS, as a result of operations under this contract and which is identified by the Contract Administrator shall be removed and deposited in a stable position. Removal of slash or debris shall be accomplished in a manner that avoids damage to the natural stream bed and bank vegetation.

S-130 Hazardous Materials

a. Hazardous Materials and Waste - Regulatory Compliance

Purchaser is responsible for understanding and complying with all applicable local, state, and federal hazardous material/waste laws and regulations for operations conducted under this contract. Such regulations pertain to, but may not be limited to, hazardous material storage, handling and transport, personnel protection, release notification and emergency response, cleanup, and waste disposal.

Purchaser shall be responsible for restoring the site in the event of a spill or other releases of hazardous material/waste during operations conducted under this contract.

b. Hazardous Materials Spill Prevention

All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

c. Hazardous Materials Spill Containment, Control and Cleanup

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. Purchaser shall ensure that enough quick response spill kits capable of absorbing 10 gallons of oil, coolant, solvent or

contaminated water are available on site to quickly address potential spills from any piece of equipment at all times throughout active operations. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain & recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

d. Hazardous Material Release Reporting

Releases of oil or hazardous materials to the environment must be reported according to the State Department of Ecology (DOE). It is the responsibility of the Purchaser to have all emergency contact information readily available and a means of remote communication for purposes of quick notification. In the event of a spill covered in part a., the Purchaser is responsible for immediately notifying all the following:

- Department of Emergency Management (contact information below).
- National Response Center (contact information below).
- Appropriate Department of Ecology (DOE) regional office (contact information below).
- DNR Contract Administrator

DOE - Northwest Region: 1-425-649-7000
(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

DOE - Southwest Region: 1-360-407-6300
(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

DOE - Central Region: 1-509-575-2490
(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

DOE - Eastern Region: 1-509-329-3400
(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

Department of Emergency Management 24-hour Number: 1-800-258-5990

National Response Center: 1-800-424-8802

S-131 Refuse Disposal

As required by RCW 70.93, All Purchaser generated refuse shall be removed from state lands for proper disposal prior to termination of this contract. No refuse shall be burned, buried or abandoned on state forest lands. All refuse shall be transported in a manner such that it is in compliance with RCW 70.93 and all loads or loose materials

shall be covered/secured such that these waste materials are properly contained during transport.

S-150 Recreation Trail Cleanout

At the completion of logging operations as described in clause H-140/H-141, Purchaser shall repair any damage to and clean out all logging debris from recreational trail(s).

Section D: Damages

D-010 Liquidated Damages

The clauses in the DAMAGES section of this contract provide for payments by Purchaser to the State for certain breaches of the terms of this contract. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State caused by Purchaser's breach. These liquidated damages provisions are agreed to by the State and Purchaser with the understanding of the difficulty of proving loss and the inconvenience or infeasibility of obtaining an adequate remedy. These liquidated damages provisions provide greater certainty for the Purchaser by allowing the Purchaser to better assess its responsibilities under the contract.

D-020 Failure to Remove Forest Products

Purchaser's failure to remove all or part of the forest products sold in this agreement prior to the expiration of the contract term results in substantial injury to the State. The value of the forest products sold at the time of breach is not readily ascertainable. Purchaser's failure to perform disrupts the State's management plans, the actual cost of which is difficult to assess. A resale involves additional time and expense and is not an adequate remedy. Therefore, Purchaser agrees to pay the State as liquidated damages a sum calculated using the following formula:

$$LD = .35V-ID-P+C+A$$

Where:

LD = Liquidated Damage value.

V = The unremoved value at the date of breach of contract. The value is determined by subtracting the removal volume to date from the State's cruise volume multiplied by the contract bid rates.

ID = Initial Deposit paid at date of contract that has not been applied to timber payments.

P = Advance payments received but not yet applied to specific contract requirements.

C = Charges assessed for contract requirements completed prior to breach of contract but not paid for.

A = Administrative Fee = \$2,500.00.

The above formula reflects the Purchaser's forfeiture of the initial deposit in accordance with clause P-010 by deducting the initial deposit from the amount owed. In no event shall the liquidated damages be less than zero. Interest on the liquidated damage is owed from the date of breach until final payment, calculated using the following formula: $\text{Interest} = r \times \text{LD} \times N$.

Where:

r = daily equivalent of an annual interest at current interest rate as established by WAC 332-100-030.

LD = Liquidated damage value.

N = Number of days from date of breach to date payment is received.

D-030 Inadequate Log Accountability

Removal of forest products from the sale area without adequate branding and/or valid load tickets attached to the load and scaling forest products in a location other than the facility approved by the State can result in substantial injury to the State. Failure to properly account for loads and scaling and/or weighing information can result in loss to the State. The potential loss from not having proper branding, ticketing, scaling and/or weighing location and accountability is not readily ascertainable. Purchaser's failure to perform results in a loss of log weight and scale accountability, increases the potential for unauthorized removal of forest products, and increases the State's administration costs, the actual costs of which are difficult to assess.

Enforcement actions for unauthorized removal of forest products for each improperly branded load, improperly ticketed load, lost or unaccounted for tickets, or use of a facility not authorized for this sale or improper submission of scaling data are impractical, expensive, time consuming and are not an adequate remedy. Therefore, Purchaser agrees to pay the State, as liquidated damages, a sum of \$100 each time a load of logs does not have branding as required in the contract, \$250 each time a load of logs does not have a load ticket as required by the contract, \$250 each time a load ticket has not been filled out as required by the plan of operations, \$250 each time a load is weighed or scaled at a location not approved as required under this contract, \$250 each time a log ticket summary report is not submitted properly, and if a third party Log and Load Reporting Service is required, \$250 each time scaling or weight data is not properly submitted to the Log and Load Reporting Service per clause L-071, and \$250 each unused ticket that is not returned to the State, for any reason.

D-041 Reserve Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-013, Reserve Tree Damage Definition, and when the Contract Administrator determines that a suitable replacement for a damaged reserve tree is not possible, the damaged trees result in substantial injury to the State. The value of the damaged reserve trees at the time of the breach is not readily ascertainable. Therefore, the Purchaser agrees to pay

the State as liquidated damages at the rate of \$1,000.00 per tree for all damaged reserve trees that are not replaced in the sale area.

SIGNATURES

This agreement may be executed in any number of counterparts (including by electronic mail in portable document format (.pdf), or by facsimile) each of which shall be deemed an original but all of which, when taken together, shall constitute one and the same Agreement binding on all parties.

IN WITNESS WHEREOF, the Parties hereto have entered into this contract.

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

Purchaser

Jay Guthrie, Acting
Northwest Region Manager

Print Name

Date: _____

Date: _____

Address:

CORPORATE ACKNOWLEDGEMENT
(Required for both LLC and Inc. Entities)

STATE OF _____)

COUNTY OF _____)

On this _____ day of _____, 20____, before me personally
appeared _____

_____ to me known to be the
_____ of the corporation
that executed the within and foregoing instrument and acknowledged said instrument to be the
free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned,
and on oath stated that (he/she was) (they were) authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and
year first above written.

Notary Public in and for the State of

My appointment expires _____



WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

FOREST EXCISE TAX ROAD SUMMARY SHEET

Region:

Timber Sale Name:

Application Number:

EXCISE TAX APPLICABLE ACTIVITIES

Construction: linear feet
Road to be constructed (optional and required) but not abandoned

Reconstruction: linear feet
Road to be reconstructed (optional and required) but not abandoned

Abandonment: linear feet
Abandonment of existing roads not reconstructed under the contract

Decommission: linear feet
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: linear feet
Existing road to receive maintenance work (optional and required) prior to haul

EXCISE TAX EXEMPT ACTIVITIES

Temporary Construction: linear feet
Roads to be constructed (optional and required) and then abandoned

Temporary Reconstruction: linear feet
Roads to be reconstructed (optional and required) and then abandoned

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.
(Revised 9/18)

PRE-CRUISE NARRATIVE

Sale Name: Middle May	Region: Northwest
Agreement #: 30-100161	District: Cascade
Contact Forester: Tyson Whiteid Phone / Location: 360-280-0968	County(s): Choose a county, Snohomish
Alternate Contact: John Moon Phone / Location: 360-770-4436	Other information: Click here to enter text.

Type of Sale: MBF Scale	
Harvest System: Ground based Click here to enter text.	70%
Harvest System: Downhill Cable Click here to enter text.	20%
Harvest System: Uphill Cable Click here to enter text.	10%

UNIT ACREAGES AND METHOD OF DETERMINATION:

Unit # Harvest R/W or RMZ WMZ	Legal Description (Enter only one legal for each unit) Sec/Twp/Rng	Grant or Trust	Gross Proposal Acres	Deductions from Gross Acres (No harvest acres)				Net Harvest Acres	Acreage Determination (List method and error of closure if applicable)
				RMZ/ WMZ Acres	Leave Tree Acres	Existing Road Acres	Other Acres (describe)		
1A	S33/T28/R09E	01	95.6	21.0	2.4	0		72.2	GPS (Garmin)
1B	S33/T28/R09E	01	7.7	1.6	0	0		6.1	GPS (Garmin)
2	S34/T28/R09E	01/03	80.0	25.9	2.8	0		51.3	GPS (Garmin)
3	S03/T27/R09E	01	62.6	28.2	2.8	0		31.6	GPS (Garmin)
ROW	All of the above	01/03	31.8	0	0	0		31.8	Combination
TOTAL ACRES			277.7	76.7	8.0	0		193.0	

HARVEST PLAN AND SPECIAL CONDITIONS:

Unit #	Harvest Prescription: (Leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1A	Variable Retention Harvest: Take all trees bounded by white "Timber Sale Boundary" tags or by and including trees painted with two red bands and a yellow	N/A	605 total leave trees (512 clumped and 93 scattered)

	"T". Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint.		
1B	Variable Retention Harvest: Take all trees bounded by white "Timber Sale Boundary" tags or by and including trees painted with two red bands and a yellow "T". Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint	N/A	40 total leave trees (14 clumped and 26 scattered)
2	Variable Retention Harvest: Take all trees bounded by white "Timber Sale Boundary" tags. Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint	N/A	447 total leave trees (431 clumped and 16 scattered)
3	Variable Retention Harvest: Take all trees bounded by white "Timber Sale Boundary" tags. Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint	N/A	281 total leave trees (275 clumped and 6 scattered)
ROW	Take all trees bounded by orange "Right of Way" tags.	N/A	

OTHER PRE-CRUISE INFORMATION:

Unit #	Primary,secondary Species / Estimated Volume (MBF)	Access information (Gates, locks, etc.)	Photos, traverse maps required
1A	DF, WH/ 3,780 MBF		Traverse and vicinity maps are included
1B	DF, WH/ 310 MBF		Traverse and vicinity maps are included
2	DF, WH/ 2,980 MBF		Traverse and vicinity maps are included
3	DF, BLM/ 1,620 MBF		Traverse and vicinity maps are included
ROW	DF, BLM/ 1,500 MBF		Traverse and vicinity maps are included
TOTAL MBF	10,190 MBF		

REMARKS:**Unit 1:**

Highly variable stand around 95 years old. Lower portions are dominated by low TPA hardwood while the upper portions are well stocked with High quality and pole quality Douglas-fir. Western red-cedar and western hemlock are a minor component.

Unit 2:

Variable stand of conifer around 80 years old. Western hemlock, large Douglas-fir and pole quality western red-cedar are arranged in varying pockets throughout the unit. 90% of it can be harvested with ground based equipment.

Unit 3:

A moderately variable stand around 75 years old consisting of conifer with abundant clumps of big leaf maple. The total heights and forms are low in the uphill portions. These heights and forms increase as elevation decreases. Douglas-fir is the primary species in this unit. It is well stocked with high quality and pole quality Douglas-fir. The majority of this unit will be harvested using downhill cable yarding.

Right of Way:

This is a large unit which covers many different aspects and elevations. It is highly variable and contains components of all of the above descriptions.

DRIVING DIRECTIONS:

Directions for heavy equipment and hauling:

- From US-2 at the town of Gold Bar:
 - Turn North onto Reiter Rd. Travel 0.8 mi.
 - Keep strait to stay on Reiter Rd. Travel 1.2 mi.
 - Turn left at yellow gate (F1-3 lock) onto MY-ML. Travel 0.4mi.
 - To MY-0403 hard rock pit:
 - Turn right onto MY-04. Travel 2.9 mi.
 - Arrive at hard rock pit.
 - To Unit 3:
 - Turn left to stay on MY-ML. Travel 0.7 mi (begin road construction).
 - Cross May Creek on foot. Travel 0.1 mi
 - Arrive at Unit 3
 - To Unit 1 from May Creek:
 - Travel on MY-ML for 1.1 mi.
 - Turn left onto MY-21. Travel 0.4 mi.
 - Arrive at Unit 1.
 - To Unit 2 from Jct. with MY-21:
 - Continue on MY-ML for 1.4 mi
 - Arrive at Unit 2

Alternate directions for authorized personnel only (No equipment. No hauling):

- From US-2 at the town of Gold Bar:
 - Turn North onto Reiter Rd. Travel 0.8 mi.
 - Keep left to turn onto May Creek Rd. Travel 1.5 mi.
 - Turn right onto 429th Ave. SE. Travel 0.2 mi
 - Arrive at trail head. Continue on hiking trail for 0.7 mi.
 - Arrive at MY-21/ MY-2104 Jct. (250 feet East of Unit 1)

- From US-2 at the town of Startup:
 - Turn North onto Kellogg Lake Rd. Travel 0.2 mi.
 - Veer right (first driveway on right) onto WF-ML. Travel 0.3 mi.
 - Continue through yellow gate (F1-3 lock) on WF-ML for 0.7 mi.
 - Continue through yellow gate (F1-3 lock) on WF-ML for 7.5 mi.
 - Turn right onto WF-87 (use WF-84 when built). Travel 1.9 mi.
 - Park at Foot Bridge. Continue on foot across the bridge and onto an old road grade for approximately 1000 feet.
 - Arrive at Unit 2

Prepared By: <u>Tyson Whiteid</u>	Title: <u>Forester</u>	CC:
Date: <u>12/2/19</u>		

Cruise Narrative

Sale Name: Middle May	Region: Northwest
Agree. #: 30-100161	District: Cascade
Lead cruiser: Matt Llobet	Completion date: 12/12/2019
Other cruisers on sale: AH	

Unit acreage specifications:

Unit #	Cruised acres	Cruised acres agree with sale acres? Yes/No	If acres do not agree explain why.
1	78.3	No	Combined units 1A and 1B
2	51.3	Yes	
3	31.6	Yes	
ROW	31.8	Yes	
Total	193.0		

Unit cruise specifications:

Unit #	Sample type (VP, FP, ITS,100%)	Expansion factor (BAF, full/half)	Sighting height (4.5 ft, 16 ft.)	Grid size (Plot spacing or % of area)	Plot ratio (cruise:count)	Total number of plots
1	VP	62.6 BAF 40.0 BAF	4.5 ft	300' x 300'	Cruise All	39
2	VP	62.5 BAF 40.0 BAF	4.5 ft	250' x 250'	1:1	43
3	VP	62.5 BAF 40.0 BAF	4.5 ft	250' x 250'	1:1	29
ROW	FP	.05		19plots/31.8ac	Cruise All	19

Minor species cruise intensity:	Used a 40 prism on minors to capture a better sample						
Minimum cruise spec:	Minimum DBH 7 inches, 10 BF net, minimum top dib 5 inches or 40% of 16-ft. form point dob.						
Avg ring count by sp:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">DF =</td> <td style="width: 20%; text-align: center;">8</td> <td style="width: 15%;">WH =</td> <td style="width: 20%; text-align: center;">8</td> <td style="width: 15%;">SS =</td> <td style="width: 15%;"></td> </tr> </table>	DF =	8	WH =	8	SS =	
DF =	8	WH =	8	SS =			
Leave/take tree description:	<p>Variable Retention Harvest-</p> <p>Unit 1- Take all trees bounded by white "Timber Sale Boundary" tags or by and including trees painted with two red bands and a yellow "T". Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint ROW- Remove all timber bounded by orange right of way tags.</p>						

	<p>Unit 2- Take all trees bounded by white "Timber Sale Boundary" tags. Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint.</p> <p>Unit 3- Take all trees bounded by white "Timber Sale Boundary" tags. Do not take leave tree areas marked with yellow "Leave Tree Area" tags and/or individual trees marked with one or two bands of blue paint.</p> <p>ROW- Take all trees bounded by orange "Right of Way" tags.</p>
Other conditions	

Field Observations:

All timber was graded and cruised in variable log lengths using NW Official Log Scaling and Grading Rules. Utility volume was given board foot volume. Middle May timber sale is 70% ground based harvesting, 30% cable harvesting, and ranges in elevation from 360' - 1880'. Predominant species throughout the sale is Douglas fir at 69%, Western Hemlock at 17%, and Western Red Cedar at 7%. While cruising Middle may, both A sort (**1,074**) and B sort (**1,410mbf**) Douglas fir was consistent throughout the sale. Also observed throughout the sale was an estimated **350mbf** of pole quality Douglas fir, and an estimated **65mbf** of pole quality Western Red Cedar.

Prepared by: Matt Llobet
Title: Forest Check Cruiser, Timber Sales
Sedro Woolley, WA.

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																		
T27N R09E S03 Ty0002 THRU T28N R09E S34 Ty0003				Project:		RSPTW										Page		1				
				Acres		193.00										Date		12/17/2019	Time	11:27:29AM		
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf		
									5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99						
DF	HB	2S		19	.7	6,690	6,643	1,282				38	62			3	97	39	15	371	2.00	17.9
DF	HB	3S		2	.3	665	663	128			100						100	40	10	152	0.94	4.4
DF	D	2S		40	1.4	14,214	14,008	2,704				37	63		0	1	99	39	16	386	2.03	36.3
DF	D	3S		19	.6	6,271	6,234	1,203	15	85				0	6	5	89	37	9	105	0.72	59.6
DF	D	4S		3	1.1	1,201	1,188	229	92	8				28	50	3	19	24	6	29	0.34	40.6
DF	D	UT				123	123	24	82	18				76	19		6	19	6	25	0.31	5.0
DF	HA	3P		2	1.2	410	405	78					100				100	38	24	978	4.65	.4
DF	HASM			10	.7	3,509	3,485	673							2	5	93	38	19	585	3.03	6.0
DF	HA	2S		5	.7	1,686	1,673	323				61	39		5	8	87	38	14	299	1.75	5.6
DF Totals				69	1.0	34,768	34,422	6,643	6	18	25	51		1	3	3	93	34	11	196	1.25	175.8
WH	D	2S		59	1.7	5,053	4,966	958				52	48		1		99	39	15	316	1.79	15.7
WH	D	3S		31	.5	2,645	2,631	508	24	76				0	1	5	93	38	8	99	0.72	26.5
WH	D	4S		5	2.2	374	366	71	98	2				23	31	11	35	27	6	32	0.33	11.3
WH	D	UT		5		401	401	77	69	2		29		34	45	22		24	6	37	0.36	10.9
WH Totals				17	1.3	8,473	8,364	1,614	15	24	31	30		3	5	3	89	34	9	130	0.93	64.5
RC	D	3S		78	8.7	2,831	2,583	499	12	36	33	19		1	8	0	91	37	10	136	1.34	19.0
RC	D	4S		22	5.4	756	715	138	97	3				11	43	28	18	27	5	29	0.39	25.0
RC Totals				7	8.0	3,587	3,298	637	30	29	26	15		3	16	6	75	31	7	75	0.88	44.0
RA	D	2S		28	8.4	107	98	19				100		18	82			27	13	146	1.52	.7
RA	D	3S		33	3.0	114	111	21				100			66		34	32	10	123	1.04	.9
RA	D	4S		25	6.6	90	85	16	47	53				5	81	14		29	7	52	0.57	1.6
RA	D	UT		14		47	47	9	78		22			62	38			20	6	29	0.43	1.6
RA Totals				1	5.1	359	340	66	22	46	32			15	70	4	11	26	8	71	0.78	4.8
CW	D	2S		88	4.7	606	578	111				6	94	4	21		75	35	20	613	3.39	.9
CW	D	4S		11		70	70	13				100		5	32	11	51	30	10	126	1.12	.6
CW	D	UT		1	.0	6	6	1	100								100	29	5	30	0.40	.2
CW Totals				1	4.2	682	654	126	1	11	5	83		4	23	1	72	33	15	385	2.39	1.7
BM	D	2S		46	13.9	1,378	1,187	229				67	33	28	43		29	28	14	197	1.94	6.0
BM	D	3S		19	6.5	500	468	90				100		23	67		10	27	10	100	1.01	4.7
BM	D	4S		18	10.1	515	463	89	44	56				7	79	3	11	30	7	46	0.53	10.1
BM	D	UT		17		424	424	82	64	36				23	44	8	25	24	6	34	0.49	12.5
BM Totals				5	9.8	2,817	2,542	491	19	35	31	16		22	54	2	21	27	8	76	0.85	33.3
Totals					2.1	50,685	49,620	9,577	10	21	26	43		3	8	3	86	33	10	153	1.10	324.2

TC PSTATS		PROJECT STATISTICS							PAGE	1	
		PROJECT RSPTW							DATE	12/17/2019	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
27N	09E	03	RSP	0002	THR	193.00	130	728	S	W	
28N	09E	34	RSP	0003							
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			130	728	5.6						
CRUISE			97	529	5.5	29,850	1.8				
DBH COUNT											
REFOREST											
COUNT			33	199	6.0						
BLANKS											
100 %											
STAND SUMMARY											
		SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR		255	66.7	21.5	96	36.2	167.5	34,768	34,422	7,564	7,564
WHEMLOCK		82	35.1	16.5	69	12.8	52.1	8,473	8,364	2,009	2,009
WR CEDAR		100	30.2	15.7	52	10.3	40.7	3,587	3,298	1,196	1,196
BL MAPLE		73	19.5	16.2	55	6.9	28.0	2,817	2,542	769	770
R ALDER		13	2.4	16.7	57	0.9	3.7	359	340	99	99
COTWOOD		6	.7	28.0	85	0.6	3.0	682	654	133	133
TOTAL		529	154.7	18.7	75	68.2	295.0	50,685	49,620	11,770	11,770
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR		65.8	4.1	686	715	745					
WHEMLOCK		76.6	8.4	323	353	383					
WR CEDAR		117.9	11.8	175	199	222					
BL MAPLE		98.4	11.8	177	201	224					
R ALDER		28.3	8.2	134	146	158					
COTWOOD		59.9	26.7	852	1,162	1,471					
TOTAL		93.0	4.1	463	482	502	345	176	86		
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR		98.5	8.6	61	67	72					
WHEMLOCK		163.7	14.3	30	35	40					
WR CEDAR		167.8	14.7	26	30	35					
BL MAPLE		234.2	20.5	16	20	24					
R ALDER		508.2	44.5	1	2	3					
COTWOOD		577.0	50.6	0	1	1					
TOTAL		61.3	5.4	146	155	163	150	77	37		
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR		90.1	7.9	154	168	181					
WHEMLOCK		144.2	12.6	45	52	59					
WR CEDAR		153.3	13.4	35	41	46					
BL MAPLE		215.2	18.9	23	28	33					
R ALDER		481.3	42.2	2	4	5					
COTWOOD		624.6	54.7	1	3	5					
TOTAL		52.3	4.6	281	295	308	109	56	27		
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR		97.9	8.6	31,468	34,422	37,375					
WHEMLOCK		151.6	13.3	7,253	8,364	9,476					
WR CEDAR		177.8	15.6	2,784	3,298	3,812					

TC PSTATS		PROJECT STATISTICS							PAGE	2
		PROJECT		RSPTW			DATE	12/17/2019		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
27N	09E	03	RSP	0002	THR	193.00	130	728	S	W
28N	09E	34	RSP	0003						
CL	68.1		COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	.00		VAR.	S.E.%	LOW	AVG	HIGH	5	7	10
BL MAPLE			221.8	19.4	2,048	2,542	3,035			
R ALDER			496.9	43.5	192	340	488			
COTWOOD			705.2	61.8	250	654	1,057			
TOTAL			66.3	5.8	46,736	49,620	52,504	176	90	44

T27N R09E S03 T0002										T27N R09E S03 T0002				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
27N	09E	03	RSP	0002	51.30	43	133	S	W					

S Sp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre			
								Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/ Lf		
								5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99							
WH	DM	2S	66	1.9	16,988	16,669	855			55	45			1	99	39	14	308	1.75	54.1		
WH	DM	3S	29	.3	7,422	7,401	380	21	79					0	2	1	97	38	8	102	0.73	72.8
WH	DM	4S	3		702	702	36	95	5					43	39		18	23	6	29	0.35	24.3
WH	DM	UT	2		412	412	21	60			40			40	60			24	6	45	0.36	9.2
WH	Totals		43	1.3	25,525	25,184	1,292	10	23	36	30	2	3	0	94	35	10	157	1.06	160.4		
DF	HB	2S	19	1.1	4,977	4,921	252			41	59				9	91	39	15	372	2.04	13.2	
DF	HB	3S	3		976	976	50		100							100	40	11	180	1.11	5.4	
DF	DM	2S	50	2.4	13,110	12,791	656			24	76				3	97	39	16	428	2.27	29.9	
DF	DM	3S	13	.6	3,532	3,511	180	9	91						14	6	80	35	9	101	0.76	34.7
DF	DM	4S	4	3.3	858	830	43	83	17					34	66			22	6	29	0.39	28.5
DF	DM	UT			107	107	5	100						100				18	5	20	0.17	5.3
DF	HA	SM	5		1,299	1,299	67				100					100	37	20	680	3.35	1.9	
DF	HA	2S	6	3.2	1,464	1,417	73				100				21	79	36	17	386	2.22	3.7	
DF	Totals		45	1.8	26,322	25,852	1,326	4	17	20	59	1	5	4	89	33	11	211	1.40	122.8		
RC	DM	3S	81	2.3	5,604	5,476	281	9	43	34	14	2	11	1	86	36	10	139	1.16	39.5		
RC	DM	4S	19	.0	1,263	1,263	65	96	4			8	49	18	25	28	5	33	0.35	38.1		
RC	Totals		12	1.9	6,868	6,739	346	25	35	28	11	3	18	4	75	32	8	87	0.81	77.6		
RA	DM	2S	34	19.0	59	48	2			100					100	30	14	170	2.53	.3		
RA	DM	4S	42		58	58	3	100							100	30	7	50	0.53	1.2		
RA	DM	UT	24		32	32	2	100				74	26			18	5	22	0.32	1.4		
RA	Totals		0	7.5	149	137	7	65	35			17	83			24	7	48	0.69	2.9		
Type	Totals			1.6	58,863	57,912	2,971	9	22	28	41	2	6	2	89	34	10	159	1.12	363.6		

T27N R09E S03 TROW T27N R09E S03 TROW
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt
 27N 09E 03 RSP ROW 31.80 19 104 S W

Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre						
									Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/Lf	
														5-7	8-11	12-15	16+	12-20	21-30		31-35					36-99
DF	HB	2S	22	.3	6,305	6,284	200		25	75					100	39	17	459	2.42	13.7						
DF	HB	3S	1	2.8	379	368	12		100						100	40	11	175	1.07	2.1						
DF	DM	2S	44	1.3	12,747	12,579	400		32	68			1	99	38	16	427	2.31	29.5							
DF	DM	3S	17		4,674	4,674	149	9	91				2	7	7	84	35	9	106	0.78	44.2					
DF	DM	4S	3		1,063	1,063	34	92	8				28	41	4	28	25	6	31	0.36	34.7					
DF	DM	UT	1		63	63	2	100					33			67	26	6	30	0.40	2.1					
DF	HA	SM	5		1,495	1,495	48			100						100	38	21	710	3.68	2.1					
DF	HA	2S	7		1,916	1,916	61		13	87					100	38	16	364	2.10	5.3						
DF	Totals		79	.7	28,642	28,442	904	5	17	21	58	1	3	1	94	34	11	213	1.39	133.7						
BM	DM	2S	43	11.4	1,105	979	31		58	42			68	32		23	14	155	1.79	6.3						
BM	DM	3S	32	4.1	779	747	24		100					100		30	11	118	1.07	6.3						
BM	DM	4S	10	9.1	232	211	7	20	80					100		30	8	50	0.53	4.2						
BM	DM	UT	15		337	337	11	59	41				6	69	25	26	6	36	0.82	9.5						
BM	Totals		6	7.3	2,453	2,274	72	11	46	25	18	30	66	4		27	9	86	1.04	26.3						
WH	DM	2S	28	1.4	768	758	24		28	72				100		40	15	360	2.12	2.1						
WH	DM	3S	58	2.0	1,568	1,537	49	17	83					5	95	38	9	112	0.79	13.7						
WH	DM	4S	12		316	316	10	100				7	53	13	27	30	5	33	0.36	9.5						
WH	DM	UT	2		53	53	2	100				40		60		24	5	25	0.27	2.1						
WH	Totals		7	1.6	2,705	2,663	85	24	48	8	21	2	6	6	87	34	8	97	0.75	27.4						
RA	DM	2S	23	6.5	326	305	10		100				34	66		25	13	145	1.56	2.1						
RA	DM	3S	33	4.5	463	442	14		100					100		30	10	105	0.93	4.2						
RA	DM	4S	26	5.7	368	347	11	21	79					79	21	31	8	66	0.62	5.3						
RA	DM	UT	18		232	232	7	73	27				59	41		20	6	31	0.46	7.4						
RA	Totals		4	4.5	1,389	1,326	42	18	54	28			18	76	6	26	8	70	0.75	18.9						
RC	DM	3S	63		505	505	16	13	37	50				37	63	34	10	120	1.20	4.2						
RC	DM	4S	37		295	295	9	100					7	57	36	26	5	28	0.38	10.5						
RC	Totals		2		800	800	25	45	24	32			3	45	13	28	6	54	0.66	14.7						
CW	DM	2S	72		368	368	12		100					100		30	17	350	2.36	1.1						
CW	DM	4S	28		137	137	4		100					100		30	11	130	1.12	1.1						
CW	Totals		1	.0	505	505	16		27	73				100		30	14	240	1.74	2.1						
Type Totals				1.3	36,495	36,011	1,145	8	22	20	49	4	12	2	82	32	10	161	1.19	223.2						

T28N R09E S33 T0001 **T28N R09E S33 T0001**
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt
 28N 09E 33 RSP 0001 78.30 39 219 S W

Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre						
									Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/Lf	
														5-7	8-11	12-15	16+	12-20	21-30		31-35					36-99
DF	HB	2S	14	.6	5,448	5,418	424		31	69				3	97	40	16	382	2.01	14.2						
DF	DM	2S	39	1.0	15,559	15,411	1,207		43	57					100	40	15	381	1.93	40.5						
DF	DM	3S	19	.7	7,405	7,351	576	11	89			0	3	3	93	38	9	111	0.74	66.2						
DF	DM	4S	2	1.8	746	732	57	94	6			29	53	4	14	24	6	30	0.35	24.7						
DF	DM	UT	1		189	189	15	72	28			70	30			18	7	27	0.36	7.1						
DF	HA	3P	2	1.2	1,011	999	78								100	38	24	978	4.65	1.0						
DF	HA	SM	17	.9	6,705	6,646	520							2	6	91	38	19	576	2.99	11.5					
DF	HA	2S	6		1,971	1,971	154			100					16	84	38	14	273	1.61	7.2					
DF	Totals		77	.8	39,034	38,716	3,031	4	17	26	52	1	2	3	94	36	11	225	1.35	172.4						
RC	DM	3S	76	17.3	3,048	2,522	197	16	28	28	27			1	99	39	10	132	1.56	19.2						
RC	DM	4S	24	11.1	851	756	59	98	2			15	31	40	14	25	5	25	0.42	30.4						
RC	Totals		6	15.9	3,899	3,278	257	35	22	22	21	3	8	9	80	30	7	66	0.98	49.6						
BM	DM	2S	52	15.1	2,520	2,141	168			73	27	18	53		29	30	15	208	1.97	10.3						
BM	DM	3S	16	8.5	714	653	51		100			34	52		14	26	10	92	0.97	7.1						
BM	DM	4S	15	14.6	692	591	46	48	52			11	63	6	21	31	7	44	0.55	13.3						
BM	DM	UT	17		678	678	53	53	47			22	40	7	30	23	6	38	0.52	18.0						
BM	Totals		8	11.7	4,604	4,063	318	16	32	38	14	20	52	2	26	27	9	83	0.93	48.7						
WH	DM	2S	34		1,012	1,012	79			21	79				100	40	16	413	2.14	2.5						
WH	DM	3S	33		940	940	74	46	54					1	29	35	8	81	0.63	11.6						
WH	DM	4S	10	6.4	323	303	24	100						7	27	34	5	40	0.29	7.6						
WH	DM	UT	23		647	647	51	69	3		28	33	35	31		24	5	37	0.37	17.6						
WH	Totals		6	.7	2,923	2,902	227	41	18	7	34	7	9	19	64	30	7	74	0.59	39.2						
CW	DM	2S	97	5.2	1,345	1,274	100			7	93	5	11		84	36	21	673	3.59	1.9						
CW	DM	4S	3		28	28	2		100			31		69		20	9	62	0.93	.5						
CW	Totals		3	5.1	1,373	1,302	102		2	6	91	5	11	1	82	33	18	555	3.28	2.3						
RA	DM	2S	41	6.7	93	87	7			100					100	30	12	140	1.18	.6						
RA	DM	3S	45		94	94	7		100						100	40	11	180	1.31	.5						
RA	DM	4S	14	17.6	35	29	2	100				36	64			25	6	25	0.48	1.1						
RA	Totals		0	5.6	222	210	16	14	45	41		5	50		45	30	9	92	0.93	2.3						
Type Totals				3.0	52,054	50,471	3,952	9	18	26	47	3	7	4	85	33	10	160	1.16	314.6						

T28N R09E S34 T0003 **T28N R09E S34 T0003**
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt
 28N 09E 34 RSP 0003 31.60 29 73 S W

Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log			Logs Per /Acre						
									Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/Lf	
														5-7	8-11	12-15	16+	12-20	21-30		31-35					36-99
DF	HB	2S	29	.8	12,937	12,834	406		48	52					100	40	15	329	1.82	39.1						
DF	HB	3S	5		2,095	2,095	66	100							100	40	9	133	0.83	15.7						
DF	DM	2S	32	1.4	14,147	13,947	441		43	57					100	39	15	323	1.82	43.1						
DF	DM	3S	21	.6	9,515	9,456	299	28	72				4	7	89	38	8	95	0.65	99.3						
DF	DM	4S	7		3,023	3,023	96	95	5			24	45	4	27	25	6	29	0.30	105.6						
DF	DM	UT			46	46	1	100				100				19	6	20	0.32	2.3						
DF	HA	SM	3	.0	1,202	1,202	38			100					100	38	17	459	2.61	2.6						
DF	HA	2S	3		1,109	1,109	35			100					100	40	12	219	1.36	5.1						
DF	Totals		92	.8	44,074	43,711	1,381	13	21	30	36	2	4	2	92	34	9	140	0.96	312.8						
BM	DM	2S	30	9.3	1,059	960	30		44	56		44		56	23	14	195	1.95	4.9							
BM	DM	3S	15	3.3	502	485	15	100				24	64	12	27	11	105	1.09	4.6							
BM	DM	4S	36	3.7	1,196	1,151	36	43	57			3	97		29	7	47	0.50	24.7							
BM	DM	UT	19		571	571	18	100				34	41	14	12	24	5	26	0.30	22.3						
BM	Totals		7	4.8	3,327	3,167	100	34	36	13	17	24	52	2	21	27	7	56	0.59	56.5						
RC	DM	3S	46		128	128	4			100				100	36	15	320	2.46	.4							
RC	DM	4S	54	10.5	164	147	5	89	11					100	28	6	31	0.54	4.8							
RC	Totals		1	5.9	292	275	9	48	6	47			53	47	29	6	53	0.73	5.2							
WH	DM	3S	54	6.7	196	183	6			100				100	40	10	140	1.06	1.3							
WH	DM	4S	8		26	26	1	100						100	23	5	20	0.34	1.3							
WH	DM	UT	38		123	123	4	100						100	23	5	20	0.29	6.2							
WH	Totals		1	3.8	345	332	11	45	55				45	55	26	6	38	0.48	8.8							
CW	DM	4S	85		220	220	7			100				100	40	11	180	1.21	1.2							
CW	DM	UT	15	.0	37	37	1	100						100	29	5	30	0.40	1.2							
CW	Totals		1		256	256	8	14	86				14	86	35	8	105	0.87	2.4							
Type Totals				1.1	48,295	47,742	1,509	14	22	29	34	3	8	2	87	33	9	124	0.91	385.7						

TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	RSPTW			DATE	12/17/2019		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
27N	09E	03	RSP	0002	51.30	43	263	S	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		43	263	6.1							
CRUISE		23	133	5.8	8,733	1.5					
DBH COUNT REFOREST COUNT		20	130	6.5							
BLANKS 100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
WHEMLOCK	51	75.2	18.9	82	33.7	146.8	25,525	25,184	5,993	5,993	
DOUG FIR	44	46.0	22.6	93	26.9	127.9	26,322	25,852	5,669	5,669	
WR CEDAR	36	47.6	15.9	61	16.5	66.0	6,868	6,739	1,998	1,998	
R ALDER	2	1.4	15.4	55	0.5	1.9	149	137	48	48	
TOTAL	<i>133</i>	<i>170.2</i>	<i>19.2</i>	<i>79</i>	<i>78.2</i>	<i>342.6</i>	<i>58,863</i>	<i>57,912</i>	<i>13,707</i>	<i>13,707</i>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	51.8	7.2	399	430	461						
DOUG FIR	55.4	8.3	726	792	858						
WR CEDAR	91.2	15.2	207	244	281						
R ALDER	68.1	63.8	49	135	221						
TOTAL	<i>76.9</i>	<i>6.7</i>	<i>462</i>	<i>495</i>	<i>528</i>	<i>236</i>	<i>120</i>	<i>59</i>			
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	79.3	12.1	66	75	84						
DOUG FIR	96.0	14.6	39	46	53						
WR CEDAR	112.1	17.1	40	48	56						
R ALDER	655.7	99.9	0	1	3						
TOTAL	<i>44.6</i>	<i>6.8</i>	<i>159</i>	<i>170</i>	<i>182</i>	<i>79</i>	<i>40</i>	<i>20</i>			
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	70.1	10.7	131	147	162						
DOUG FIR	90.4	13.8	110	128	146						
WR CEDAR	112.8	17.2	55	66	77						
R ALDER	655.7	99.9	0	2	4						
TOTAL	<i>35.6</i>	<i>5.4</i>	<i>324</i>	<i>343</i>	<i>361</i>	<i>51</i>	<i>26</i>	<i>13</i>			
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10			
WHEMLOCK	70.6	10.8	22,476	25,184	27,892						
DOUG FIR	90.8	13.8	22,274	25,852	29,429						
WR CEDAR	127.2	19.4	5,434	6,739	8,045						
R ALDER	655.7	99.9	0	137	275						
TOTAL	<i>40.3</i>	<i>6.1</i>	<i>54,352</i>	<i>57,912</i>	<i>61,472</i>	<i>65</i>	<i>33</i>	<i>16</i>			

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT		RSPTW		DATE	12/17/2019	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
27N	09E	03	RSP	ROW	31.80	19	104	S	W	
				TREES	ESTIMATED		PERCENT			
				PER PLOT	TOTAL		SAMPLE			
				PLOTS	TREES	TREES	TREES			
TOTAL	19	104	5.5							
CRUISE	19	104	5.5		3,481		3.0			
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	53	55.8	22.1	86	31.6	148.6	28,642	28,442	6,275	6,275
BL MAPLE	14	14.7	19.1	57	6.7	29.3	2,453	2,274	739	739
WHEMLOCK	15	15.8	15.6	63	5.3	21.0	2,705	2,663	709	709
R ALDER	9	9.5	16.6	56	3.5	14.2	1,389	1,326	370	370
WR CEDAR	12	12.6	12.9	40	3.2	11.5	800	800	276	276
COTWOOD	1	1.1	24.0	73	0.7	3.3	505	505	110	110
TOTAL	104	109.5	19.5	71	51.6	227.9	36,495	36,011	8,479	8,479
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	89.8	12.4		455	520	584				
BL MAPLE	30.3	8.7		152	166	181				
WHEMLOCK	82.3	22.0		132	169	206				
R ALDER	22.6	8.0		129	140	151				
WR CEDAR	115.9	34.9		41	63	85				
COTWOOD										
TOTAL	115.9	11.5		297	335	374	537	274	134	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	129.0	30.4		39	56	73				
BL MAPLE	180.1	42.4		8	15	21				
WHEMLOCK	137.3	32.4		11	16	21				
R ALDER	257.3	60.6		4	9	15				
WR CEDAR	184.4	43.5		7	13	18				
COTWOOD	435.9	102.7			1	2				
TOTAL	59.8	14.1		94	109	125	151	77	38	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	108.0	25.4		111	149	186				
BL MAPLE	166.6	39.3		18	29	41				
WHEMLOCK	159.0	37.5		13	21	29				
R ALDER	242.2	57.1		6	14	22				
WR CEDAR	185.4	43.7		6	11	17				
COTWOOD	435.9	102.7			3	7				
TOTAL	66.2	15.6		192	228	263	185	94	46	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	115.1	27.1		20,728	28,442	36,157				
BL MAPLE	192.3	45.3		1,243	2,274	3,304				
WHEMLOCK	169.5	39.9		1,600	2,663	3,727				
R ALDER	252.9	59.6		536	1,326	2,117				
WR CEDAR	201.7	47.5		420	800	1,180				

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT		RSPTW		DATE	12/17/2019	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
27N	09E	03	RSP	ROW	31.80	19	104	S	W	
CL:	68.1%	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	7	10	
COTWOOD		435.9	102.7		505	1,024				
TOTAL		89.6	21.1	28,404	36,011	43,617	339	173	85	

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				RSPTW				DATE	12/17/2019	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	09E	33	RSP	0001	78.30	39	219	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				TREES	TREES	TREES				
TOTAL	39	219	5.6							
CRUISE	39	219	5.6	12,104			1.8			
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	108	60.6	22.9	107	36.2	173.1	39,034	38,716	8,269	8,269
WR CEDAR	49	36.3	15.9	47	12.6	50.3	3,899	3,278	1,484	1,483
BL MAPLE	42	27.9	16.8	57	10.5	43.1	4,604	4,063	1,239	1,239
WHEMLOCK	14	27.8	12.0	51	6.3	21.9	2,923	2,902	694	694
COTWOOD	4	.8	34.2	100	0.9	5.3	1,373	1,302	254	254
R ALDER	2	1.1	18.1	63	0.5	2.1	222	210	63	63
TOTAL	<i>219</i>	<i>154.6</i>	<i>18.7</i>	<i>74</i>	<i>68.3</i>	<i>295.6</i>	<i>52,054</i>	<i>50,471</i>	<i>12,001</i>	<i>12,002</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF					# OF TREES REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	56.8	5.5	814	861	908					
WR CEDAR	128.9	18.4	165	203	240					
BL MAPLE	58.8	9.2	196	216	236					
WHEMLOCK	132.6	36.7	196	309	423					
COTWOOD	22.7	13.0	1,366	1,570	1,774					
R ALDER	11.5	10.7	165	185	205					
TOTAL	<i>92.0</i>	<i>6.2</i>	<i>528</i>	<i>563</i>	<i>598</i>	<i>338</i>	<i>172</i>	<i>84</i>		
CL: 68.1 %	COEFF	TREES/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	94.6	15.1	51	61	70					
WR CEDAR	146.9	23.5	28	36	45					
BL MAPLE	167.4	26.8	20	28	35					
WHEMLOCK	212.5	34.0	18	28	37					
COTWOOD	456.6	73.0	0	1	1					
R ALDER	437.5	70.0	0	1	2					
TOTAL	<i>62.1</i>	<i>9.9</i>	<i>139</i>	<i>155</i>	<i>170</i>	<i>154</i>	<i>79</i>	<i>39</i>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	81.8	13.1	150	173	196					
WR CEDAR	119.3	19.1	41	50	60					
BL MAPLE	149.7	24.0	33	43	53					
WHEMLOCK	189.2	30.3	15	22	28					
COTWOOD	446.7	71.5	2	5	9					
R ALDER	435.7	69.7	1	2	3					
TOTAL	<i>45.3</i>	<i>7.2</i>	<i>274</i>	<i>296</i>	<i>317</i>	<i>82</i>	<i>42</i>	<i>20</i>		
CL: 68.1 %	COEFF	NET BF/ACRE					# OF PLOTS REQ.		INF. POP.	
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	86.4	13.8	33,365	38,716	44,067					
WR CEDAR	152.9	24.5	2,476	3,278	4,080					
BL MAPLE	151.3	24.2	3,079	4,063	5,047					
WHEMLOCK	202.4	32.4	1,962	2,902	3,842					
COTWOOD	463.1	74.1	337	1,302	2,267					

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT		RSPTW		DATE	12/17/2019	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	09E	33	RSP	0001	78.30	39	219	S	W	
CL:	68.1%	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER		435.7	69.7	64	210	356				
TOTAL		63.9	10.2	45,308	50,471	55,635	163	83	41	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	RSPTW			DATE	12/17/2019	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	09E	34	RSP	0003	31.60	29	142	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL	29	142	4.9							
CRUISE	16	73	4.6		5,532		1.3			
DBH COUNT										
REFOREST										
COUNT	13	69	5.3							
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	50	126.5	18.5	89	55.1	237.1	44,074	43,711	10,189	10,189
BL MAPLE	17	35.1	13.4	51	9.4	34.5	3,327	3,167	886	886
WR CEDAR	3	4.8	14.6	37	1.4	5.5	292	275	109	109
WHEMLOCK	2	7.5	10.3	37	1.3	4.3	345	332	107	107
COTWOOD	1	1.2	18.0	71	0.5	2.2	256	256	73	73
TOTAL	73	175.1	17.2	77	68.3	283.5	48,295	47,742	11,364	11,364
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	58.5	8.4		488	532	577				
BL MAPLE	192.3	49.6		95	189	283				
WR CEDAR	136.1	94.2		8	140	272				
WHEMLOCK	110.0	103.0			90	183				
COTWOOD										
TOTAL	83.6	9.9		380	422	463	279	142	70	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	60.9	11.5		112	127	141				
BL MAPLE	194.6	36.7		22	35	48				
WR CEDAR	289.2	54.6		2	5	7				
WHEMLOCK	451.1	85.2		1	7	14				
COTWOOD	538.5	101.7			1	2				
TOTAL	45.6	8.6		160	175	190	86	44	22	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	53.4	10.1		213	237	261				
BL MAPLE	171.8	32.4		23	34	46				
WR CEDAR	254.4	48.0		3	6	8				
WHEMLOCK	373.9	70.6		1	4	7				
COTWOOD	538.5	101.7			2	4				
TOTAL	41.0	7.7		262	284	305	69	35	17	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	54.3	10.3		39,226	43,711	48,197				
BL MAPLE	165.5	31.2		2,178	3,167	4,157				
WR CEDAR	273.6	51.7		133	275	417				
WHEMLOCK	386.9	73.1		90	332	575				
COTWOOD	538.5	101.7			256	517				
TOTAL	45.2	8.5		43,663	47,742	51,821	85	43	21	

Species Summary - Trees, Logs, Tons, CCF, MBF

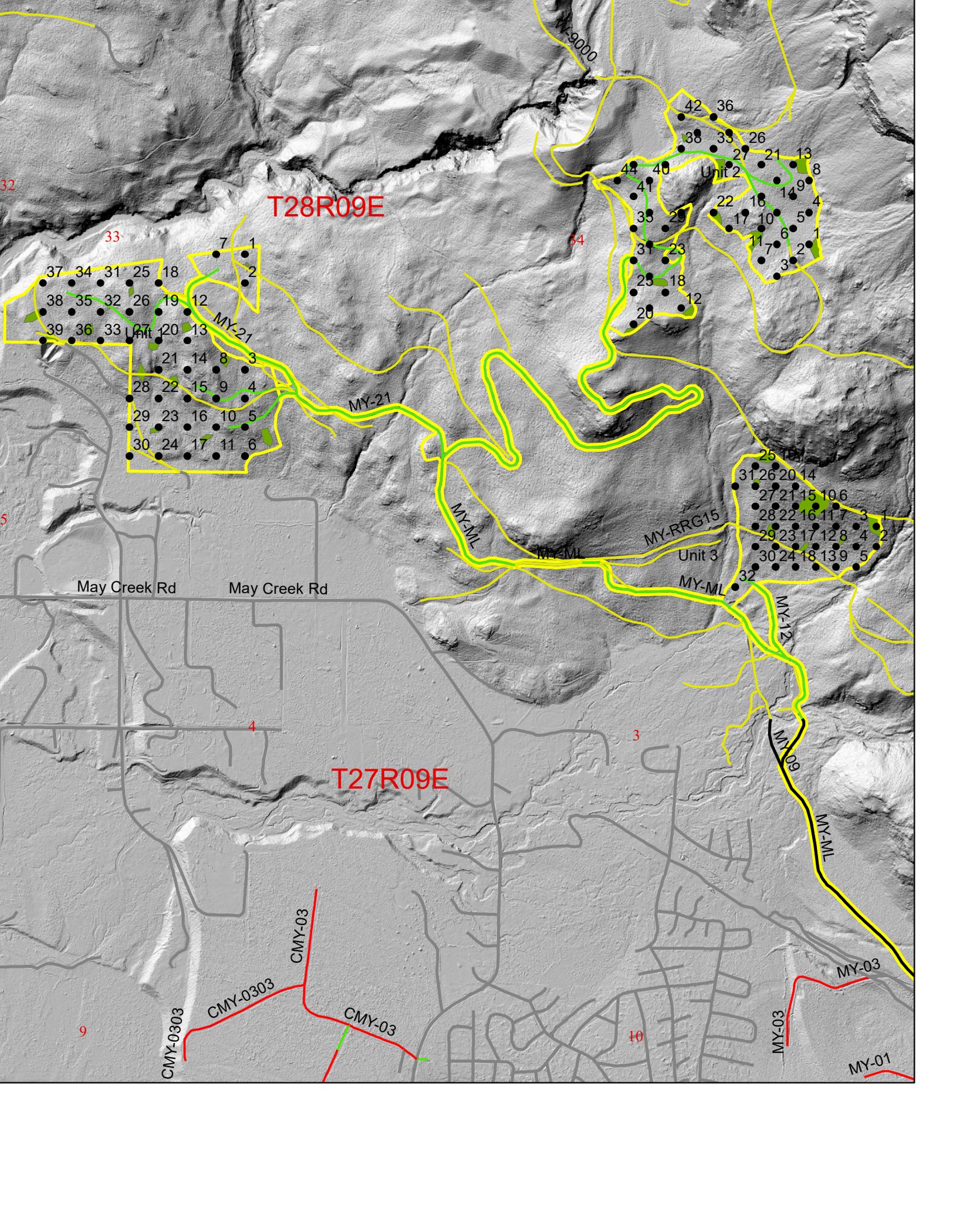
T27N R09E S03 Ty0002	51.3
T27N R09E S03 TyROW	31.8
T28N R09E S34 Ty0003	31.6

Project RSPTW
Acres 193.00

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Species	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
DOUG FIR	12,876	33,931	41,604	113.37	43.02	1.25	14,598	14,598	6,710	6,643
WHEMLOCK	6,769	12,445	12,407	57.28	31.16	0.96	3,877	3,877	1,635	1,614
WR CEDAR	5,838	8,497	5,426	39.55	27.17	0.88	2,309	2,309	692	637
BL MAPLE	3,766	6,436	3,935	39.45	23.08	0.85	1,485	1,485	544	491
COTWOOD	137	328	629	188.00	78.28	2.38	257	257	132	126
R ALDER	465	930	525	41.16	20.58	0.78	191	191	69	66
Totals	29,850	62,566	64,525	76.10	36.31	1.11	22,716	22,717	9,782	9,577

Wood Type Species	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
C	25,483	54,872	59,436	81.56	37.88	1.13	20,784	20,784	9,038	8,894
H	4,367	7,694	5,089	44.27	25.13	0.92	1,933	1,933	744	682
Totals	29,850	62,566	64,525	76.10	36.31	1.11	22,716	22,717	9,782	9,577





Forest Practices Application/Notification
Notice of Decision

FPA/N No: 2817340
Effective Date: 4/2/2020
Expiration Date: 4/2/2023
Shut Down Zone: 658
EARR Tax Credit: Eligible [] Non-eligible
Reference: Middle May

Decision

- Notification Operations shall not begin before the effective date.
- Approved This Forest Practices Application is subject to the conditions listed below.
- Disapproved This Forest Practices Application is disapproved for the reasons listed below.
- Closed Applicant has withdrawn FPA/N.

FPA/N Classification

Number of Years Granted on Multi-Year Request

Class II Class III [] Class IVG [] Class IVS [] 4 years [] 5 years

Conditions on Approval / Reasons for Disapproval

Office and/or on site meeting with DNR Forest Practice Forester will be required prior to start of road abandonment of MY-12.

FOR YOUR INFORMATION:

Please notify DNR Northwest Region Office (360-856-3500) 48 business hours before commencing timber harvest operations. Please provide the application number and legal description for your operation.

Issued By: Steven Huang Region: Northwest

Title: Skykomish Forest Practice Forester Date: 4/2/2020

Copies to: Landowner, Timber Owner and Operator.

Issued in person: Landowner [] Timber Owner [] Operator By: CWF

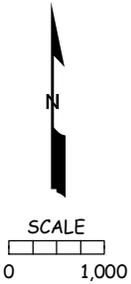
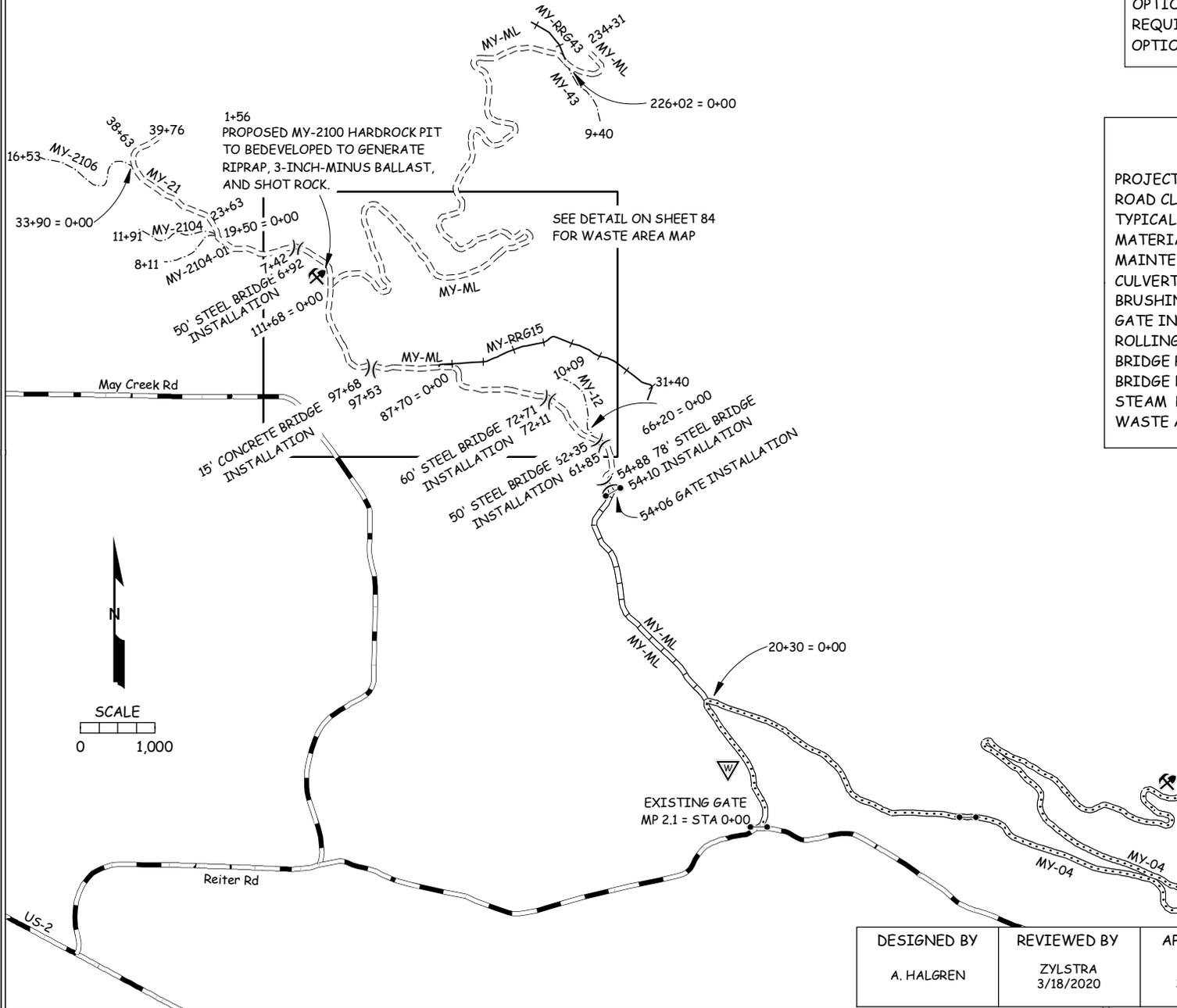


WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS #30-100161 MIDDLE MAY TIMBER SALE

LEGEND	
PRE-HAUL MAINTENANCE	=====
REQUIRED CONSTRUCTION	=====
OPTIONAL CONSTRUCTION	- - - - -
REQUIRED RECONSTRUCTION	=====
OPTIONAL RECONSTRUCTION	=====

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DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
A. HALGREN	ZYLSTRA 3/18/2020	ZYLSTRA 3/18/2020	3/17/2020	1 OF 84

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

MIDDLE MAY TIMBER SALE ROAD PLAN
SNOHOMISH COUNTY
CASCADE DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30 -100161

STAFF ENGINEER: A. HALGREN

DATE: NOVEMBER 1, 2019

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

Clauses in this road plan apply to all road related work, including landings and rock source development, unless otherwise noted.

0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
MY-ML	0+00 to 20+30	MAINTENANCE
MY-ML	20+30 to 54+10	RECONSTRUCTION
MY-ML	54+10 to 234+31	CONSTRUCTION
MY-04	0+00 to 156+70	MAINTENANCE
MY-RRG15	0+00 to 31+40	ABANDONMENT*
MY-RRG15	30+40 to 31+40	STREAM BANK RESTORATION*
MY-21	0+00 to 39+76	CONSTRUCTION

*The required work is located on an orphaned grade. See also SECTION 11-4 STREAM BANK RESTORATION and STREAM BANK RESTORATION DETAIL.

0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser must meet all the specifications in the road plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
MY-12	0+00 to 10+09	CONSTRUCTION
MY-2104	0+00 to 11+91	CONSTRUCTION
MY-2104-01	0+00 to 8+11	CONSTRUCTION
MY-2106	0+00 to 16+53	CONSTRUCTION
MY-43	0+00 to 9+40	CONSTRUCTION

0-4 CONSTRUCTION

Construction includes, but is not limited to clearing, grubbing, excavation and embankment to sub-grade, full bench sidecast, full bench end-haul, landing and turnout construction, culvert installation, geotextile installation, steel modular bridge installation, concrete bridge installation, drill and shoot, gate installation, application of 3-inch-minus ballast rock and application of shot rock.

0-5 RECONSTRUCTION

Reconstruction includes, but is not limited to blading, shaping, and ditching the road surface, brushing, clearing, grubbing, culvert installation, gate installation, and application of 3-inch-minus ballast rock.

0-6 PRE-HAUL MAINTENANCE

Pre-haul maintenance includes, but is not limited to brushing, existing culvert cleanout, and blading, shaping, and ditching the road surface.

0-7 POST-HAUL MAINTENANCE

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE.

0-10 ABANDONMENT

This project includes abandonment listed in Clause 9-21 ROAD ABANDONMENT.

0-12 DEVELOP ROCK SOURCE

Purchaser shall develop new rock sources. Rock source development will involve clearing, stripping, drilling, shooting, and processing rock to generate shot rock, riprap, and 3-inch-minus ballast. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

0-13 STRUCTURES

Purchaser shall provide and install steel modular bridges, concrete bridge, and gate. Requirements for these structures are listed in Section 7 STRUCTURES.

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan must be submitted in writing to the Contract Administrator for consideration. Before work begins, Purchaser shall obtain approval from the State for any submitted plan that changes the scope of work or environmental condition from the original road plan.

1-2 UNFORESEEN CONDITIONS

Quantities established in this road plan are minimum acceptable values. Additional quantities required by the state due to unforeseen conditions, or Purchaser's choice of construction season or techniques will be at the Purchaser's expense. Unforeseen conditions include, but are not limited to, solid subsurface rock, subsurface springs, saturated ground, and unstable soils.

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan.

1-4 ROAD TOLERANCES

Purchaser shall perform road work within the tolerances listed below. The tolerance class for each road is listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0
Bridge Elevation (feet)	±0.25	-	-

1-5 DESIGN DATA

Design data (for bridges and switchbacks) is available upon request at the Department of Natural Resources Northwest Region Office in Sedro Woolley, WA.

1-6 ORDER OF PRECEDENCE

Any conflict or inconsistency in the road plan will be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Designs or Plans. On designs and plans, figured dimensions shall take precedence over scaled dimensions.
3. Road Plan Clauses.
4. Typical Section Sheet.
5. Standard Lists.
6. Standard Details.
7. Road Work maps.

In case of any ambiguity or dispute over interpreting the road plan, the Contract Administrator's or designee's decision will be final.

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer’s recommendation, and may not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

Any cut ends, or damaged galvanized or aluminized coating on existing or new bridge components, culverts, downspouts, and flumes must be cleaned and treated with a minimum of two coats of zinc rich paint or cold galvanizing compound.

1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work on the following road(s) in accordance with the construction stakes and reference points set in the field for grade and alignment.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
MY-ML	54+10 to 54+88	Bridge (1) installation
MY-ML	61+85 to 62+35	Bridge (2) installation
MY-ML	72+11 to 72+71	Bridge (3) installation
MY-ML	97+53 to 97+68	Bridge (4) installation
MY-21	6+92 to 7+42	Bridge (5) installation

1-18 REFERENCE POINT DAMAGE

Purchaser shall reset reference points (RPs) that were moved or damaged at any time during construction to their original locations. Excavation and embankment may not proceed on road segments controlled by said RPs until Purchaser resets all moved or damaged RPs.

1-21 HAUL APPROVAL

Purchaser shall not use roads under this road plan for any hauling other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1-22 WORK NOTIFICATIONS

On the following road(s), Purchaser shall notify the Contract Administrator within 14 days, and a minimum of 7 calendar days, before work begins.

<u>Road</u>	<u>Stations</u>	<u>Note</u>
MY-ML	54+10 to 54+88	Bridge (1) installation
MY-ML	61+85 to 62+35	Bridge (2) installation
MY-ML	72+11 to 72+71	Bridge (3) installation
MY-ML	97+53 to 97+68	Bridge (4) installation
MY-ML	118+45 to 122+19	Switchback (1)
MY-ML	133+61 to 136+99	Switchback (2)
MY-ML	159+36 to 165+43	Switchback (3)
MY-ML	191+45 to 195+53	Switchback (4)
MY-ML	198+96 to 202+70	Switchback (5)
MY-ML	210+91 to 215+92	Switchback (6)
MY-21	6+92 to 7+42	Bridge (5) installation

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
	ALL	Rock hauling, construction, reconstruction, or abandonment	November 1 to March 31
MY-ML	54+10 to 54+88, 61+85 to 62+35, 72+11 to 72+71, 97+53 to 97+68	In-stream work for structure installation	September 30 – July1, not to be waived by the Contract Administrator except with written approval from WDFW and Forest Practices
MY-21	6+92 to 7+42		
MY-21	23+63 to 38+63	Construction	October 15 th to June 15 th to protect WMZ function
MY-2106	0+00 to 0+92		

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION, Purchaser shall provide a maintenance plan to include further protection of state resources. Purchaser shall obtain written approval from the Contract Administrator for the maintenance plan, and shall put preventative measures in place before operating during the closure period. Purchaser is required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER. If other operators are using, or desire to use these roads, a joint operating plan must be developed. All parties shall follow this plan.

1-29 SEDIMENT RESTRICTION

Purchaser shall not allow silt-bearing runoff to enter any streams.

1-30 CLOSURE TO PREVENT DAMAGE

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

Operations must stop unless authority to continue working or hauling is granted in writing by the Contract Administrator. In the event that surface or base stability problems persist, Purchaser shall cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

1-32 BRIDGE SURFACE RESTRICTION

The use of metal tracked equipment is not allowed on concrete or wood-deck bridge surfaces at any time. If Purchaser must run equipment on bridge surfaces, then rubber tired equipment or other methods, approved in writing by Contract Administrator, must be used.

If tracked equipment is used on concrete or wood-deck bridge surfaces, Purchaser shall immediately cease all road construction and hauling operations. Purchaser shall remove any dirt, rock, or other material tracked or spilled on the bridge surface(s) and have surface(s) evaluated by the District Engineer or their designee for any damage caused by transporting equipment. Any damage to the surface(s) will be repaired, at the Purchaser's expense, as directed by the Contract Administrator.

1-33 SNOW PLOWING RESTRICTION

Snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contact Administrator upon request. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

1-42 UTILITY ACCESS ROAD

The following road(s) intersect(s) existing utility access roads. Purchaser shall conduct road work on the intersecting roads so that the utility access roads are accessible at all times.

<u>Road</u>	<u>Stations</u>
MY-ML	0+00 to 20+30

1-43 ROAD WORK AROUND UTILITIES

Road work is in close proximity to a utility. Known utilities are listed, but it is the Purchaser’s responsibility to identify any utilities not listed. Purchaser shall work in accordance with all applicable laws or rules concerning utilities. Purchaser is responsible for all notification, including “call before you dig”, and liabilities associated with the utilities and their rights-of-way. Purchaser shall notify the Bonneville Power Administration before starting road work.

<u>Road</u>	<u>Stations</u>	<u>Utility</u>	<u>Utility Contact</u>
MY-ML	0+00 to 20+30	Bonneville Power Administration (overhead powerlines)	1-800-282-3713

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

Purchaser shall maintain all roads used under this contract in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS for the entire term of this contract. Maintenance is required even during periods of inactivity.

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

Purchaser shall perform maintenance on roads listed in Contract Clause C-050 PURCHASER ROAD MAINTENANCE AND REPAIR in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain the following road(s) in a condition that will allow the passage of light administrative vehicles.

<u>Road</u>	<u>Stations</u>
MY-ML	0+00 to 20+30

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean ditches, headwalls, and catchbasins. Work must be completed before rock haul and must be done in accordance with the Forest Access Road Specifications.

<u>Road</u>	<u>Stations</u>
MY-04	0+00 to 156+70

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 6 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

<u>Road</u>	<u>Stations</u>
MY-ML	0+00 to 20+30
MY-04	0+00 to 156+70

3-5 CLEARING

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

3-6 CLEARING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING

At the following stream crossing location(s), Purchaser shall place a log, with length equal to two (2) times the width of the ordinary high water, from the largest diameter class conifer tree cut from within the Inner Zone (25 feet either side of the stream) in the stream in accordance with the Riparian Forest Restoration Strategy.

<u>Road</u>	<u>Stations</u>
MY-ML	54+10 to 54+88, 61+85 to 62+35, 72+11 to 72+71, 97+53 to 97+68
MY-21	6+92 to 7+42

3-8 PROHIBITED DECKING AREAS

Purchaser shall not deck right-of-way timber in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 40%.
- Against standing trees.

3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET and within waste and debris areas. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Grubbing must be completed before starting excavation and embankment.

3-11 GRUBBING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING

At the following stream crossing location(s), Purchaser shall retain all grubbed stumps (root wads) within the Inner Zone (25 feet either side of the stream) for placement in accordance with the Riparian Forest Restoration Strategy. Three root wads must be placed in or adjacent to the stream channel. The remaining stumps grubbed from the Inner Zone must be placed at least 50 feet from the roadway in the Middle (25 feet to 100 feet from the stream) or the Outer Zones (remaining portion of RMZ).

<u>Road</u>	<u>Stations</u>
MY-ML	54+10 to 54+88, 61+85 to 62+35, 72+11 to 72+71, 97+53 to 97+68
MY-21	6+92 to 7+42

3-12 STUMP PLACEMENT

On the following road(s), Purchaser shall place grubbed stumps adjacent to the road shoulder or as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps must be positioned upright, with root wads in contact with the forest floor on stable locations.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
MY-21	STA 23+63 to 33+90	Place stumps on downhill side, below fill slope
	33+90 to 38+63	Place stumps in two rows on both sides of the road

3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the clearing limits as shown on the TYPICAL SECTION SHEET.

3-21 DISPOSAL COMPLETION

Purchaser shall remove organic debris from the road surface, ditchlines, and culvert inlets and outlets. Purchaser shall complete all disposal of organic debris before the application of rock.

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris shall be located at areas approved in writing by the Contract Administrator.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland, unless used to comply with the specifications detailed in the Riparian Forest Restoration Strategy, Clause 3-6 CLEARING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING, and Clause 3-11 GRUBBING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 50%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

Purchaser shall not bury organic debris unless otherwise stated in this plan.

3-25 SCATTERING ORGANIC DEBRIS

Purchaser shall scatter organic debris outside of the clearing limits in natural openings unless otherwise detailed in this road plan.

3-32 END HAULING ORGANIC DEBRIS

On the following road(s), Purchaser shall end haul or push organic debris to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS.

<u>Road</u>	<u>Stations</u>
MY-ML	STA 116+13 to 117+94

SECTION 4 – EXCAVATION

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. Pioneering may not extend more than 500 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations prior to embankment.

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Purchaser shall follow these standards for road grade and alignment:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- On temporary roads maximum grades may not exceed 18 percent favorable and 15 percent adverse.
- On permanent roads maximum grades may not exceed 16 percent favorable and 12 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

Grade limitations and alignment are modified as follows:

<u>Road</u>	<u>Stations</u>	<u>Minimum Curve Radius (ft)</u>	<u>Maximum Grade (%)</u>	
			<u>Favorable</u>	<u>Adverse</u>
MY-ML	118+45 to 122+19	70	12	-
MY-ML	133+61 to 136+99	70	12	-
MY-ML	159+36 to 165+43	70	12	-
MY-ML	191+45 to 195+53	70	12	-
MY-ML	198+96 to 202+70	70	12	-
MY-ML	210+91 to 215+92	70	12	-

4-4 SWITCHBACK STANDARDS

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

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 10% of the curve radius.
- Maximum favorable grades for switchbacks is 12%.
- Maximum transition grades entering and leaving switchbacks is a 6% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (56% to 70% side slopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

4-6 EMBANKMENT SLOPE RATIO

Purchaser shall construct embankment slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Embankment Slope Percent</u>
Sandy Soils	2:1	50
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

4-7 SHAPING CUT AND FILL SLOPE

Purchaser shall construct excavation and embankment slopes to a uniform line and left rough for easier revegetation.

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

- 6 feet for curves of 50 to 79 feet radius.
- 4 feet for curves of 80 to 100 feet radius.

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

- 2 feet for embankment heights at centerline of 2 to 6 feet.
- 4 feet for embankment heights at centerline of greater than 6 feet.

Purchaser shall apply embankment widening equally to both sides of the road to achieve the required width.

4-12 FULL BENCH CONSTRUCTION

On the following road(s) and where side slopes exceed 50% full bench construction shall be utilized for the entire subgrade width except as construction staked or designed. If designated, waste material shall be end hauled to a location specified in Clause 4-37 WASTE AREA LOCATION.

<u>Road</u>	<u>Full Bench Location (STA)</u>	<u>Comments</u>
MY-ML	116+13 to 117+53	Wet area above steep slope.
MY-ML	150+56 to 155+18	-
MY-ML	159+81 to 160+21	-
MY-ML	169+16 to 171+15	-
MY-ML	174+68 to 179+00	Rock may be used for road construction with in-place processing if approved in writing by the contract administrator.
MY-12	1+42 to 1+81	Located within a channel migration zone (CMZ). Full bench construction is required to achieve grade through swales. Material may be sidecast and staged for requirements as listed in 9-24 HEAVY ABANDONMENT.
MY-12	3+57 to 3+88	
MY-12	4+62 to 4+90	

4-21 TURNOUTS

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

Purchaser shall construct or reconstruct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Ditches must be constructed concurrently with construction of the subgrade.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts at locations shown on the MATERIALS LIST and as needed or as directed by the Contract Administrator. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio.

4-35 WASTE MATERIAL DEFINITION

Waste material is defined as all dirt, rock, mud, or related material that is extraneous or unsuitable for construction material. Waste material, as used in Section 4 EXCAVATION, is not organic debris.

4-36 DISPOSAL OF WASTE MATERIAL

Purchaser may sidecast waste material on side slopes up to 50% if the waste material is compacted and free of organic debris. On side slopes greater than 50%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

4-37 WASTE AREA LOCATION

Purchaser shall deposit waste material in the listed designated. Additional waste areas may also be identified or approved by the Contract Administrator. The amount of material allowed in a waste area is as listed unless approved by the Contract Administrator.

<u>Road</u>	<u>Waste Area Location</u>	<u>Comments</u>	<u>Volume</u>
MY-ML	4+40 to 6+40	-	1000
MY-ML	83+00 to 86+70	-	2600
MY-ML	92+90 to 94+90	-	1400
MY-ML	103+08 to 105+68	-	1800
MY-ML	112+47 to 114+81	-	1600
MY-ML	132+00 to 133+61	Place below road grade (outside switchback curve)	1100
MY-ML	133+61 to 135+79	Place inside switchback	1500
MY-ML	140+45 to 145+19	-	3500
MY-ML	146+45 to 147+80	-	1000
MY-ML	156+11 to 157+02	-	600
MY-21	3+71 to 5+05		

4-38 PROHIBITED WASTE DISPOSAL AREAS

Purchaser shall not deposit waste material in the following areas, except as otherwise specified in this plan:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- On side slopes steeper than 50%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing timber.
- Outside the clearing limits.
- Within a CMZ, see 11-3 CONSTRUCTION WITHIN A CHANNEL MIGRATION ZONE.

4-55 ROAD SHAPING

Purchaser shall shape the subgrade and surface as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape must ensure runoff in an even, un-concentrated manner, and must be uniform, firm, and rut-free.

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material by routing equipment over the entire width of each lift.

4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed and reconstructed subgrades by routing equipment over the entire width

4-70 SUBGRADE REINFORCEMENT

On the following road(s), Purchaser shall provide and install geotextile fabric. Subgrade reinforcement must be installed to a width that is 2 feet more than the subgrade width, including turnouts. Geotextile fabric must overlap by a minimum of 2 feet at all joints. The geotextile fabric must be covered with a minimum of 12 inches of compacted 3-inch-minus ballast rock/gravel ballast. Purchaser shall apply rock in one-foot lift(s) over the geotextile in accordance with the manufacturer’s specifications. Geotextile fabric must meet the specifications in Clause 10-3 GEOTEXTILE FOR STABILIZATION.

<u>Road</u>	<u>Stations</u>
MY-ML	55+36 to 56+87
MY-ML	115+72 to 118+45
MY-ML	123+24 to 125+92
MY-ML	197+16 to 200+99
MY-21	18+38 to 20+13
MY-21	22+42 to 24+02
MY-21	25+39 to 28+49
MY-21	33+90 to 38+63
MY-2104	5+81 to 7+83

SECTION 5 – DRAINAGE

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts may be new or used material and must meet the specifications in Clauses 10-15 through 10-24.

5-7 USED CULVERT MATERIAL

On temporary roads, Purchaser may install used culverts. All other roads must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation. Culverts must meet the specifications in Clauses 10-15 through 10-24.

5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the MATERIALS LIST that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

5-13 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator.

<u>Road</u>	<u>Size</u>	<u>Quantity</u>
On any portion of road used for timber or rock haul.	18" x 36' culvert	4
	18" x 40' culvert	4

5-15 CULVERT INSTALLATION

Culvert installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures" and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings".

5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

Purchaser shall obtain written approval from the Contract Administrator for the installation of culverts 36 inches in diameter and over before backfilling.

5-17 CROSS DRAIN SKEW AND SLOPE

Cross drains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the cross drain is at the low point in the road culverts will not be skewed. Cross drain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

5-18 CULVERT DEPTH OF COVER

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL. Energy dissipater installation is subject to approval by the Contract Administrator.

The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT AND DRAINAGE SPECIFICATION DETAIL.

5-25 CATCH BASINS

Purchaser shall construct catch basins in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 2 feet wide and 4 feet long.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts. Rock used for headwalls must weigh at least 50 pounds. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Minimum specifications require that rock be placed at a width of one culvert diameter on each side of the culvert opening, and to a height of one culvert diameter above the top of the culvert. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At the following culvert(s), Purchaser shall place rip rap in conjunction with construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the MATERIALS LIST and CULVERT AND DRAINAGE SPECIFICATIONS or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Rock must be set in place by machine. Placement must be with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed. Rip rap must meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP and 6-50 HEAVY LOOSE RIP RAP

<u>Road</u>	<u>Stations</u>
MY-ML	117+02
MY-ML	124+66
MY-21	27+84
MY-2104-01	1+14
MY-2104-01	5+19

5-31 ROLLING DIP CONSTRUCTION

Purchaser shall construct rolling dips in accordance with the ROLLING DIP DETAIL and as specified on the MATERIALS LIST. Rolling dips must be installed concurrently with construction of the subgrade and must be maintained in an operable condition. Purchaser shall install rolling dips using a <dozer. Use of other equipment is not allowed without written approval of the Contract Administrator

SECTION 6 – ROCK AND SURFACING

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following source(s) on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source(s), a joint operating plan must be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
MY-0430 (Proposed)	STA 156+70 of the MY-04 road.	Hard Rock
MY-2100* (Proposed)	STA 1+56 of the MY-21	Hard Rock

*See special requirements for pit development in clause 6-12.

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from any commercial source at the Purchaser's expense. Rock sources are subject to written approval by the Contract Administrator before their use.

6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER

Purchaser shall conduct rock source development and use in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operations. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator.

Rock source development plans prepared by the Purchaser must show the following information:

- Rock source location.
- Rock source overview showing access roads, development areas, stockpile locations, waste areas, and floor drainage.
- Rock source profiles showing development areas, bench locations including widths, and wall faces including heights.

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications:

- Pit walls may not be undermined or over steepened. The maximum slope of the walls must be consistent with recognized engineering standards for the type of material being excavated in accordance with the following table:

Material	Maximum Slope Ratio (Horiz. :Vert.)	Maximum Slope Percent
Sand	2:1	50
Gravel	1.5:1	67
Common Earth	1:1	100
Fractured Rock	0.5:1	200
Solid Rock	0:1	vertical

- Pit walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches must be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All operations must be carried out in compliance with all regulations of the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- All vehicle access to the top of the pit faces must be blocked.

If the Purchaser elects to use the proposed MY-2100 hard rock pit the following requirements must be met:

- Contact all neighbors within 0.5 miles of the pit a minimum of 14 days prior to shooting the pit.
- Stem depth must be a minimum of 6' where possible to cut down on fly rock and noise.

6-14 DRILL AND SHOOT

Rock drilling and shooting must meet the following specifications:

- Purchaser shall notify the Contract Administrator a minimum of 14 working days before blasting operations.
- Purchaser shall block access roads and trails before blasting operations.

6-21 IN-PLACE PROCESSING

On temporary roads and at the following location(s) Purchaser may use in-place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size-specified in Clause 6-38 4-INCH IN-PLACE ROCK. Purchaser shall remove any existing organic debris before the start of in-place crushing operations. The use of in-place processing methods is subject to written approval by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Remarks</u>
MY-ML	STA 174+68 to 179+00	Drill and shoot construction may be necessary.

6-23 ROCK GRADATION TYPES

Purchaser shall provide rock in accordance with the types and amounts listed in the TYPICAL SECTION and MATERIALS LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles or during manufacture and placement into a stockpile. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

6-34 3-INCH MINUS BALLAST ROCK

Ballast rock must be 100% equal to, or smaller than, 3 inches in at least one dimension.

Rock may contain no more than 5 percent organic debris, dirt, and trash. All percentages are by weight.

6-38 4-INCH IN-PLACE ROCK

4-inch in-place rock must have a minimum of 90 percent of the top 4 inches of the running surface pass a 4-inch square opening.

In-place rock may not contain more than 5 percent by weight of organic debris and trash. No more than 5 percent of rock may be larger than 6 inches in any dimension and no rock may be larger than 10 inches in any dimension.

6-50 LIGHT LOOSE RIP RAP

Light loose rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Light loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>Quantity</u>	<u>Approximate Size Range</u>
20% to 90%	500 lbs. to 1 ton (18" - 28")
15% to 80%	50 lbs. to 500 lbs. (8" - 18")
10% to 20%	3 inch to 50 lbs. (3" - 8")

6-51 HEAVY LOOSE RIP RAP

Heavy loose rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Heavy loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>Quantity</u>	<u>Size Range</u>
30% to 90%	1 ton to 2 ton (28" - 36")
30% to 70%	500 lbs. to 1 ton (18" - 28")
20% to 50%	50 lbs. to 500 lbs. (8" - 18")
10% to 20%	3 inch to 50 lbs. (3" - 8")

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the TYPICAL SECTION are loose yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements, and are not subject to reduction.

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for culvert installation, ditch construction, ditch reconstruction, headwall construction, and headwall reconstruction before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the TYPICAL SECTION. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the TYPICAL SECTION by routing equipment over the entire width.

6-73 ROCK FOR WIDENED PORTIONS

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way.

6-80 WATERING FOR DUST ABATEMENT

Purchaser shall use water for dust abatement on the following roads, as directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
MY-ML	0+00 to 234+31
MY-04	0+00 to 156+70

SECTION 7 – STRUCTURES

7-6 STREAM CROSSING INSTALLATION

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements, and specifications, Riparian Forest Restoration Strategy, requirements of the FPHP, and the bridge installation details on sheets 60-77.

7-16 DRAWING AND CALCULATION REVIEW FOR ACCEPTANCE

Purchaser shall prepare and submit three sets of complete design drawings and calculations for the superstructure and substructure including footings, foundation and bank protection. All drawings and calculations must be prepared, stamped, and signed by a Registered Professional Engineer licensed in the State of Washington. The superstructure must be designed by a Professional Engineer licensed in the state of manufacture. Drawings can be in either electronic or hard copy form and must be no smaller than 11" X 17" sheets.

Bridge super structure design must include all shop detail plans for fabricating the steel. All welds and splices must be shown on the shop plans. No welded field splices will be allowed; all field splices must be bolted and explicitly designed. No welded splices will be allowed on girders, floor beams, or truss members without specific approval from the Region Engineer or designee. When used, shop splices are generally complete joint penetration (CIP) butt-welded splices that develop the full section strength of the adjoining materials. In general, splices must not be made for material lengths or spans under 60 feet, or for widths or depths under 12.5 feet, unless the Purchaser demonstrates that the material is not otherwise readily and commercially available.

Send submittals to:

Department of Natural Resources
Attn.: Tamra Zylstra
919 N Township St.
Sedro Woolley, WA 98284
360-854-2807
tamra.zylstra@dnr.wa.gov

Reports and plans will be accepted or rejected within 30 working days of receipt. Delays in work because of the possibility of rejection, revision, and resubmittal of documents are deemed a risk of the Purchaser and may not be the basis for claims of additional compensation.

Materials may not be fabricated until the Region Engineer or designee has approved the plans. Changes are not allowed in any shop plan after approval unless approved in writing by the Region Engineer or designee.

7-17 STRUCTURE ACCEPTANCE

The Region Engineer or designee will inspect the structure upon delivery. Acceptance will be issued if the structure meets all specifications and certifications. Structures that are not accepted may not be installed.

7-18 INSTALLATION PRODUCTION SCHEDULE

Purchaser shall provide the Contract Administrator or their designee, with a production schedule showing projected completion dates for the following items before starting construction of the structure(s). Production schedule must include:

- excavation
- placement of sills/abutments/footings/structure
- backfill compaction, rock application and compaction

7-19 INSTALLATION STAGE ACCEPTANCE

Purchaser shall ensure that all materials and procedures used during construction comply with the design. Purchaser shall obtain written approval from the Contract Administrator or their designee, after verification by the Region Engineer or designee for each stage of construction, listed in Clause 7-18 INSTALLATION PRODUCTION SCHEDULE, before starting construction on the next stage. Purchaser shall notify the Contract Administrator in writing when each construction stage is complete.

7-20 INSTALLATION FINAL ACCEPTANCE

Purchaser shall notify the Contract Administrator in writing when each structure is complete. Within 15 working days of final construction acceptance, Purchaser shall submit two complete sets of finalized plans to the Region Engineer and one to the Contract Administrator. Any omissions to the plans are the responsibility of the Purchaser to correct and include in the finalized set of plans. Submit finalized plans to the same location stated in Clause 7-15 DRAWING AND CALCULATION REVIEW FOR ACCEPTANCE.

7-45 PURCHASER SUPPLIED BRIDGE

Purchaser shall provide, and construct each bridge listed below. Refer to Technical Bridge Specifications and design sheets for details.

Road	Station	Length (ft)	W.B.S.R. ¹ (ft)	Bridge Type	Footing / Abutment	Running Surface
MY-ML	54+10 to 54+88	78	14	Modular Steel	Spread Footings	Gravel or Concrete
MY-ML	72+11 to 72+71	60	14	Modular Steel	(1) Spread Footing, and (1) Tower and Pad	Gravel or Concrete
MY-ML	97+53 to 97+68	15	16	Concrete Slab	Spread Footing on Precast Block Wall	Concrete

¹W.B.S.R. = Width between shear rails.

7-46 STATE SUPPLIED BRIDGE

Purchaser shall deliver and construct each bridge listed below. Bridge(s) are available for use within the terms of the contract without charge from the state.

Road	Station	Length (ft)	W.B.S.R. ¹ (ft)	Bridge Type	Footing / Abutment	Running Surface
MY-ML	61+85 to 62+35	50	16	Modular Steel	Spread Footings	Gravel
MY-21 ²	6+92 to 7+42	50	14	Modular Steel	Spread Footings	Wood Plank

¹W.B.S.R. = Width between shear rails

²This structure may also be used for the temporary crossing during construction of bridge at 54+10 of MY-ML.

7-47 PURCHASER SUPPLIED FOOTINGS

Purchaser shall provide footing designs. Bridge footings must be designed by an engineer licensed in the state or province of manufacture.

7-48 STATE SUPPLIED BRIDGE – MOBILIZATION

Purchaser is responsible for all costs associated with loading and transportation of State supplied bridges. Equipment used to lift the superstructure must have sufficient capacity to lift it free and clear without dragging. Purchaser is liable for damage to the bridge structure.

The bridges and precast spread footings are stored behind a locked gate at a location approximately two miles north of Hamilton, WA (refer to vicinity map for details). Rail posts, guardrail, backwalls, and other miscellaneous hardware are stored at the Northwest Region office in Sedro Woolley, WA.

Purchaser shall notify the Contract Administrator a minimum of 2 business days before pick up of the bridge and associated hardware.

Road	Station	Length (ft)	Bridge Sections	Section Weight (lbs)	Precast Sill Weight (lbs)	Type
MY-ML	61+85 to 62+35	50	2	15,480	11,250	BigR
MY-21	6+92 to 7+42	50	2	18,210	10,130	BigR

7-52 TECHNICAL SPECIFICATIONS

The bridge superstructure design, fabrication, and welding must be in accordance with the TECHNICAL BRIDGE SPECIFICATIONS on sheets 78-81.

7-53 BRIDGE INSTALLATION

Purchaser shall install bridges ensuring there is a full width, continuous deck with no gaps that allow water and sediment to drain from the bridge to the stream.

7-76 GATE INSTALLATION

On the following road(s), Purchaser shall install the designated gate(s). Gate installations shall be installed within 7 days of bridge installation.

<u>Road</u>	<u>Station</u>	<u>Type*</u>	<u>Furnished by</u>
MY-ML	54+06	Steel Gate	State

* Steel gate installation(s) shall be in accordance with the STEEL GATE DETAIL.

The gate and lock box shall be installed plumb and aligned to ensure all mating components match with precision. Each post shall be filled with concrete and set in a minimum of 4 cubic yards of poured-in-place concrete. The Contract Administrator will supply the Purchaser with a padlock. If the Purchaser wishes to install an alternate design, detailed plans for the construction of the gate shall be submitted to the Contract Administrator, or their designee, for approval, in writing, before gate installation.

7-77 GATE SUPPLIED BY STATE

A gate with lock box is located at NW Region Office. After arranging with the Contract Administrator, Purchaser shall transport the gate, tie-back post, and lock box to the installation site. Notification to Region Engineer is required 24-48 hours in advance of pickup.

SECTION 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 4-inch layer of straw to all exposed soils at culvert installations. Soils must be covered before the first anticipated storm event. Soils may not sit exposed during any rain event.

8-3 EROSION CONTROL MATTING

On the following road(s), Purchaser shall install biodegradable erosion control matting to provide full coverage of the disturbed area. Matting must be either natural fiber matting made of jute or coconut, or an erosion control blanket made of wood excelsior. Erosion control matting must conform to the specifications listed in Clause 10-10 JUTE EROSION CONTROL MATTING or 10-11 COCONUT EROSION CONTROL MATTING or 10-12 WOOD EXCELSIOR EROSION CONTROL MATTING. Installation must be in accordance with the manufacturer’s recommendations.

<u>Road</u>	<u>Stations</u>	<u>Remarks</u>
MY-ML	54+10 to 54+88	Place erosion control matting on temporary bridge access adjacent to bridge installation.

8-5 CHECK DAM

On the following road(s), Purchaser shall construct rock check dams every 2 vertical feet in the ditch. Check dams must be built with 3-inch minus crushed rock to a depth of 8 inches and a length of 4 feet.

<u>Road</u>	<u>Stations</u>
MY-ML	61+58 to 61+85

8-10 STABILIZE SLOPES – ROCK APPLICATION

On the following road(s), Purchaser shall stabilize embankment (fill) slopes by applying rock as specified below. Rock must be set in place in conjunction with or immediately following construction of the embankment. Rock must be applied in quantities specified in the MATERIALS LIST to exposed soil on the entire embankment to a minimum depth 24 inches. Rock must be set in place by machine. Placement must be with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed.

<u>Road</u>	<u>Stations</u>
MY-ML	160+53 to 162+02

8-15 REVEGETATION

Purchaser shall spread seed and fertilizer on all exposed soils within the grubbing limits resulting from road work activities. Cover all exposed soils using manual dispersal of grass seed and fertilizer. Other methods of covering must be approved in writing by the Contract Administrator.

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the grass seed and fertilizer as directed in clauses 8-25 GRASS SEED, 8-26 GRASS SEED: WETLAND MANAGEMENT MIX, and 8-27 FERTILIZER.

8-17 REVEGETATION TIMING

Purchaser shall revegetate during the first available opportunity after road work is completed. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator.

8-18 PROTECTION FOR SEED

Purchaser shall provide a protective cover for seed if revegetation occurs between July 1 and March 31. The protective cover may consist of dispersed straw, jute matting, or clear plastic sheets. The protective cover requirement may be waived in writing by the Contract Administrator if Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop (at least 50% coverage) of 3-inch tall grass by October 31.

8-19 ASSURANCE FOR SEEDED AREA

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and fertilizer in areas that have failed to germinate or have been damaged through any cause. Restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and fertilizer at no additional cost to the state.

8-25 GRASS SEED

Except as specified in clause 8-26 GRASS SEED: WETLAND MANAGEMENT MIX, Purchaser shall evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

1. Weed seed may not exceed 0.5% by weight.
2. All seed species must have a minimum 90% germination rate, unless otherwise specified.
3. Seed must be certified.
4. Seed must be furnished in standard containers showing the following information:
 - a. Common name of seed
 - b. Net weight
 - c. Percent of purity
 - d. Percentage of germination
 - e. Percentage of weed seed and inert material
5. Seed must conform to the following mixture unless a comparable mix is approved in writing by the Contract Administrator.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Creeping Red Fescue	50
Elf Perennial Rye Grass	25
Highland Colonial Bentgrass	15
White Clover	10
Inert and Other Crop	0.5

8-26 GRASS SEED: WETLAND MANAGEMENT MIX

On the following roads, located in proximity to a Wetland Management Zone, a Wetland Management seed mixture shall be used instead of the mixture listed in 8-25 GRASS SEED.

<u>Road</u>	<u>Stations</u>
MY-21	STA 23+63 to 34+82
MY-2106	STA 0+00 to 4+73

Purchaser shall evenly spread the Wetland Management seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 50 pounds per acre of exposed soil. Grass seed shall meet the following specifications:

1. Weed seed shall not exceed 0.5% by weight.
2. All seed species shall have a minimum 90% germination rate, unless otherwise specified.
3. Seed shall be certified.
4. Seed shall be furnished in standard containers that show the following information:
 - a. Common name of seed
 - b. Net weight
 - c. Percent of purity
 - d. Percentage of germination
 - e. Percentage of weed seed and inert material
5. Seed shall conform to the following mixture.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Annual Rye Grass	40
Winter triticale	40
Perennial Rye Grass	10
Austrian winter pea (inoculated)	10

Do not use seed sources that have the label “other seeds”- these can contain invasive species.

Mulch with straw to achieve no more than 70% cover, evenly distributed, at a rate of 1.5 to 2 tons per acre.

8-27 FERTILIZER

Purchaser shall evenly spread the fertilizer listed below on all exposed soil inside the grubbing limits at a rate of 200 pounds per acre of exposed soil. Fertilizer must meet the following specifications:

<u>Chemical Component</u>	<u>% by Weight</u>
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

SECTION 9 – POST-HAUL ROAD WORK

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

Culverts removed from roads become the property of the Purchaser and must be removed from state land.

9-5 POST-HAUL MAINTENANCE

Purchaser shall perform post-haul maintenance in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

9-21 ROAD ABANDONMENT

Purchaser shall abandon the following before the termination of this contract or by the specified date.

<u>Road</u>	<u>Stations</u>	<u>Type</u>	<u>Date</u>
MY-12	0+00 to 6+69	HEAVY ABANDONMENT	Road may not overwinter more than one season. Abandonment must be completed within 60 days of timber removal from Unit 3.
MY-12	6+69 to 10+09	ABANDONMENT	-
MY-RRG15	0+00 to 31+40	ABANDONMENT*	
MY-2104	0+00 to 11+91	ABANDONMENT	-
MY-2104-01	0+00 to 2+26, 3+98 to 8+11	ABANDONMENT	-
MY-2104-01	2+26 to 3+98	HEAVY ABANDONMENT	-
MY-2106	0+00 to 16+53	ABANDONMENT	-
MY-43	0+00 to 9+40	ABANDONMENT	-

*The required work is located on an orphaned grade.

9-22 ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 1.5:1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL.

9-24 HEAVY ABANDONMENT

In addition to requirements listed in 9-22 ABANDONMENT the purchaser shall complete the following abandonment items to meet hydrologic goals in proximity to RMZs and WMZs or hydrologic goals within a channel migration zone:

- Complete an on-site pre-work with the Contract Administrator and Forest Practices prior to beginning abandonment work.
- Remove embankments, sidecast fill, and place material into cut-banks and shape banks to conform to the natural ground.
- Pull back entire road prism from swales as listed in clause 11-3 CONSTRUCTION WITHIN A CHANNEL MIGRATION ZONE and place within full bench road cuts or against the side walls of each swale.
- Scatter woody debris onto re-shaped abandoned road surfaces.

SECTION 10 MATERIALS

10-3 GEOTEXTILE FOR STABILIZATION

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for stabilization or reinforcement, and filtration. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Woven
Apparent opening size	D 4751	No. 40 max
Water permittivity	D 4491	0.10 sec ⁻¹
Grab tensile strength	D 4632	315 lb
Grab tensile elongation	D 4632	50%
Puncture strength	D 6241	620 lb
Tear strength	D 4533	112 lb
Ultraviolet stability	D 4355	50% retained after 500 hours of exposure

10-10 JUTE EROSION CONTROL MATTING

Jute mesh must have a uniform open plain weave made from jute yarn that does not vary by more than half its nominal diameter. Erosion control matting must conform to the specifications listed below, and must be recommended by the manufacturer for use on embankments with a slope of 1½:1 (H:V) or steeper.

- Mesh size 1 inch max.
- Mesh mass, 0.9 lb/yd² ±5%

10-11 COCONUT EROSION CONTROL MATTING

Coconut mat must have a uniform open plain weave made from jute, coconut coir, synthetic polypropylene fibers, or other approved yarn. Erosion control matting must conform to the specifications listed below, and must be recommended by the manufacturer for use on embankments with a slope of 1½:1 (H:V) or steeper.

- Mesh size 0.5 to 1 inch.
- Mesh mass, 0.4 lb/yd² min.
- Netting must be photodegradable on one side.
- Moisture content may not exceed 20%.

10-12 WOOD EXCELSIOR EROSION CONTROL MATTING

Excelsior blanket must have a uniform thickness made of curled wood excelsior secured on the top side to a biodegradable, photodegradable extruded plastic mesh. Matting must be smolder resistant without the use of additional chemical additives. Erosion control matting must conform to the specifications listed below, and must be recommended by the manufacturer for use on embankments with a slope of 1½:1 (H:V) or steeper.

- Mesh size 1 to 2 inch.
- Blanket mass, 1 lb/yd² ±10%
- Excelsior fibers 7.8 inch (200-mm) length 80% min.

10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be galvanized (zinc coated meeting AASHTO M-218).

10-16 CORRUGATED ALUMINUM CULVERT

Aluminum culverts must meet AASHTO M-196 (ASTM A-745) specifications.

10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts must be Type S – double walled with a corrugated exterior and smooth interior.

10-21 METAL BAND

Metal coupling and end bands must meet the AASHTO specification designated for the culvert and must have matching corrugations. Culverts 24 inches and smaller must have bands with a minimum width of 12 inches. Culverts over 24 inches must have bands with a minimum width of 24 inches.

10-22 PLASTIC BAND

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used.

10-24 GAUGE AND CORRUGATION

Unless otherwise stated in the engineer’s design, metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	14 (0.079")	3" X 1"

SECTION 11 SPECIAL NOTES

11-1 OPERATIONS AT FISH BEARING STREAMS

Purchaser shall develop a site specific Spill Prevention and Erosion Control Plan to be approved by the Contract Administrator prior to structure installation at the following bridge installation sites:

<u>Road</u>	<u>Structure Location</u>	<u>Structure Type</u>
MY-ML	STA 54+10 to 54+88	BRIDGE
MY-ML	STA 61+85 to 62+35	BRIDGE
MY-ML	STA 72+11 to 72+71	BRIDGE
MY-ML	STA 97+53 to 97+68	BRIDGE
MY-21	STA 6+92 to 7+42	BRIDGE

If it is necessary to pass equipment over open water prior to bridge structure installation at the locations listed above then this shall be addressed in the Erosion Control Plan. Equipment may pass over open water only if the drive mechanisms do not enter the channel.

11-2 PROTECTION OF FISH DURING STRUCTURE INSTALLATION

Best Management Practices for the protection of fish life and habitat shall be applied as described in the Forest Practices Board Manual Section 5 GUIDELINES FOR FOREST PRACTICES HYDRAULIC PROJECTS. All structure installation sites listed in 11-1 shall be either dewatered or have fish exclusion measures in place prior to installation.

Dewatering methods must be approved by the contract administrator which may include:

- Passive gravity flow bypass consistent with WAC 222-24-044
- Cofferdam and pump(s) equipped with screens to prevent injury of fish pursuant to RCW 77.57.010 and RCW 77.57.070.
- Isolation of water from work area

The purchaser shall maintain clean water by diverting the stream before it enters the construction site and returning the flow to the channel downstream from the project. Any water that appears within the installation area shall be captured and removed from the construction site. This wastewater may not be discharged directly into typed waters. Fish stranded in the bypass reach shall be safely removed to the flowing stream.

Where dewatering will not be used fish shall be excluded from the construction site in accordance with the Forest Practices Board Manual Chapter 5, Section 9 Fish Capture and Exclusion.

11-3 CONSTRUCTION WITHIN CHANNEL MIGRATION ZONE

On the following roads proposed within a channel migration zone, the typical section shall be constructed with an outsloped road surface of 3% without a ditch. Road work shall be completed with the goal of maintaining natural drainages:

<u>Road</u>	<u>Stations</u>
MY-ML	62+35 to 71+00
MY-12	0+00 to 7+08

Within swale locations listed below the maximum embankment (fill) depth permitted at centerline is 2.0 feet and must be removed during abandonment (see clause 9-24 HEAVY ABANDONMENT). The purchaser shall also construct rolling dips as listed in the MATERIALS LIST and in accordance with the ROLLING DIP DETAIL.

<u>Road</u>	<u>Stations</u>
MY-ML	63+70 to 65+70
MY-12	0+89 to 1+42
MY-12	2+59 to 3+27
MY-12	4+10 to 4+62
MY-12	5+20 to 5+70

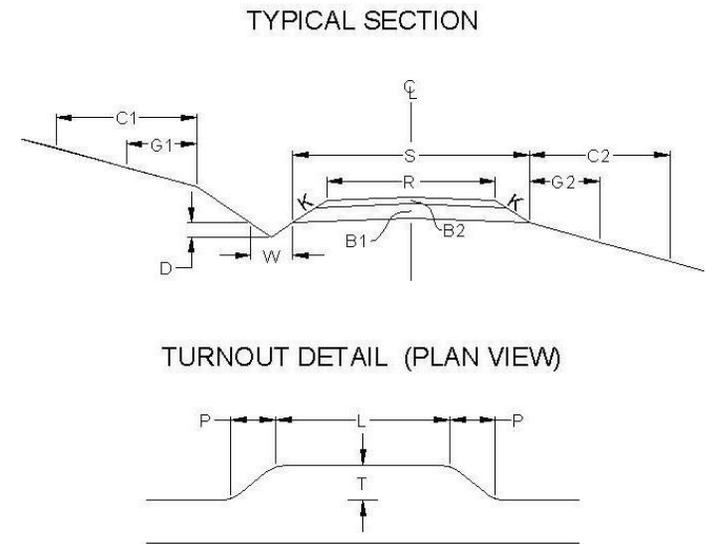
11-4 STREAM BANK RESTORATION

On the following road Purchaser shall perform work as directed in the STREAM BANK RESTORATION DETAIL.

<u>Road</u>	<u>Stations</u>
MY-RRG15	30+40 to 31+40

This work entails pulling back a poorly located orphaned grade embankment at a Type 4 stream crossing to reduce the risk of an avulsion hazard. Material removed from the channel shall be placed on the grade and shaped to mimic the natural bank above and below the orphaned grade. Additional material is available on site with written approval from the Contract Administrator. All work must be completed under the direction of a State Lands Geologist and District Engineer with approval by Forest Practices and WDFW.

ROAD #		MY-ML	MY-ML	MY-ML	MY-ML
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		MAINTENANCE	RECONSTRUCT	CONSTRUCT	CONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	A	C
STATION / MP TO		0+00	20+30	54+10	54+88
STATION / MP		20+30	54+10	54+88	61+85
ROAD WIDTH	R	-	12	14	12
CROWN (INCHES @ C/L)		-	3	78 FOOT SPAN, GRAVEL DECK, PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE-CAST CONCRETE FOOTINGS	3
DITCH WIDTH	W	-	3		3
DITCH DEPTH	D	-	1		1
TURNOUT LENGTH	L	-	50		50
TURNOUT WIDTH	T	-	10		10
TURNOUT TAPER	P	-	25		25
GRUBBING	G1	-	5		5
	G2	-	5		5
CLEARING	C1	-	10		10
	C2	-	10		10
ROCK FILLSLOPE	K:1	-	1 ½	1 ½	
❖ BALLAST DEPTH	B1	-	6	-	18
CUBIC YARDS / STATION		-	34	-	114
➤ TOTAL CY BALLAST		-	2450*	20 ^A	800
❖ SURFACING DEPTH	B2	-	-	-	-
CUBIC YARDS / STATION		-	-	-	-
➤ TOTAL CY SURFACING		-	-	50 ^B	-
➤ TOTAL CUBIC YARDS		-	2450*	70	800
SUBGRADE WIDTH	S	-	-	-	16.5
BRUSHCUT (Y/N)		Y	N	N/A	N/A
BLADE, SHAPE, & DITCH (Y/N)		N	Y**	N/A	N/A



SYMBOL NOTES

- ❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.
- Specified Rock Quantity is LOOSE MEASURE (Truck Cubic Yards) needed to accomplish specified FINISHED COMPACTED DEPTH. Rock quantities include volume for turnouts, curve widening and landings.

* Quantity includes 1300 cubic yards of shot rock for road prism reconstruction and 1150 cubic yards 3-inch-minus ballast rock.
 ** Pull berms back into road subgrade prior to shot rock application.

^A 3-inch-minus ballast for bridge approach.

^B 1 ½-inch-minus crushed rock from a commercial source for bridge surfacing and a leveling course for precast concrete footings. See installation details on pages 45-50.

^C New construction is located on an existing grade.

Rock Totals Summary

Type	Quantity (Cubic Yards)
Ballast	28,560
Rip Rap	1555
1 ½" minus	150
Shot rock	1300

ROAD #		MY-ML	MY-ML	MY-ML ^c	MY-ML	MY-ML ^c	MY-ML	MY-ML ^c	MY-ML
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT
TOLERANCE CLASS (A/B/C)		A	C	C	A	C	C	C	C
STATION / MP TO		61+85	62+35	67+33	72+11	72+71	81+64	86+57	94+27
STATION / MP		62+35	67+33	72+11	72+71	81+64	86+57	94+27	97+53
ROAD WIDTH	R	16	12	12	14	12	12	12	12
CROWN (INCHES @ C/L)		50 FOOT SPAN, GRAVEL DECK, PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE- CAST CONCRETE FOOTINGS	3	3	60 FOOT SPAN, GRAVEL DECK, PRE-CONSTRUCTED, MODULAR TYPE STEEL BRIDGE AND PRECAST CONCRETE FOOTING WITH STEEL TOWER ASSEMBLY	3	3	3	3
DITCH WIDTH	W		3	3		3	3		
DITCH DEPTH	D		1	1		1	1		
TURNOUT LENGTH	L		50	50		50	50		
TURNOUT WIDTH	T		10	10		10	10		
TURNOUT TAPER	P		25	25		25	25		
GRUBBING	G1		5	5		5	5		
	G2		5	5		5	5		
CLEARING	C1		10	10		10	10		
	C2		10	10		10	10		
ROCK FILLSLOPE	K:1	1 ½	1 ½	1 ½	1 ½				
❖ BALLAST DEPTH	B1	-	18	12	-	12	18	12	18
CUBIC YARDS / STATION		-	114	72	-	72	114	72	114
➤ TOTAL CY BALLAST		20 ^A	580	350	20 ^A	650	570	560	380
❖ SURFACING DEPTH	B2	-	-	-	-	-	-	-	-
CUBIC YARDS / STATION		-	-	-	-	-	-	-	-
➤ TOTAL CY SURFACING		40 ^B	-	-	20 ^B	-	-	-	-
➤ TOTAL CUBIC YARDS		60	580	350	40	650	570	560	380
SUBGRADE WIDTH	S	-	16.5	15	-	15	16.5	15	16.5
BRUSHCUT (Y/N)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BLADE, SHAPE, & DITCH (Y/N)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ROAD #		MY-ML	MY-ML	MY-ML ^c	MY-ML	MY-04	MY-12	MY-21	MY-21
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED	REQUIRED	OPTIONAL	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	MAINTENANCE	CONSTRUCTION	CONSTRUCT	CONSTRUCT
TOLERANCE CLASS (A/B/C)		A	C	C	C	C	C	C	C
STATION / MP TO		97+53	97+68	182+56	185+17	0+00	0+00	0+00	6+92
STATION / MP		97+68	182+56	185+17	234+31	156+70	10+09	6+92	7+42
ROAD WIDTH	R	16	12	12	12	-	12	12	14
CROWN (INCHES @ C/L)		CONCRETE SLAB BRIDGE WITH PRECAST WALL ABUTMENT	3	3	3	-	3	3	50 FOOT SPAN, WOOD DECK PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE-CAST CONCRETE FOOTINGS
DITCH WIDTH	W		3	3	3	-	2	3	
DITCH DEPTH	D		1	1	1	-	1	1	
TURNOUT LENGTH	L		50	50	50	-	25	50	
TURNOUT WIDTH	T		10	10	10	-	10	10	
TURNOUT TAPER	P		25	25	25	-	25	25	
GRUBBING	G1		5	5	5	-	5	5	
	G2		5	5	5	-	5	5	
CLEARING	C1		10	10	10	-	10	10	
	C2		10	10	10	-	10	10	
ROCK FILLSLOPE	K:1	1 ½	1 ½	1 ½	-	1 ½	1 1/2		
❖ BALLAST DEPTH	B1	-	18	12	18	-	12	18	-
CUBIC YARDS / STATION		-	114	72	114	-	72	114	-
➤ TOTAL CY BALLAST		-	9700	190	5,610	-	730	560	-
❖ SURFACING DEPTH	B2	-	-	-	-	-	-	-	-
CUBIC YARDS / STATION		-	-	-	-	-	-	-	-
➤ TOTAL CY SURFACING		20 ^B	-	-	-	-	-	-	20 ^B
➤ TOTAL CUBIC YARDS		20 ^B	9700	190	5,610	-	730	560	20 ^B
SUBGRADE WIDTH	S	-	16.5	15.0	16.5	-	15.0	16.5	-
BRUSHCUT (Y/N)		N/A	N/A	N/A	N/A	Y	N/A	N/A	N/A
BLADE, SHAPE, & DITCH (Y/N)		N/A	N/A	N/A	N/A	N	N/A	N/A	N/A

ROAD #		MY-21	MY-2104	MY-2104-01	MY-2106	MY-43			
REQUIRED / OPTIONAL		REQUIRED	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL			
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT			
TOLERANCE CLASS (A/B/C)		C	C	C	C	C			
STATION / MP TO		7+42	0+00	0+00	0+00	0+00			
STATION / MP		39+76	11+91	8+11	16+53	9+40			
ROAD WIDTH	R	12	12	12	12	12			
CROWN (INCHES @ C/L)		3	3	3	3	3			
DITCH WIDTH	W	3	2	2	2	2			
DITCH DEPTH	D	1	1	1	1	1			
TURNOUT LENGTH	L	50	25	25	25	25			
TURNOUT WIDTH	T	10	10	10	10	10			
TURNOUT TAPER	P	25	25	25	25	25			
GRUBBING	G1	5	5	5	5	5			
	G2	5	5	5	5	5			
CLEARING	C1	10	10	10	10	10			
	C2	10	10	10	10	10			
ROCK FILLSLOPE	K:1	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2			
❖ BALLAST DEPTH	B1	18	12	12	12	6			
CUBIC YARDS / STATION		114	72	72	72	34			
➤ TOTAL CY BALLAST		3700	860	590	1200	320			
❖ SURFACING DEPTH	B2	-	-	-	-	-			
CUBIC YARDS / STATION		-	-	-	-	-			
➤ TOTAL CY SURFACING		-	-	-	-	-			
➤ TOTAL CUBIC YARDS		3700	860	590	1200	320			
SUBGRADE WIDTH	S	16.5	15	15	15	13.5			
BRUSHCUT (Y/N)		N/A	N/A	N/A	N/A	N/A			
BLADE, SHAPE, & DITCH (Y/N)		N/A	N/A	N/A	N/A	N/A			

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
												18" 16 2 2/3" x 1/2" 24" – 48" 14 2 2/3" x 1/2" 54" – 96" 14 3" x 1"		
MY-ML	23+30	18	34	XX	/	/	2	3	L	NT	C			
	26+30	18	34	XX	/	/	2	3	L	NT	C			
	29+05	18	34	XX	/	/	2	3	L	NT	C			
	30+90	18	34	XX	/	/	2	3	L	NT	C			
	35+50	18	34	XX	/	/	2	3	L	NT	C			
	38+50	18	34	XX	/	/	2	3	L	NT	C			
	39+90	18	34	XX	/	/	2	3	L	NT	C			
	41+10	18	34	XX	/	/	2	3	L	NT	C			
	42+50	18	34	XX	/	/	2	3	L	NT	C			
	47+20	18	34	XX	/	/	2	3	L	NT	C			
	52+30	18	34	XX	/	/	2	3	L	NT	C			
	54+07	-	-	-	-	-	-	-	-	-	-	Install steel gate. See 7-76 GATE INSTALLATION and STEEL GATE DETAIL		
	54+10 to 54+88	78 FOOT SPAN, PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE-CAST CONCRETE FOOTINGS					50	--					See clauses 11.1, 11.2 and DETAILS for BRIDGE SITE #1.	
						--	50	O/H /L	NT	A				
	55+36	-	-	-	-	-	-	-	-	-	-	Start geotextile.		
	56+87	-	-	-	-	-	-	-	-	-	-	End geotextile.		
	57+10	-	-	-	-	-	-	-	-	-	-	Ditchout		
	57+61	18	30	XX	/	/	2	3	L	NT	C			
	58+22	18	30	XX	/	/	2	3	L	NT	C			

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
										24" - 48"	14	2 2/3" x 1/2"		
												54" - 96"	14	3" x 1"
MY-ML (cont'd)	59+36	18	30	XX			2	3	L	NT	C			
	59+97	18	30	XX			2	3	L	NT	C			
	61+58 to 61+85	-	-	-			-	-	-	-	-	Install 2 check dams, see clause 8-5 CHECK DAM.		
	61+85 to 62+35	50 FOOT SPAN, PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE-CAST CONCRETE FOOTINGS					40	--					See sections 11.1, 11.2, and DETAILS for BRIDGE SITE #2.	
						--	40	H/L	NT	A				
	64+70	18	44	XX			5	7	L	SR	C	Install rolling dip. See ROLLING DIP DETAIL.		
	68+33	18	44	XX			8	12	L	NT	C			
	72+11 to 72+71	60 FOOT SPAN, PRE-CONSTRUCTED, STEEL BRIDGE AND PRECAST CONCRETE FOOTING WITH STEEL TOWER ASSEMBLY					60	--					See clauses 11.1, 11.2 and DETAILS BRIDGE SITE #3.	
						--	60	H/L	NT	A				
	73+80	18	34	XX			3	5	L	NT	C			
	77+20	24	40	GM			5	7	L/H	NT	C			
	78+89	24	36	GM			5	7	L/H	NT	C			
	79+48	18	34	XX			3	5	L	NT	C			
	81+64	18	42	XX			5	7	L	NT	C	Align to capture ditchwater from existing grade.		
	83+56	18	42	XX			5	7	L	NT	C			
	94+27	18	36	XX			5	7	L	NT	C			
	95+21	18	36	XX			3	5	L	NT	C			
	96+64	18	34	XX			3	5	L	NT	C			
	97+53 to 97+68	15' CONCRETE SLAB BRIDGE, PRECAST WALL ABUTMENT											See design details for BRIDGE SITE #4	

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
MY-ML (cont'd)	98+28	18	34	XX			2	3	L	NT	C			
	99+45	24	34	GM			3	5	L/H	NT	C			
	102+00	18	36	XX			2	3	L	NT	C			
	107+46	-	-	-	-	-	-	-	-	-	-	Ditchout		
	111+68	18	36	XX			2	3	L	NT	C			
	115+72	24	34	GM			3	5	L/H	NT	C			
	116+13	-	-	-	-	-	-	-	-	-	-	Begin full bench construction. (See clause 4-12.)		
	117+02	30	36	GM			8	12	L/H	NT	C	Stream		
	117+53	-	-	-	-	-	-	-	-	-	-	End full bench construction		
	118+45	18	36	XX			3	5	L	NT	C			
	120+26	-	-	-	-	-	-	-	-	-	-	Ditchout		
	122+19	18	34	XX			2	3	L	NT	C			
	123+24	-	-	-	-	-	-	-	-	-	-	Start geotextile		
	124+66	30	32	GM			8	10	L/H	NT	C	Stream		
	125+26	18	32	XX			2	3	L	NT	C			
	125+92	-	-	-	-	-	-	-	-	-	-	End geotextile		
	131+47	18	32	XX			2	3	L	NT	C			
	134+16	-	-	-	-	-	-	-	-	-	-	Ditchout		
	136+33	18	36	XX			2	3	L	NT	C			
	139+75	18	36	XX			2	3	L	NT	C			
	145+79	18	32	XX			2	3	L	NT	C			
	148+59	18	36	XX			3	5	L	NT	C			

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
MY-ML (cont'd)	150+56	-	-	-	-	-	-	-	-	-	-	Begin full bench construction. (See clause 4-12.)		
	151+40	18	32	XX	/	/	3	5	L	NT	C			
	153+63	18	32	XX	/	/	3	5	L	NT	C			
	155+18	-	-	-	-	-	-	-	-	-	-	End full bench construction.		
	156+11	18	36	XX	/	/	3	5	L	NT	C			
	157+75	24	36	GM	/	/	3	5	L/H	NT	C			
	159+81	-	-	-	-	-	-	-	-	-	-	Begin full bench construction. (See clause 4-12.)		
	160+21	18	32	XX	/	/	3	5	L	NT	C	End full bench construction.		
	160+53 to 162+02	-	-	-	-	-	40	350	L/H	-	-	See clause 8-10 STABILIZE SLOPES		
	162+28	-	-	-	-	-	-	-	-	-	-	Ditchout		
	164+41	18	36	XX	/	/	3	5	L	NT	C			
	165+90	24	36	GM	/	/	3	5	L/H	NT	C			
	168+10	18	36	GM	/	/	2	3	L	NT	C			
	169+16	-	-	-	-	-	-	-	-	-	-	Begin full bench construction. (See clause 4-12.)		
	171+15	18	32	GM	/	/	2	3	L	NT	C	End full bench construction.		
	174+32	18	36	GM	/	/	2	3	L	NT	C			
	174+68	-	-	-	-	-	-	-	-	-	-	Begin full bench construction. (See clause 4-12.)		
	176+79	18	32	GM	/	/	2	3	L	NT	C			
	179+00	-	-	-	-	-	-	-	-	-	-	End full bench construction.		

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 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
MY-ML (cont'd)	181+95	18	36	GM			3	5	L	NT	C			
	183+23	-	-	-	-	-	-	-	-	-	-	Ditchout onto existing grade		
	185+17	-	-	-	-	-	-	-	-	-	-	Intercept ditchline of existing grade and ditchout.		
	185+80	18	36	GM	20	GM	3	7	L	NT	C	Downspout releases to existing grade		
	188+61	18	40	GM			3	5	L	NT	C			
	193+02	-	-	-	-	-	-	-	-	-	-	Ditchout		
	196+53	18	36	GM			3	5	L	NT	C			
	197+16	-	-	-	-	-	-	-	-	-	-	Start geotextile		
	198+34	18	32	XX			2	3	L	NT	C			
	199+43	18	36	GM			2	3	L	NT	C			
	200+99	-	-	-	-	-	-	-	-	-	-	Ditchout, end geotextile.		
	203+65	-	-	-	-	-	-	-	-	-	-	Ditchout onto existing grade		
	204+95	18	32	XX			2	3	L	NT	C			
	206+94	24	32	GM			3	5	L	NT	C			
	210+55	24	36	GM			5	7	L	NT	C			
	214+65	18	36	GM			2	3	L	NT	C			
	217+50	18	36	GM			3	5	L	NT	C			
	221+65	18	32	GM			2	3	L	NT	C			
	226+02	-	-	-	-	-	-	-	-	-	-	Ditchout onto existing grade		
	227+85	18	32	XX			2	3	L	NT	C			
	231+40	-	-	-	-	-	-	-	-	-	-	Ditchout		

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 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS	
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:	
												Diameter	Gage
MY-21	5+34	18	36	XX			3	5	L	NT	C		
	6+92 to 7+42	50 FOOT SPAN, WOOD DECK PRE-CONSTRUCTED, MODULAR TYPE, PAINTED STEEL BRIDGE AND PRE-CAST CONCRETE FOOTINGS					40	--	L/H	NT	A	See design details for BRIDGE SITE #5.	
						--	50						
	10+45	18	34	XX			3	5	L	NT	C		
	12+18	18	34	XX			3	5	L	NT	C		
	14+74	18	36	XX			3	5	L	NT	C		
	18+36	18	30	XX			2	5	L	NT	C		
	19+56	18	34	GM	24	XX	3	5	L	NT	C		
	21+00	18	36	XX			3	5	L	NT	C		
	22+42	-	-	-	-	-	-	-	-	-	-	Start geotextile	
	22+93	18	32	XX			3	5	L	NT	C		
	24+02	-	-	-	-	-	-	-	-	-	-	End geotextile	
	25+39	-	-	-	-	-	-	-	-	-	-	Start geotextile	
	25+96	18	32	XX			2	3	L	NT	C		
	27+84	36	36	XX			8	12	L/H	NT	C	Stream	
	28+49	18	34	XX			3	5	L	NT	C	End geotextile	
	29+17	-	-	-	-	-	-	-	-	-	-	Ditchout	
	32+80	18	34	XX			2	5	L	NT	C		
	35+64	18	34	XX			3	5	L	NT	C		

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
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MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
												18" 16 2 2/3" x 1/2" 24" – 48" 14 2 2/3" x 1/2" 54" – 96" 14 3" x 1"		
MY-2104	3+73	18	34	XX	/	/	3	5	L	NT	C			
	5+66	-	-	-	-	-	-	-	-	-	-	Start geotextile		
	5+88	24	34	XX	/	/	5	7	L/H	NT	C			
	7+83	18	34	XX	/	/	3	5	L	NT	C	End geotextile		
	9+45	18	34	XX	/	/	3	5	L	NT	C			
	11+76	-	-	-	-	-	-	-	-	-	-	Ditchout		
MY-2104-01	0+60	18	36	XX	/	/	3	5	L	NT	C			
	1+14	24	40	XX	/	/	5	12	L/H	NT	C	Stream		
	3+98	18	32	XX	/	/	3	5	L	NT	C			
	4+68	18	36	XX	/	/	3	5	L	NT	C			
	5+19	30	36	XX	/	/	8	12	L/H	NT	C	Stream		
	6+57	18	32	XX	/	/	3	5	L	NT	C			
MY-2106	3+10	18	34	XX	/	/	2	5	L	NT	C			
	6+18	18	34	XX	/	/	3	5	L	NT	C			
	8+15	18	36	XX	/	/	3	5	L	NT	C			
	12+22	18	36	XX	/	/	3	5	L	NT	C			
	15+42	18	34	XX	/	/	3	5	L	NT	C			
MY-43	9+40	-	-	-	-	-	-	-	-	-	-	Ditchout		

GM – Galvanized Metal PS – Polyethylene Pipe Single Wall PD – Polyethylene Pipe Dual Wall AM – Aluminized Metal C – Concrete XX – PD or GM
 H – Heavy Loose Riprap L – Light Loose Riprap SR – Shot Rock NT – Native (Bank Run) QS – Quarry Spalls

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials. Remove slides from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

Surface

- Grade and shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET. Inslope or outslope as directed to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

Drainage

- Prevent silt bearing road surface and ditch runoff from delivering sediment to any streams or wetlands.
- Maintain rolling dips and drivable waterbars as needed to keep them functioning as intended.
- Maintain headwalls to the road shoulder level with material that will resist erosion.
- Maintain energy dissipaters at culvert outlets with non-erodible material or rock.
- Keep ditches, culverts, and other drainage structures clear of obstructions and functioning as intended.
- Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This shall be done even during periods of inactivity.

Preventative Maintenance

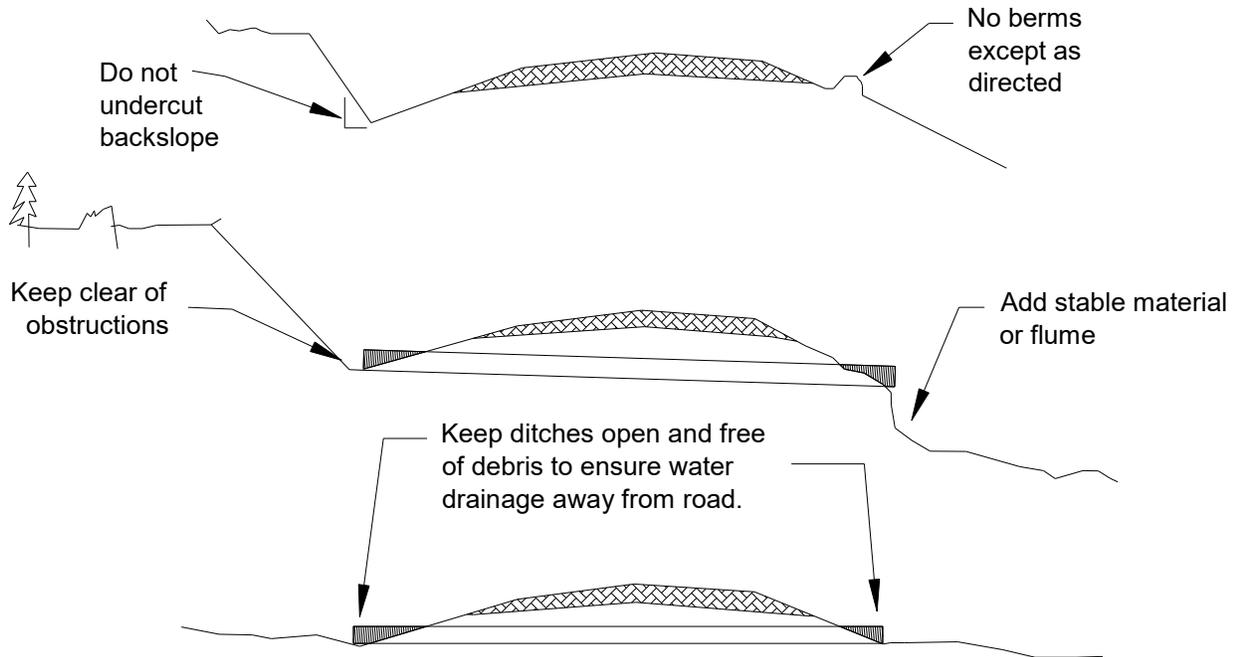
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

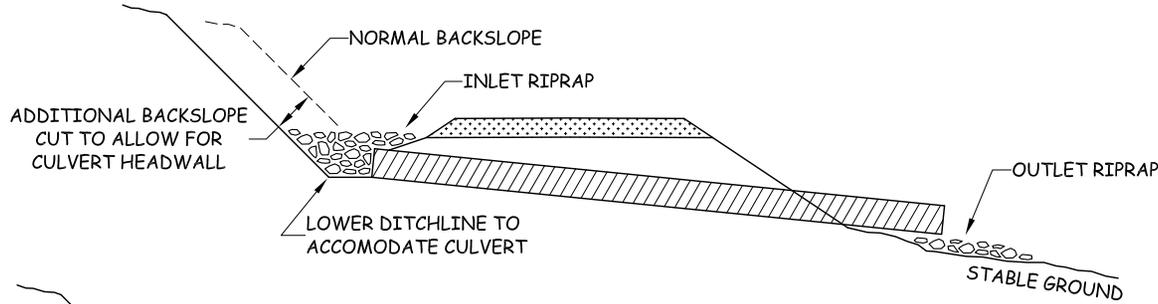
Debris

- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.

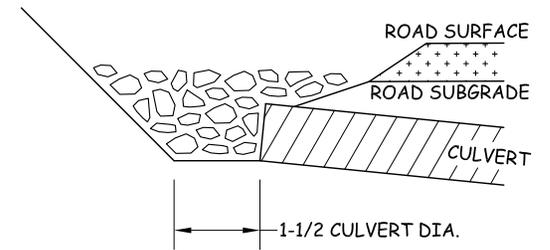


CULVERT AND DRAINAGE SPECIFICATIONS

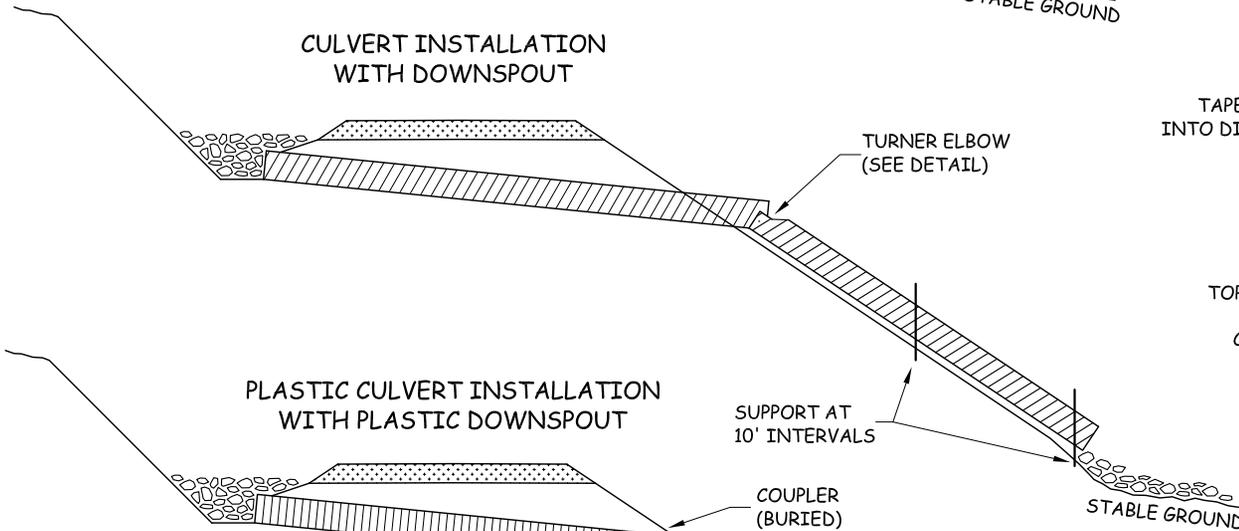
CULVERT INSTALLATION (TYPICAL)



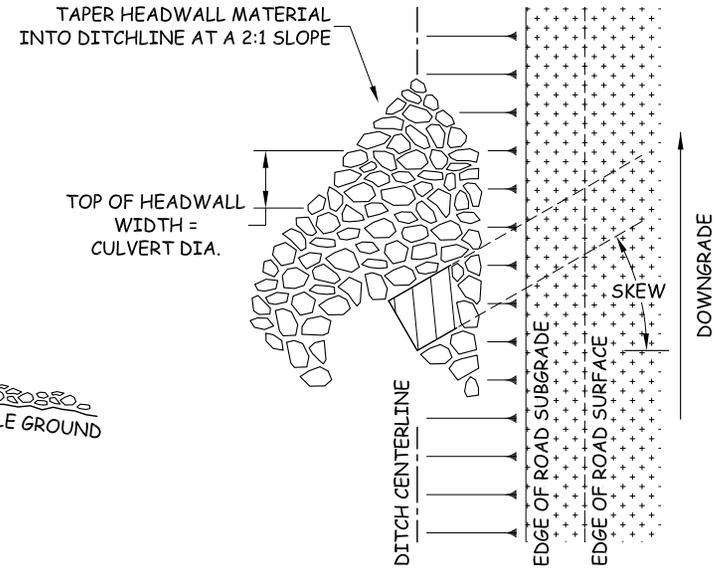
CULVERT HEADWALL - SECTION VIEW



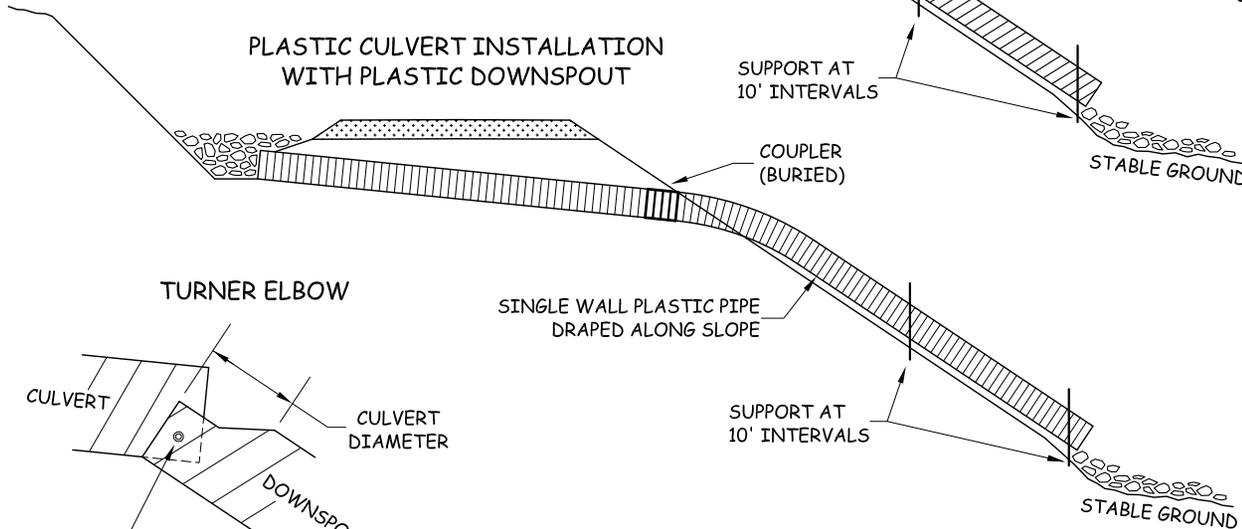
CULVERT INSTALLATION WITH DOWNSPOUT



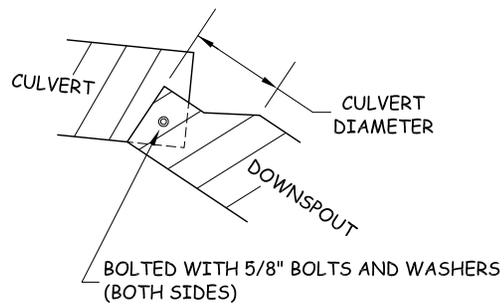
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



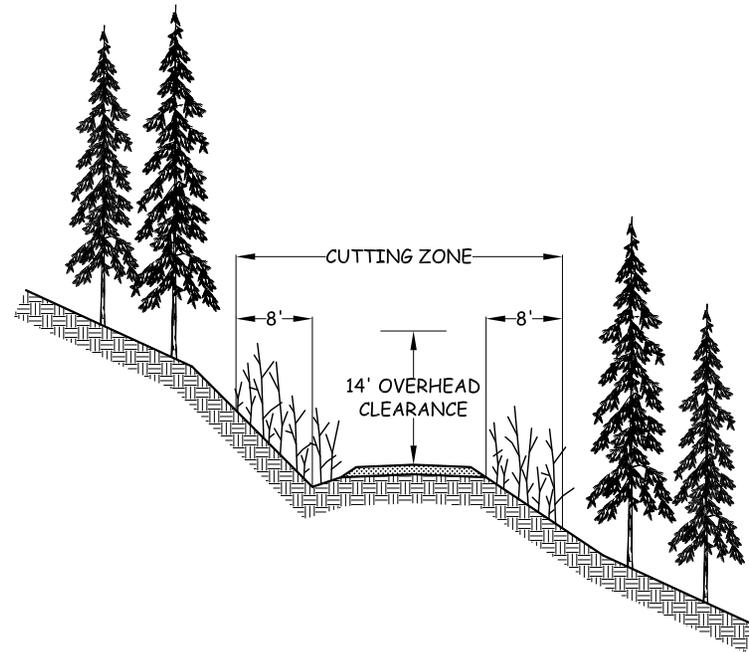
TURNER ELBOW



HEADWALL NOTE:
 HEADWALL TO BE CONSTRUCTED OF IMPERVIOUS MATERIAL THAT WILL RESIST EROSION AND ARMORED WITH RIPRAP QUANTITY SPECIFIED IN ROAD PLAN.

CONTRACT # 30 -100161	PROJECT MIDDLE MAY	SHEET 55 OF 84
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ROAD BRUSHING DETAILS



SPECIFICATIONS

BRUSH SHALL BE CUT ON THE ROAD SURFACE AND 8 ft. BACK FROM ROAD DITCH AND OUTSIDE EDGE OF RUNNING SURFACE.

ON THE INSIDE OF SWITCHBACKS AND TIGHT CURVES, BRUSH SHALL BE CUT BACK 16 ft. FOR VISIBILITY.

ON TRUCK TURNOUTS, BRUSH SHALL BE CUT 8 ft. BACK FROM OUTSIDE EDGE.

BRUSH SHALL BE CUT TO PROVIDE AN OVERHEAD CLEARANCE OF 14 ft. ABOVE THE ROAD RUNNING SURFACE.

BRUSH SHALL BE CUT TO WITHIN 6 in. OF THE GROUND.

SLASH SHALL BE REMOVED FROM CUT SLOPES ABOVE THE ROAD AND SCATTERED ON EMBANKMENT SLOPES.

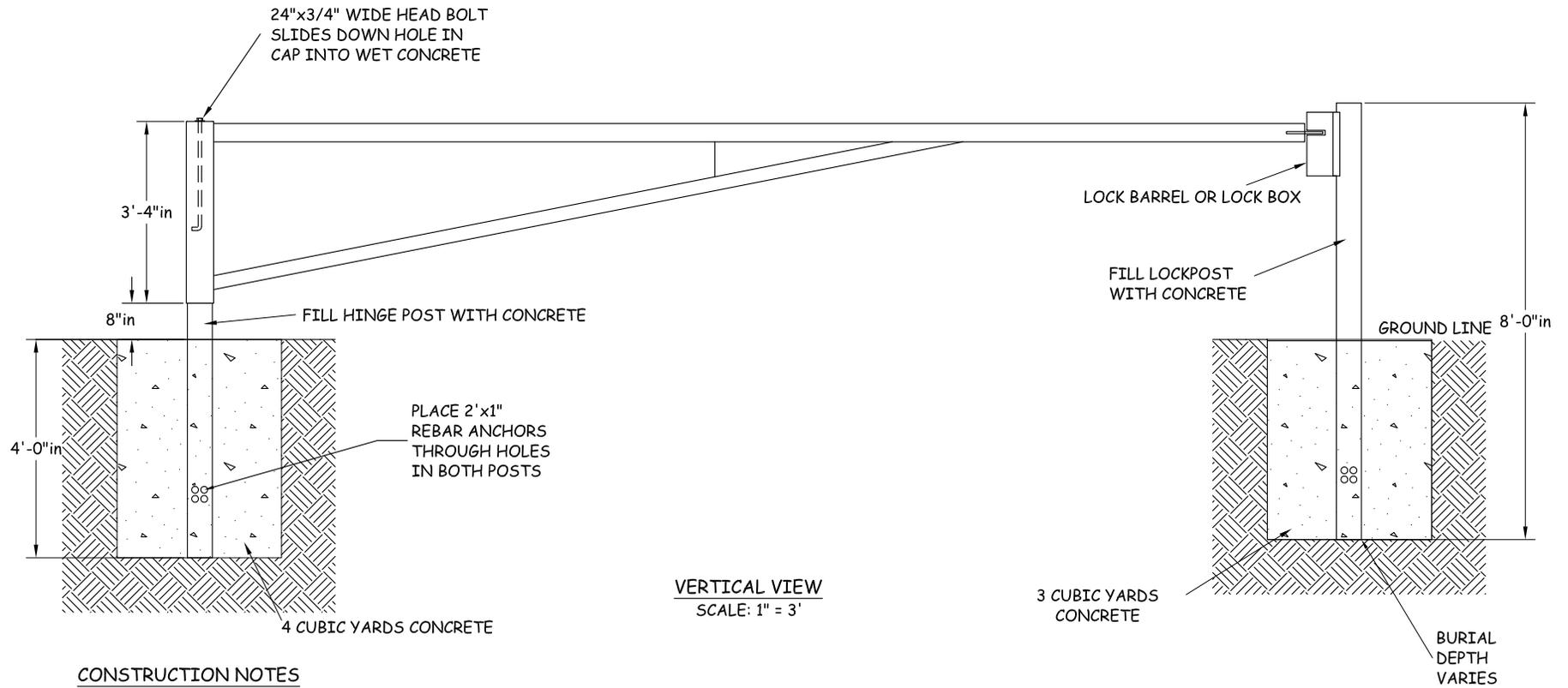
DITCHES SHALL BE CLEARED OF WOODY DEBRIS.

CULVERT INLETS AND OUTLETS SHALL BE CLEANED A MINIMUM DISTANCE OF TWO PIPE DIAMETERS AWAY.

CONTRACT # 30 -100161	PROJECT MIDDLE MAY	SHEET 56 OF 84
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STEEL GATE INSTALLATION

MY-ML 54+06

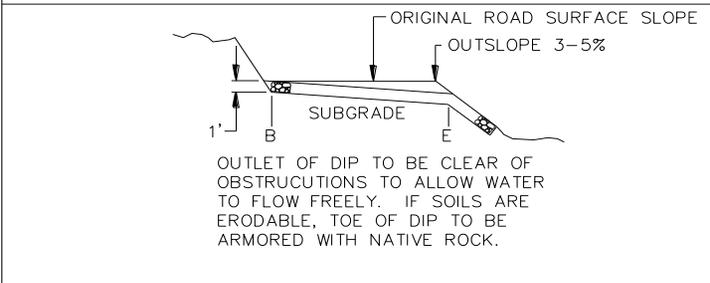
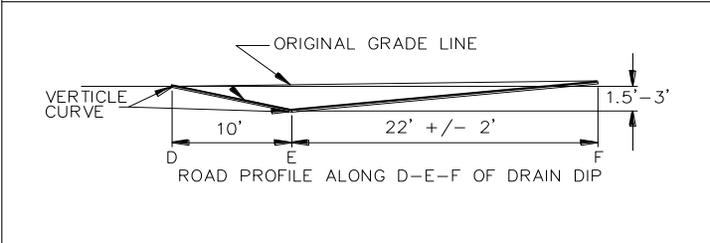
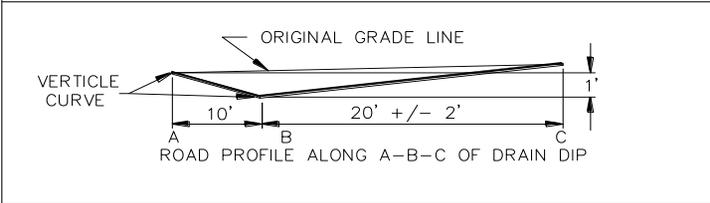


CONSTRUCTION NOTES

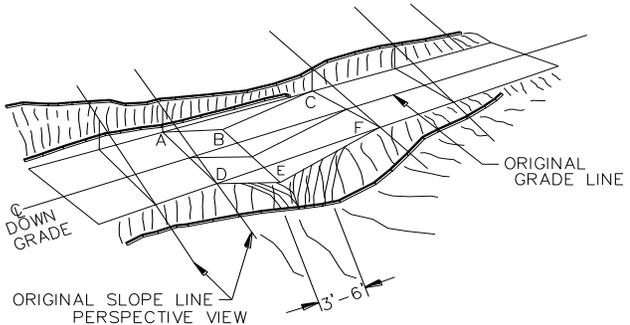
1. ALL WELDS ARE FILLET WELDS.
2. ACTUAL LOCATION SHALL BE DESIGNATED BY THE CONTRACT ADMINISTRATOR.
3. ALL CONCRETE SHALL MEET MINIMUM REQUIREMENTS FOR CLASS B CONCRETE.

CONTRACT #	PROJECT	SHEET
30 -100161	MIDDLE MAY	57 OF 84

ROLLING DIP DETAIL

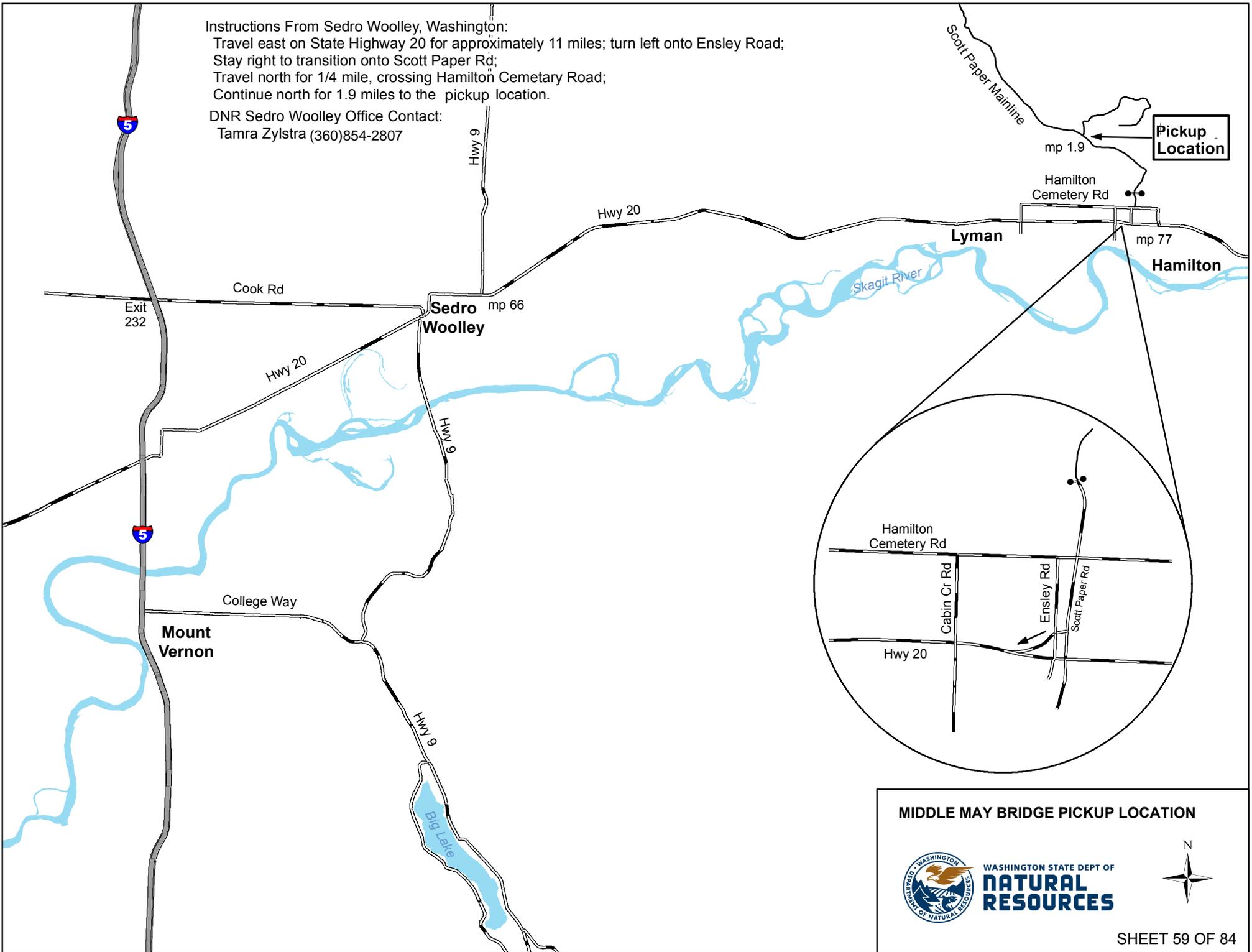


NOTE: PLAN OF DIP SHOWN IS FOR OUTSLOPED ROLLING DIP. DIPS MAY BE EITHER INSLOPED OR OUTSLOPED. WHEN INSLOPED, DIPS SHALL DRAIN FREELY INTO DITCHES OR CULVERT INLETS. WHEN OUTSLOPED, THEY SHALL DRAIN FREELY ONTO NATURAL GROUND. WHERE SOILS ARE ERODABLE, OUTLET SHALL BE ARMORED WITH NATIVE ROCK. THE MINIMUM CROSS GRADE FROM "B" TO "E" IS 4% GREATER THAN THE ROAD SURFACE SLOPE. SKEW LINE B-E TO FIT LOW POINT IN DRAW, IF LOCATED IN NATURAL DRAIN.



Instructions From Sedro Woolley, Washington:
 Travel east on State Highway 20 for approximately 11 miles; turn left onto Ensley Road;
 Stay right to transition onto Scott Paper Rd;
 Travel north for 1/4 mile, crossing Hamilton Cemetary Road;
 Continue north for 1.9 miles to the pickup location.

DNR Sedro Woolley Office Contact:
 Tamra Zylstra (360)854-2807



MIDDLE MAY BRIDGE PICKUP LOCATION



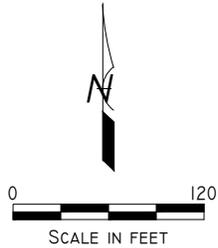
WASHINGTON STATE DEPT OF
NATURAL RESOURCES



SHEET 59 OF 84

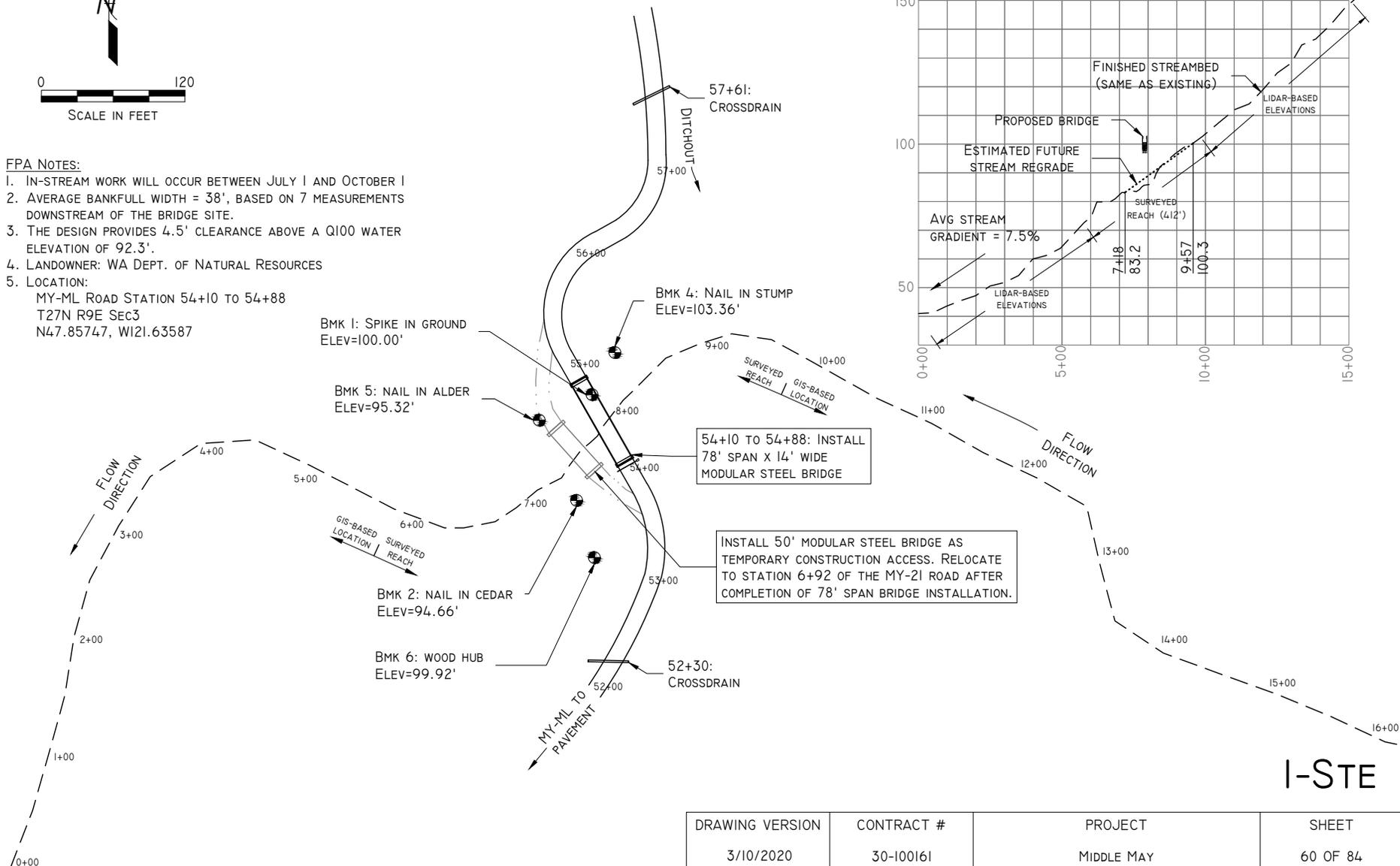
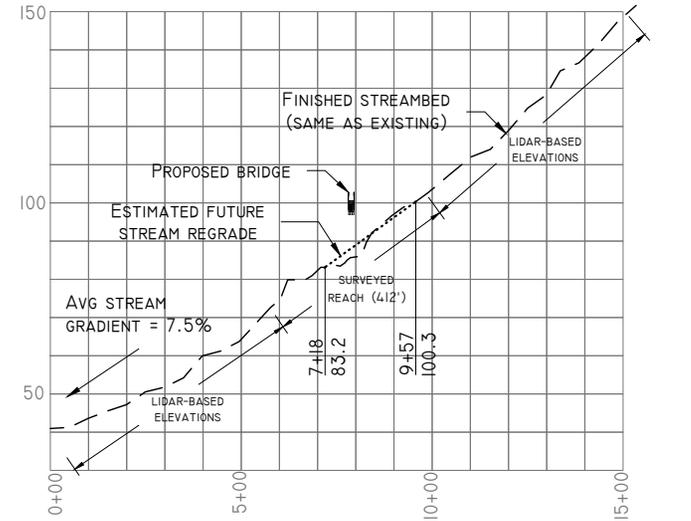
BRIDGE SITE #1
78'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 54+10 TO 54+88
SITE OVERVIEW

STREAM PROFILE
 (10X VERTICAL EXAGGERATION)



FPA NOTES:

1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1
2. AVERAGE BANKFULL WIDTH = 38', BASED ON 7 MEASUREMENTS DOWNSTREAM OF THE BRIDGE SITE.
3. THE DESIGN PROVIDES 4.5' CLEARANCE ABOVE A Q100 WATER ELEVATION OF 92.3'.
4. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
5. LOCATION:
 MY-ML ROAD STATION 54+10 TO 54+88
 T27N R9E Sec3
 N47.85747, W121.63587



DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	60 OF 84

I-STE

BRIDGE SITE #1
 78'x14' MODULAR STEEL BRIDGE INSTALLATION
 MY-ML ROAD STATION 54+10 TO 54+88
 PLAN VIEW



0 20
 SCALE IN FEET

FLOW DIRECTION

INSTALL 50' MODULAR STEEL BRIDGE AS TEMPORARY CONSTRUCTION ACCESS. RELOCATE TO STATION 6+92 OF THE MY-21 ROAD AFTER COMPLETION OF 78' SPAN BRIDGE INSTALLATION. SEE 50' TEMPORARY ACCESS BRIDGE INSTALLATION DRAWINGS FOR FURTHER INFORMATION.

EXCAVATE REMNANT LOG CRIBBING AND ASSOCIATED FILL ON BOTH BANKS. TOE OF CONSTRUCTED RIPRAP ARMORED SLOPES SHALL MATCH THE NATURAL STREAM WIDTH.

INSTALL 78' SPAN X 14' WIDE MODULAR STEEL BRIDGE

54+07: INSTALL GATE

OVERGROWN ORV TRAIL TO BE USED FOR CONSTRUCTION ACCESS.

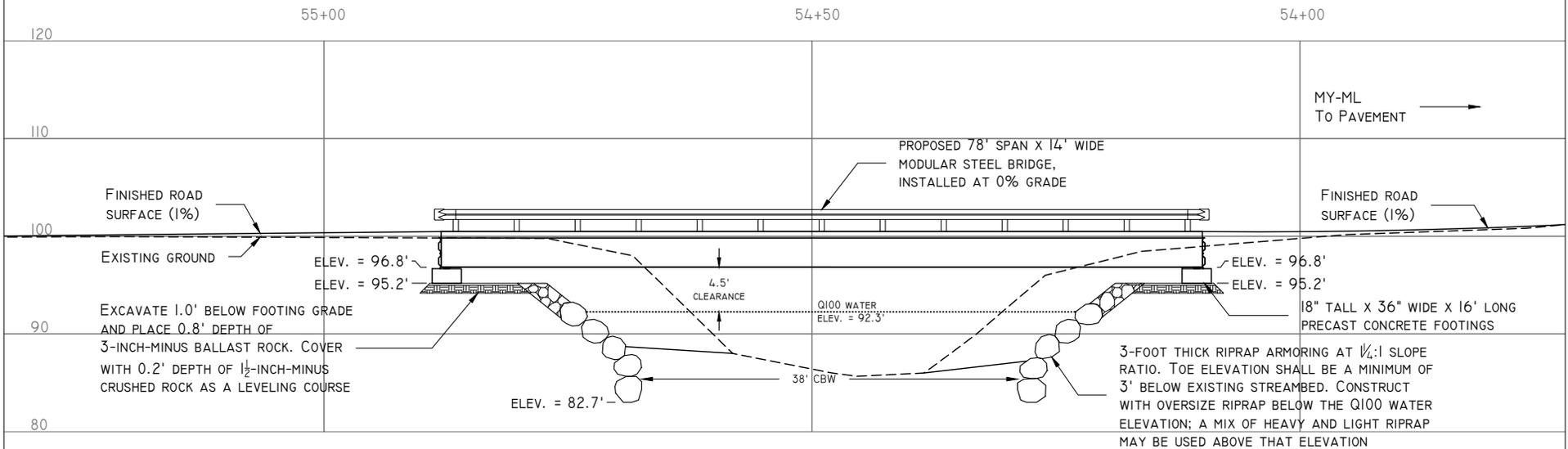
LANDOWNER NAME: WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

I-PLN

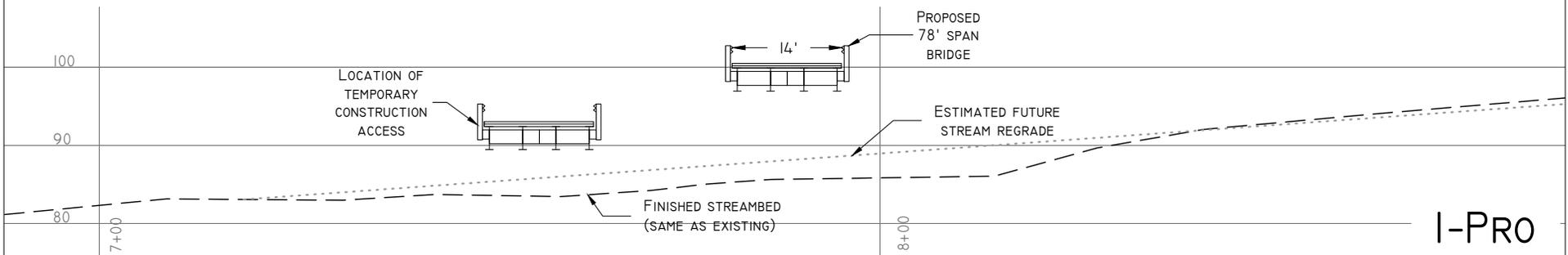
DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	61 OF 84

BRIDGE SITE #1
78'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 54+10 TO 54+88

BRIDGE PROFILE - LOOKING UPSTREAM



BRIDGE SECTION



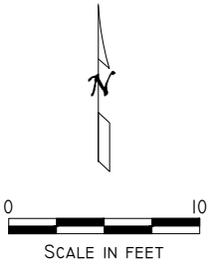
LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION 3/10/2020	CONTRACT # 30-100161	PROJECT MIDDLE MAY	SHEET 62 OF 84
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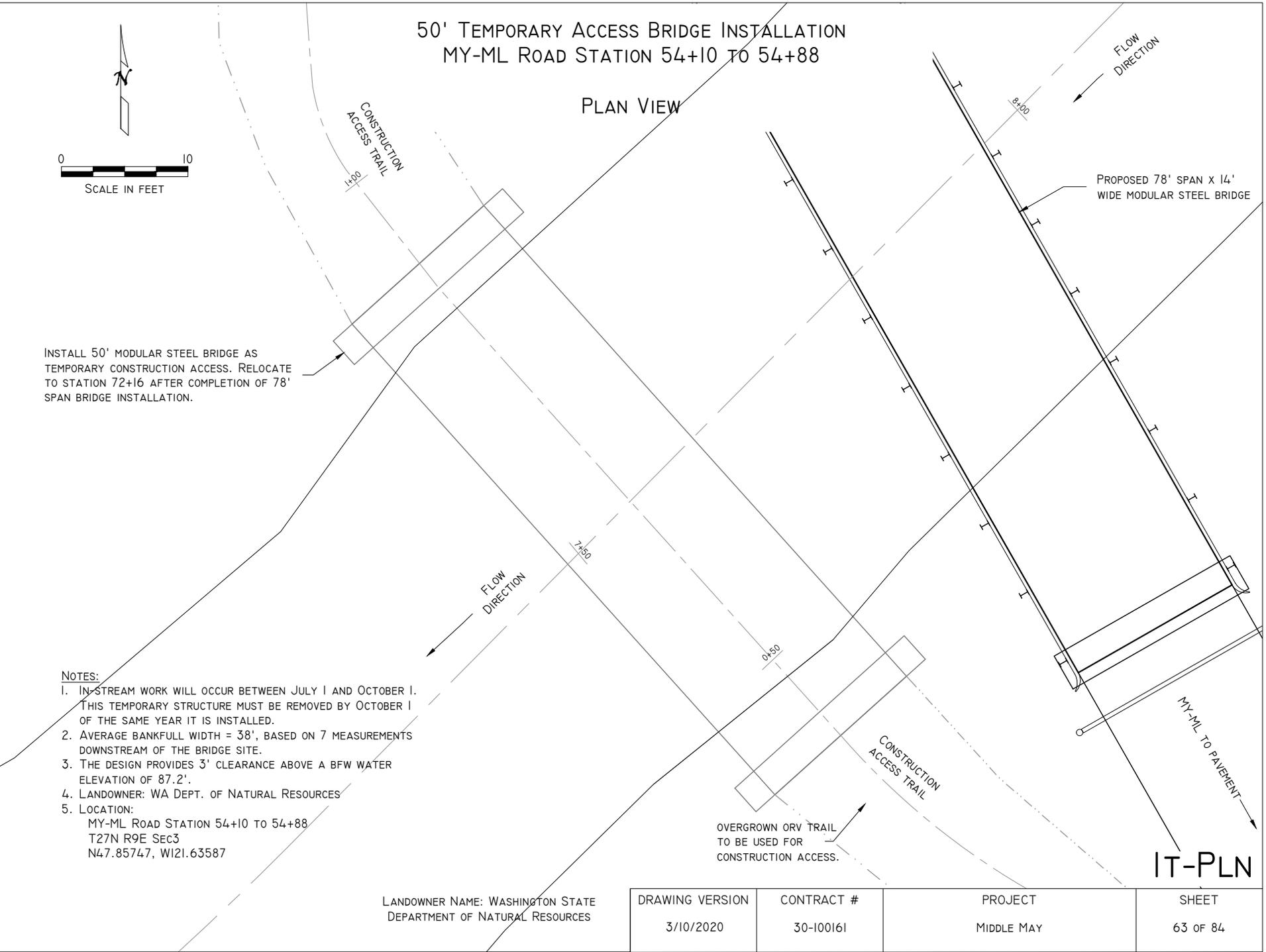
I-PRO

50' TEMPORARY ACCESS BRIDGE INSTALLATION MY-ML ROAD STATION 54+10 TO 54+88

PLAN VIEW



INSTALL 50' MODULAR STEEL BRIDGE AS TEMPORARY CONSTRUCTION ACCESS. RELOCATE TO STATION 72+16 AFTER COMPLETION OF 78' SPAN BRIDGE INSTALLATION.



NOTES:

1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1. THIS TEMPORARY STRUCTURE MUST BE REMOVED BY OCTOBER 1 OF THE SAME YEAR IT IS INSTALLED.
2. AVERAGE BANKFULL WIDTH = 38', BASED ON 7 MEASUREMENTS DOWNSTREAM OF THE BRIDGE SITE.
3. THE DESIGN PROVIDES 3' CLEARANCE ABOVE A BFW WATER ELEVATION OF 87.2'.
4. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
5. LOCATION:
MY-ML ROAD STATION 54+10 TO 54+88
T27N R9E Sec3
N47.85747, W121.63587

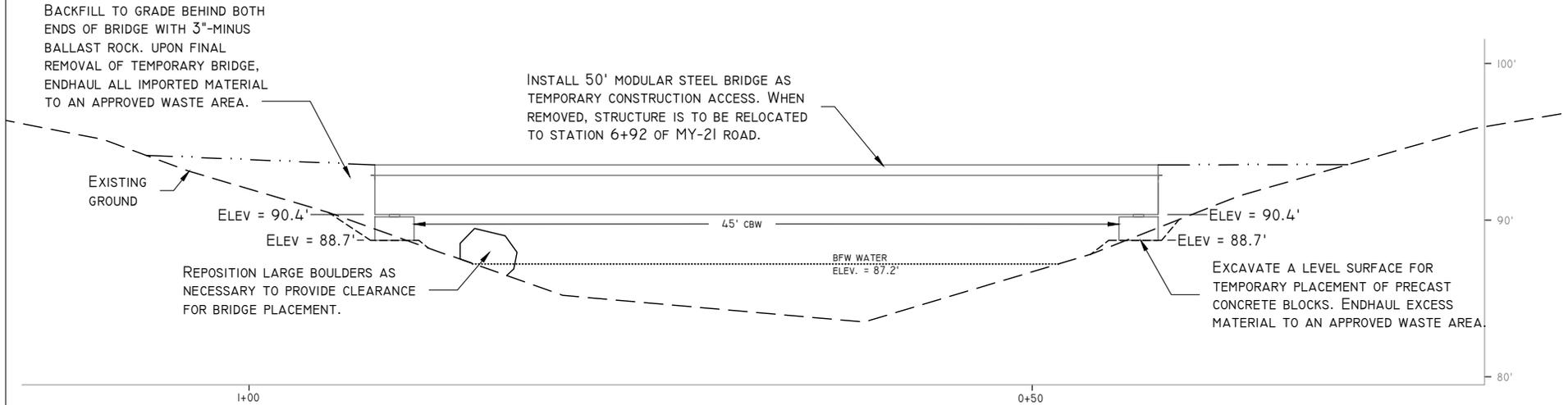
LANDOWNER NAME: WASHINGTON STATE
DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
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IT-PLN

BRIDGE SITE #1
 50' TEMPORARY ACCESS BRIDGE INSTALLATION
 MY-ML ROAD STATION 54+10 TO 54+88

BRIDGE PROFILE - LOOKING UPSTREAM



CONSTRUCTION NOTES:

CREATE TEMPORARY EQUIPMENT CROSSING BY PLACING LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE WATER WHILE CROSSING. LIMIT USE TO A MAXIMUM OF THREE PASSES UNLESS APPROVED BY FOREST PRACTICES.

IT-PRO

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION
 3/10/2020

CONTRACT #
 30-100161

PROJECT
 MIDDLE MAY

SHEET
 64 OF 84

BRIDGE SITE #1
 50' TEMPORARY ACCESS BRIDGE
 MY-ML ROAD STATION 54+10 TO 54+88

SITE RESTORATION PLAN



COVER CONSTRUCTION ACCESS ROAD WITH 6" LAYER OF TOPSOIL. TOPSOIL MAY BE OBTAINED FROM ROAD PIONEERING OPERATIONS. REVEGETATE WITH GRASS SEED AND COVER WITH EROSION CONTROL MATTING.

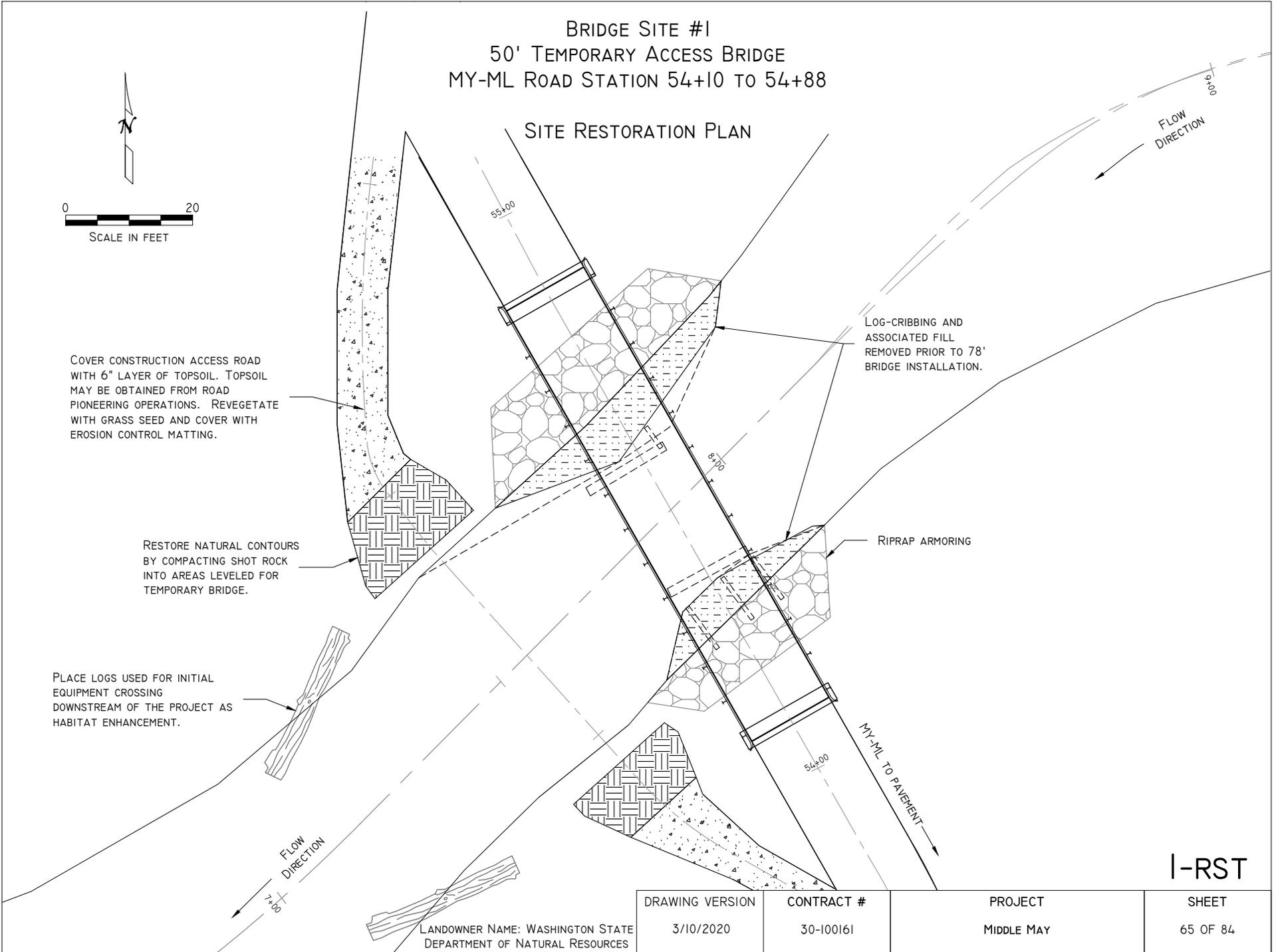
RESTORE NATURAL CONTOURS BY COMPACTING SHOT ROCK INTO AREAS LEVELED FOR TEMPORARY BRIDGE.

PLACE LOGS USED FOR INITIAL EQUIPMENT CROSSING DOWNSTREAM OF THE PROJECT AS HABITAT ENHANCEMENT.

LOG-CRIBBING AND ASSOCIATED FILL REMOVED PRIOR TO 78' BRIDGE INSTALLATION.

RIPRAP ARMORING

MY-ML TO PAVEMENT



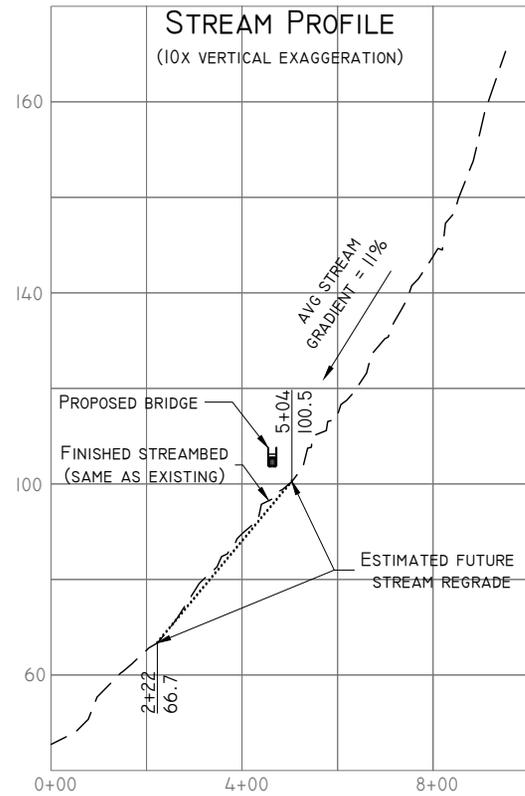
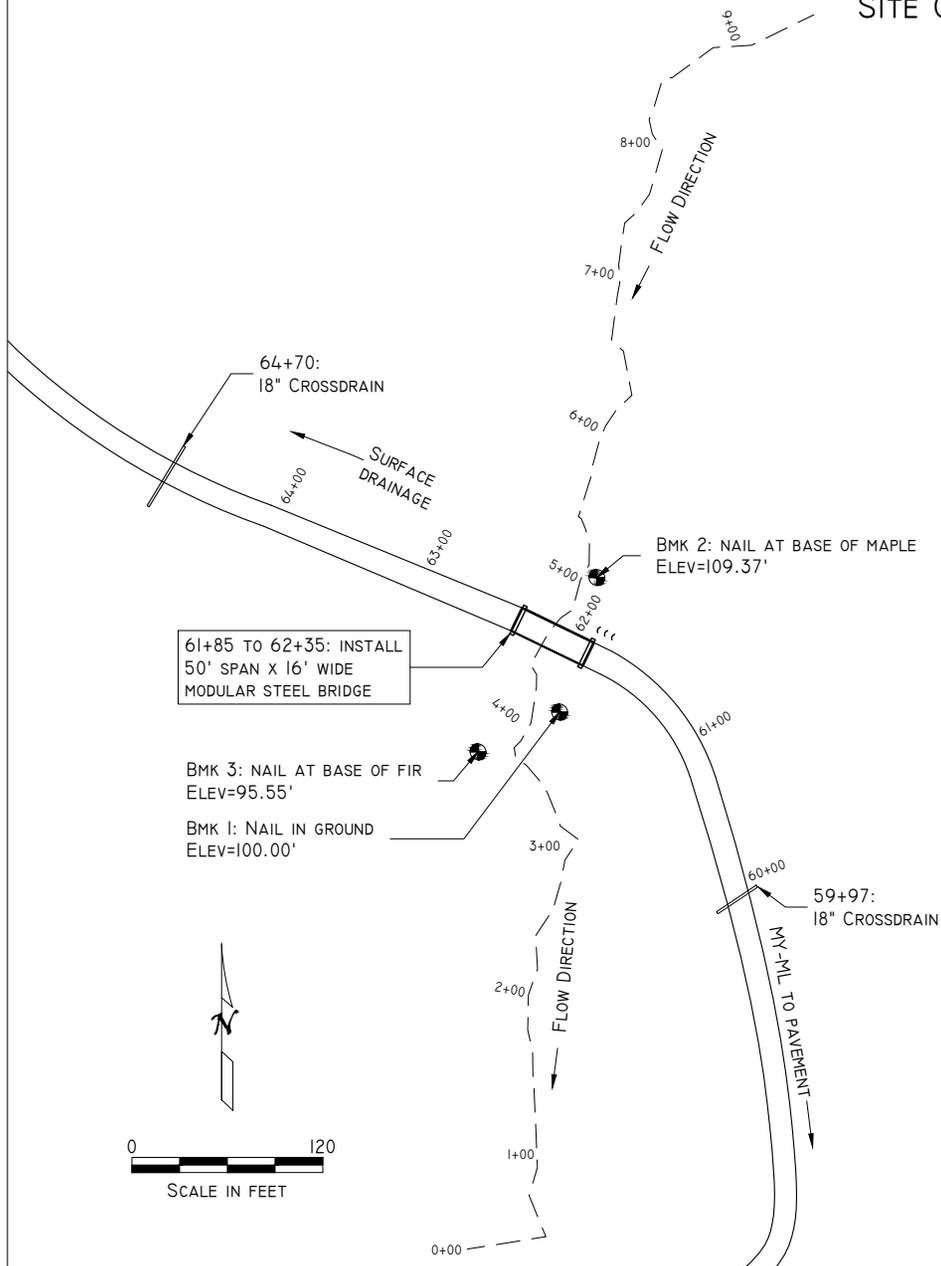
LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	65 OF 84

I-RST

BRIDGE SITE #2
50'x16' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 61+85 TO 62+35

SITE OVERVIEW



FPA NOTES:

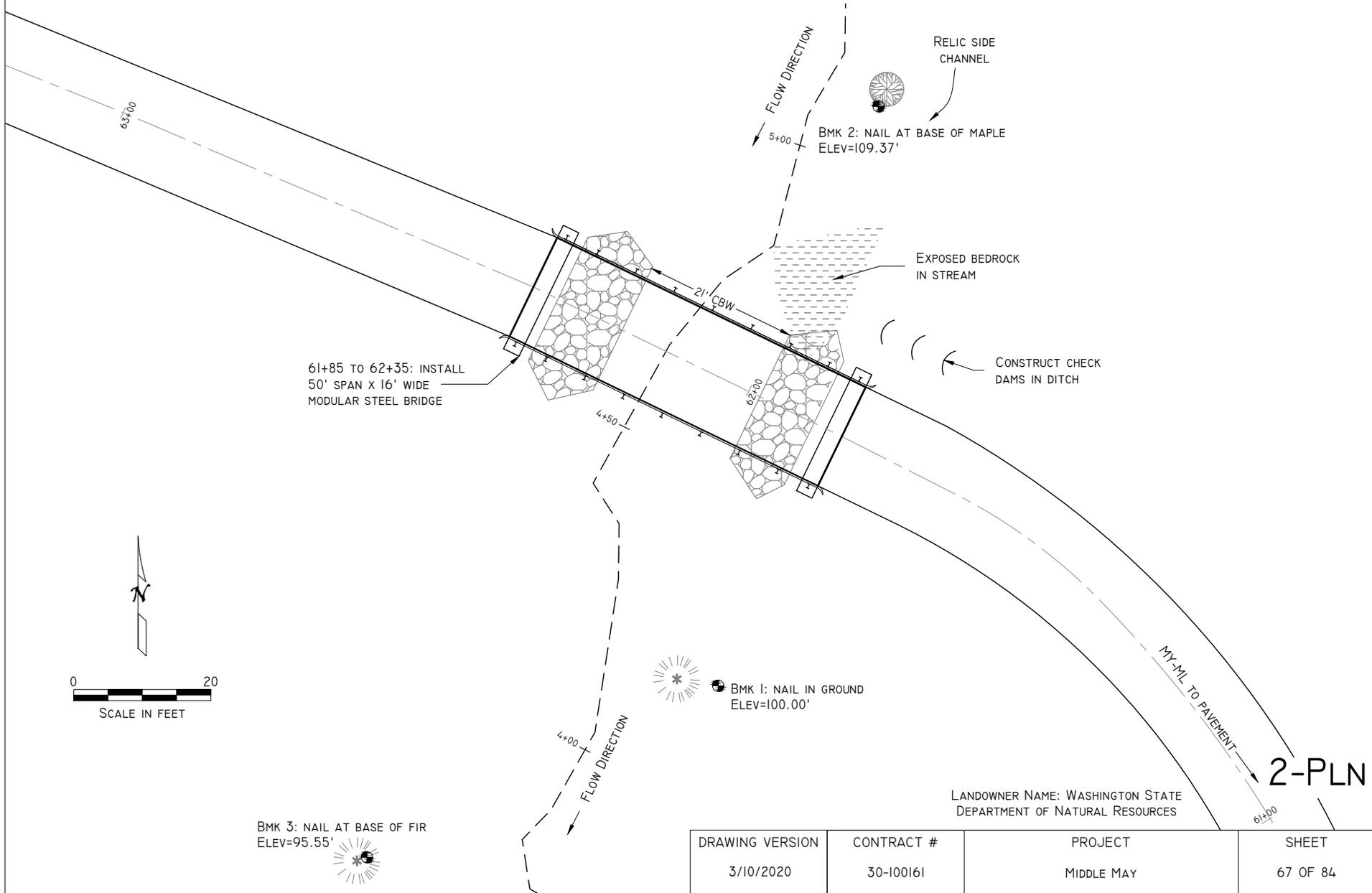
1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1
2. AVERAGE BANKFULL WIDTH = 21', BASED ON 4 MEASUREMENTS NEAR THE STREAM CROSSING.
3. THE DESIGN PROVIDES 5' CLEARANCE ABOVE A Q100 WATER ELEVATION OF 98.2'.
4. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
5. LOCATION:
 MY-ML ROAD STATION 61+85 TO 62+35
 T27N R9E Sec3
 N47.85903, W121.63630

2-STE

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	66 OF 84

BRIDGE SITE #2
 50'x16' MODULAR STEEL BRIDGE INSTALLATION
 MY-ML ROAD STATION 61+85 TO 62+35

PLAN VIEW



61+85 TO 62+35: INSTALL
 50' SPAN X 16' WIDE
 MODULAR STEEL BRIDGE

BMK 2: NAIL AT BASE OF MAPLE
 ELEV=109.37'

EXPOSED BEDROCK
 IN STREAM

CONSTRUCT CHECK
 DAMS IN DITCH

BMK 1: NAIL IN GROUND
 ELEV=100.00'

BMK 3: NAIL AT BASE OF FIR
 ELEV=95.55'



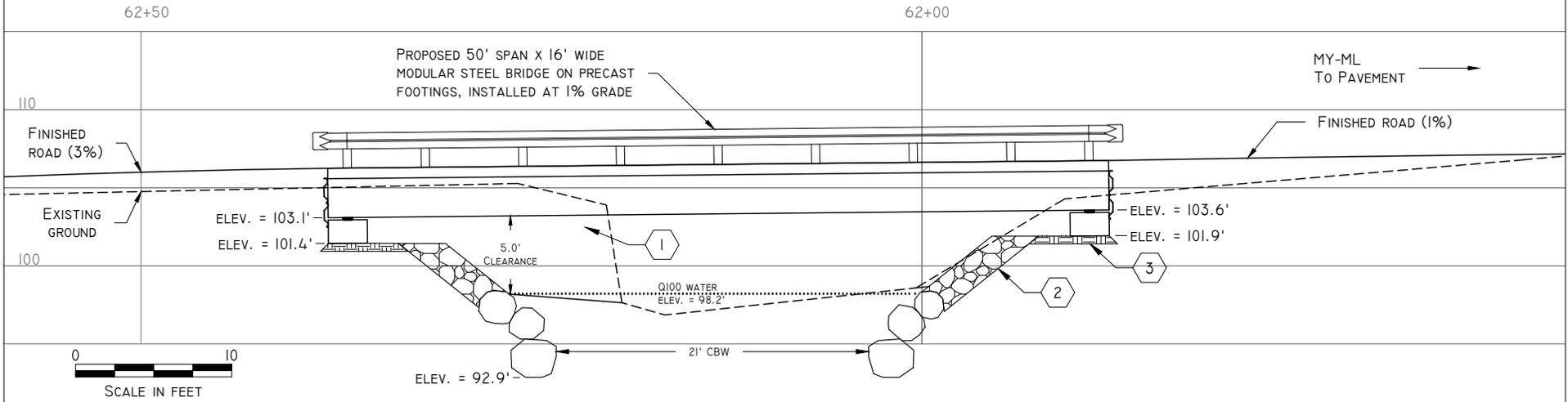
LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

2-PLN

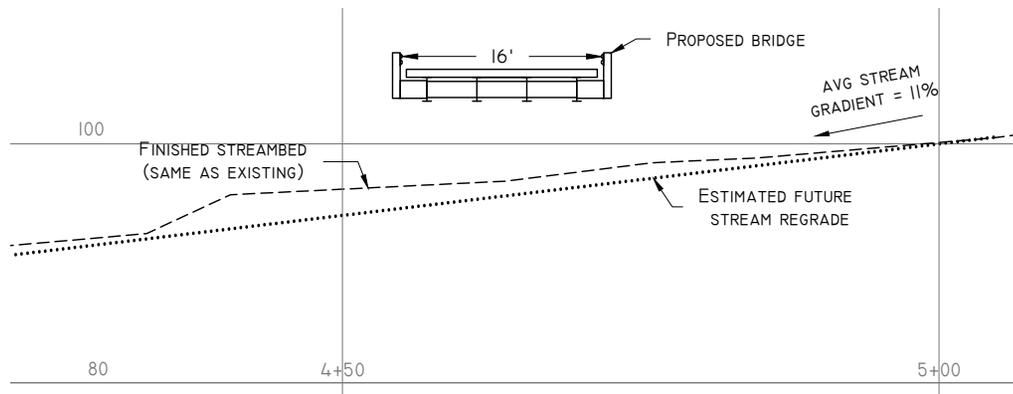
DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	67 OF 84

BRIDGE SITE #2
50'x16' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 61+85 TO 62+35

BRIDGE PROFILE - LOOKING UPSTREAM



BRIDGE SECTION



CONSTRUCTION NOTES:

- ① OVERHANGING STUMP AND UNDERCUT BANK TO BE REMOVED
- ② 3-FOOT THICK RIPRAP ARMORING AT 1:1 SLOPE RATIO. TOE ELEVATION SHALL BE A MINIMUM OF 4' BELOW EXISTING STREAMBED. CONSTRUCT WITH OVERSIZE RIPRAP BELOW THE Q100 WATER ELEVATION; A MIX OF HEAVY AND LIGHT RIPRAP MAY BE USED ABOVE THAT ELEVATION
- ③ OVEREXCAVATE 0.5' AND PLACE COMPACTED LAYER OF 1/2"-MINUS CRUSHED ROCK AS LEVELING COURSE

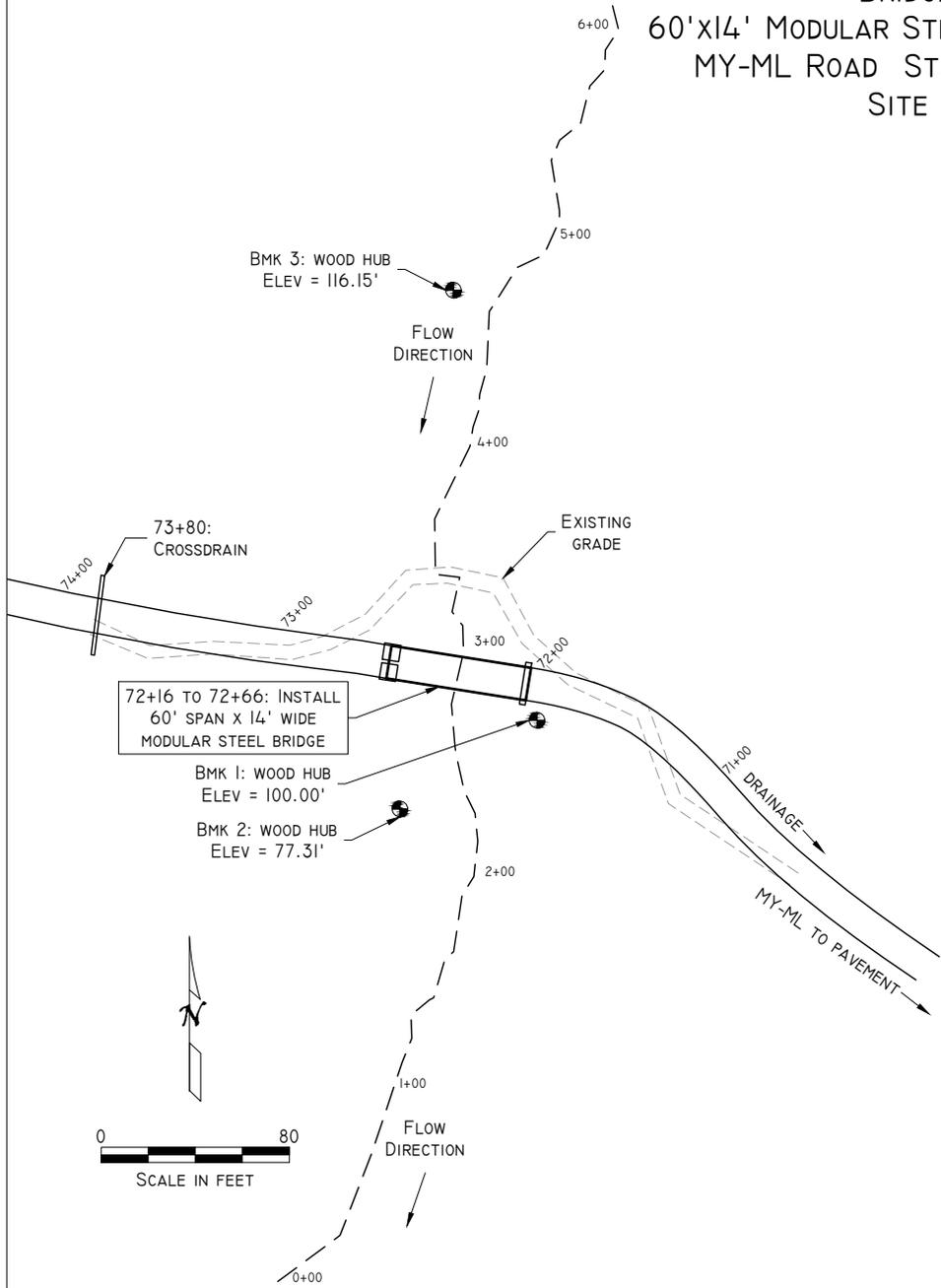
CREATE TEMPORARY EQUIPMENT CROSSING BY PLACING LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE WATER WHILE CROSSING. LIMIT USE TO A MAXIMUM OF THREE PASSES UNLESS APPROVED BY FOREST PRACTICES.

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

2-PRO

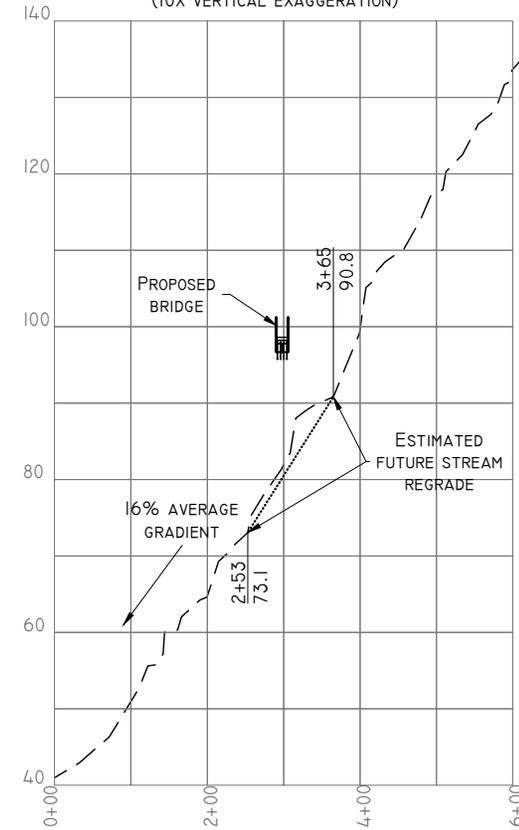
DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	68 OF 84

BRIDGE SITE #3
60'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 72+11 TO 72+71
SITE OVERVIEW



STREAM PROFILE

(10X VERTICAL EXAGGERATION)



FPA NOTES:

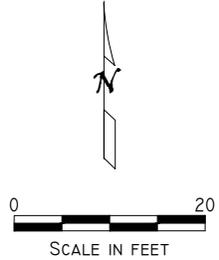
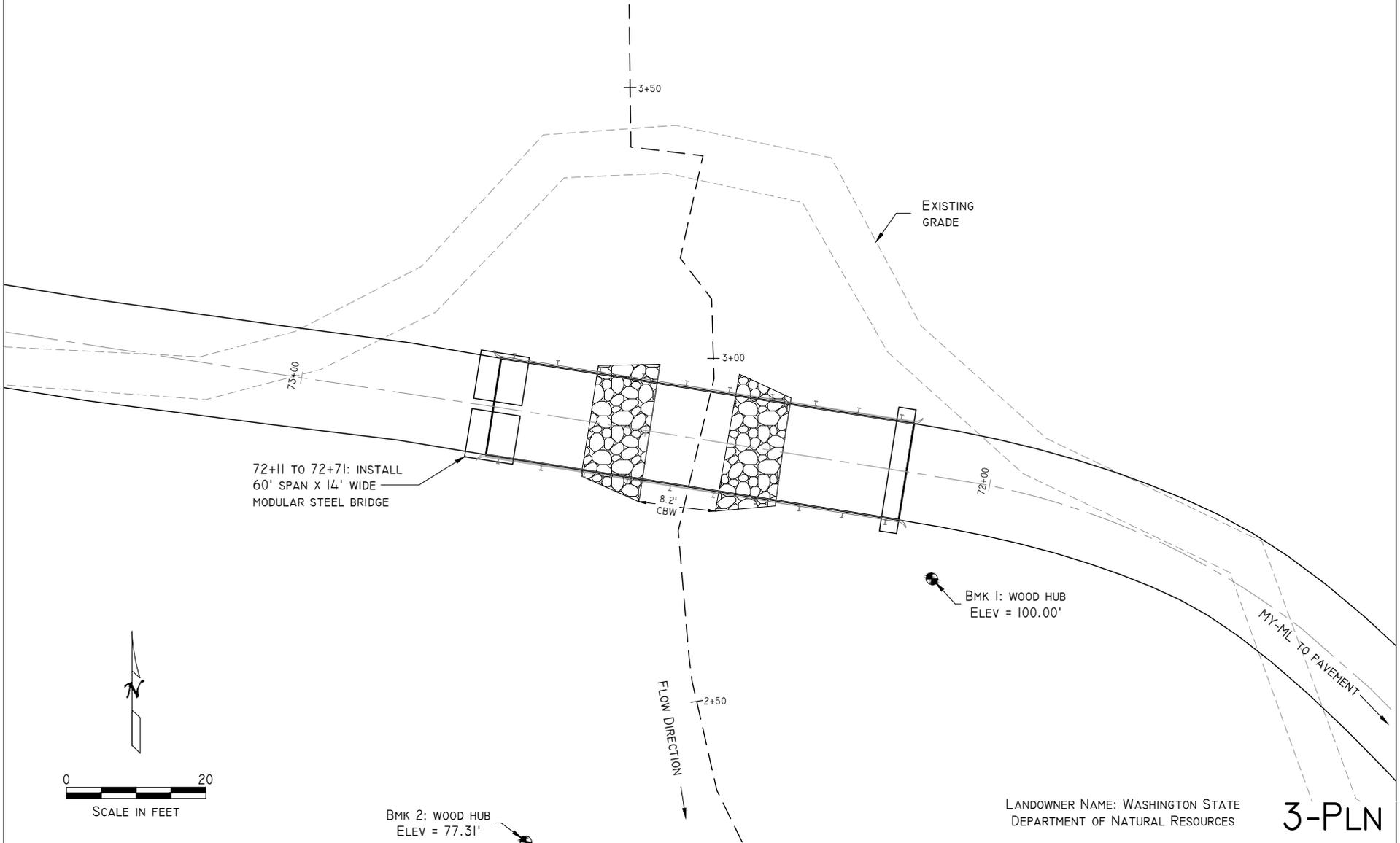
1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1
2. AVERAGE BANKFULL WIDTH = 8.2', BASED ON 6 MEASUREMENTS UPSTREAM OF THE BRIDGE SITE.
3. THE DESIGN PROVIDES 12' CLEARANCE ABOVE A Q100 WATER ELEVATION OF 81.9'.
4. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
5. LOCATION:
 MY-ML ROAD STATION 72+11 TO 72+71
 T27N R9E Sec3
 N47.86070, W121.63955

3-STE

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	69 OF 84

BRIDGE SITE #3
60'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 72+11 TO 72+71

PLAN VIEW

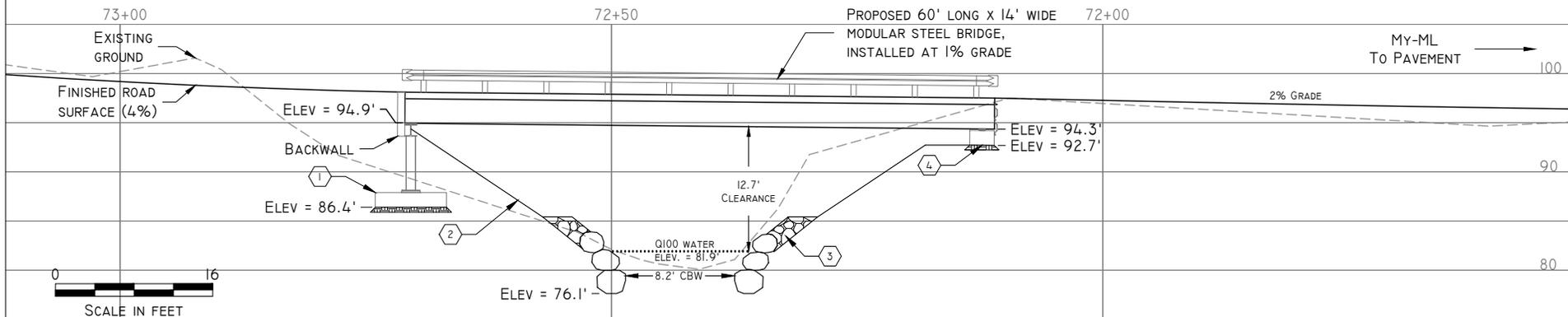


LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

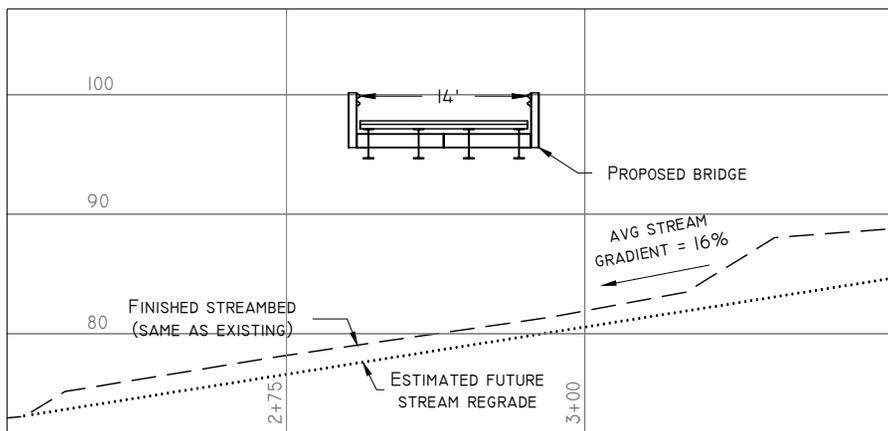
3-PLN

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	70 OF 84

BRIDGE SITE #3
60'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-ML ROAD STATION 72+11 TO 72+71
BRIDGE PROFILE - LOOKING DOWSTREAM



BRIDGE SECTION



CONSTRUCTION NOTES:

- ① PRECAST CONCRETE FOOTING WITH STEEL TOWER ASSEMBLY. OVEREXCAVATE 0.5' AND PLACE COMPACTED LAYER OF 1/2"-MINUS CRUSHED ROCK AS LEVELING COURSE
- ② COMPACTED NATIVE FILL AT FINISHED SLOPE OF 1/2:1
- ③ 3-FOOT THICK RIPRAP ARMORING AT 1/2:1 SLOPE RATIO. COUNTERSINK TOE 4FT BELOW STREAMBED. CONSTRUCT WITH A MIX OF LIGHT AND HEAVY LOOSE RIPRAP
- ④ PRECAST CONCRETE FOOTING. OVEREXCAVATE 0.5' AND PLACE COMPACTED LAYER OF 1/2"-MINUS CRUSHED ROCK AS LEVELING COURSE

CREATE TEMPORARY EQUIPMENT CROSSING BY PLACING LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE WATER WHILE CROSSING. LIMIT USE TO A MAXIMUM OF THREE PASSES UNLESS APPROVED BY FOREST PRACTICES.

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

3-PRO

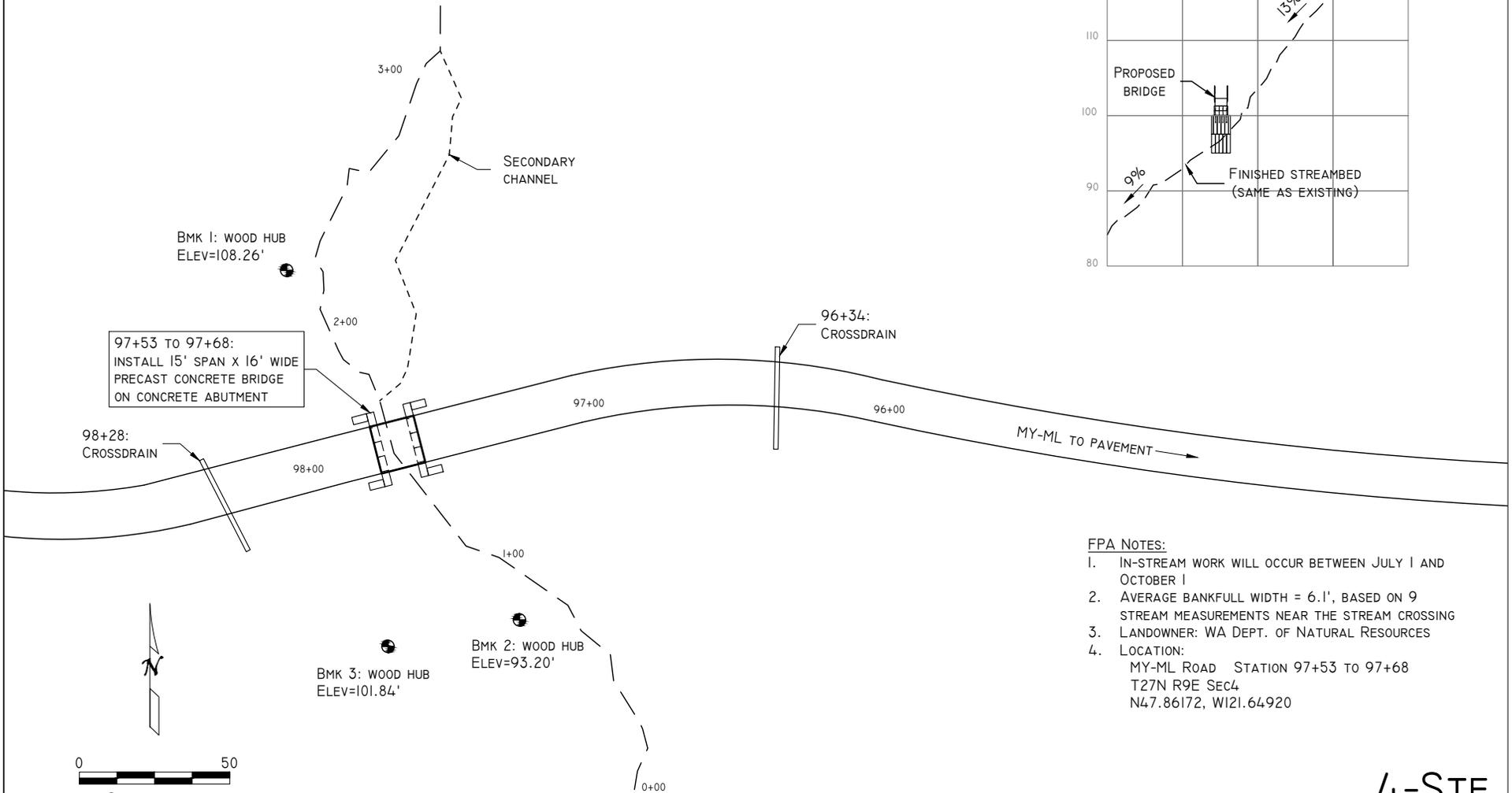
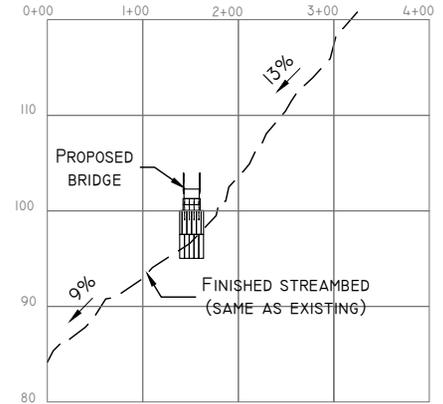
DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	71 OF 84

BRIDGE SITE #4
15'x16' PRECAST CONCRETE BRIDGE INSTALLATION
MY-ML ROAD STATION 97+53 TO 97+68

SITE OVERVIEW

STREAM PROFILE

(10X VERTICAL EXAGGERATION)



97+53 TO 97+68:
 INSTALL 15' SPAN X 16' WIDE
 PRECAST CONCRETE BRIDGE
 ON CONCRETE ABUTMENT

FPA NOTES:

1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1
2. AVERAGE BANKFULL WIDTH = 6.1', BASED ON 9 STREAM MEASUREMENTS NEAR THE STREAM CROSSING
3. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
4. LOCATION:
 MY-ML ROAD STATION 97+53 TO 97+68
 T27N R9E SEC4
 N47.86172, W121.64920

4-STE

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	72 OF 84

BRIDGE SITE #4
 15'x16' PRECAST CONCRETE BRIDGE INSTALLATION
 MY-ML ROAD STATION 97+53 TO 97+68

PLAN VIEW

2+00
 FLOW DIRECTION

SECONDARY CHANNEL

INSTALL 15' SPAN X 16' WIDE
 PRECAST CONCRETE BRIDGE ON
 CONCRETE ABUTMENT

97+00
 MY-ML TO PAVEMENT

98+00

PRECAST BLOCK ABUTMENT WALL
 (LAYOUT OF BOTTOM COURSE SHOWN)

10' MIN.
 6.1' CBW

FLOW DIRECTION

1+00



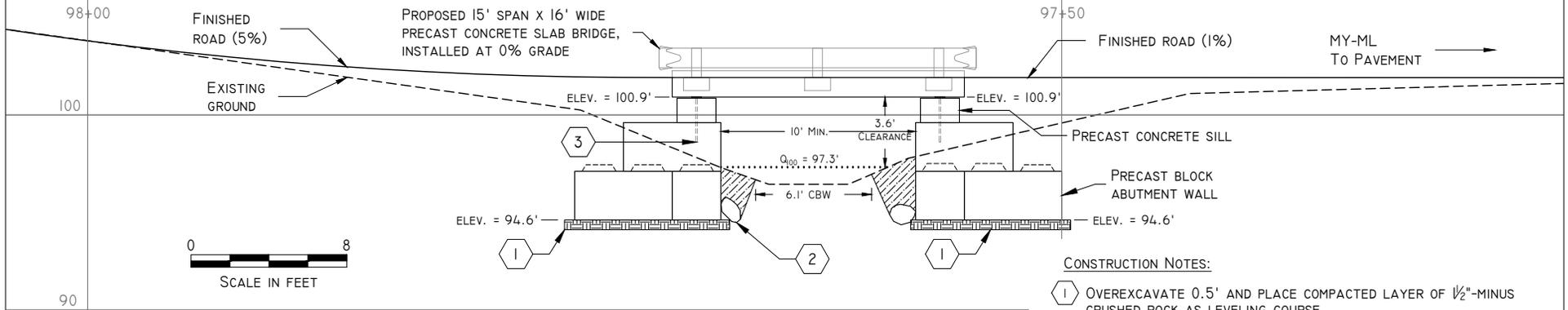
4-PLN

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	73 OF 84

BRIDGE SITE #4
15'x16' PRECAST CONCRETE BRIDGE INSTALLATION
MY-ML ROAD STATION 97+53 TO 97+68

BRIDGE PROFILE - LOOKING UPSTREAM

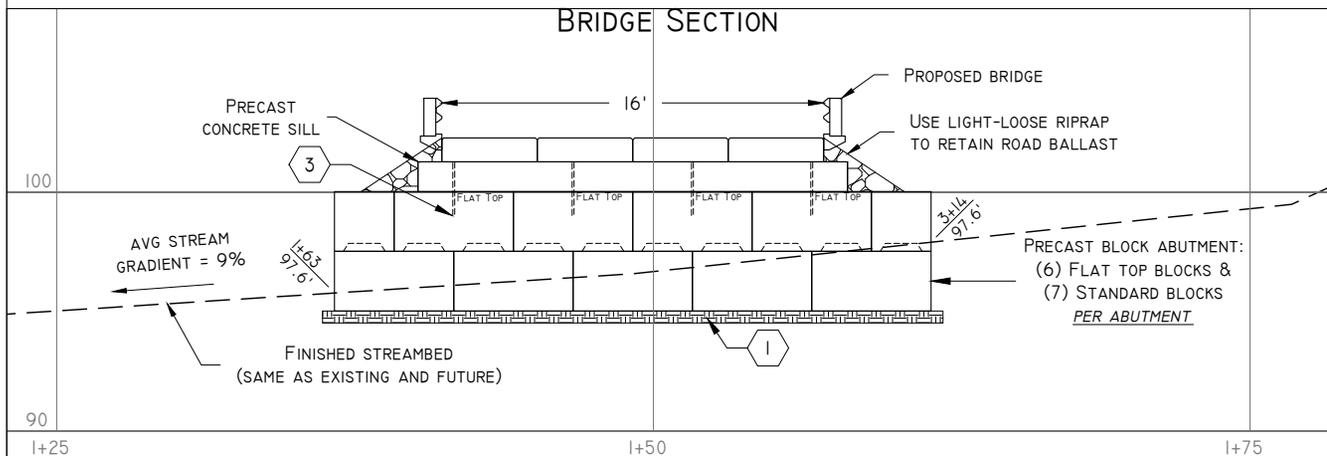


CONSTRUCTION NOTES:

- ① OVEREXCAVATE 0.5' AND PLACE COMPACTED LAYER OF 1/2"-MINUS CRUSHED ROCK AS LEVELING COURSE.
- ② ARMOR WALL WITH LIGHT-LOOSE RIPRAP. BACKFILL TO STREAM ELEVATION WITH A MIXTURE OF 50% COBBLE AND 50% NATIVE GRAVELS RETAINED FROM EXCAVATION.
- ③ GROUT 1"x18" DRIFT PIN INTO 1/2" DIA HOLE, MIN. 1 PER BLOCK

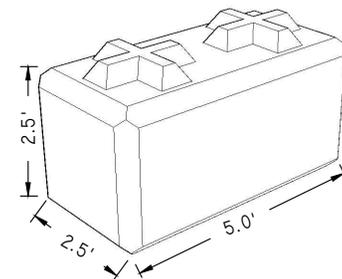
CREATE TEMPORARY EQUIPMENT CROSSING BY PLACING LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE WATER WHILE CROSSING. LIMIT USE TO A MAXIMUM OF THREE PASSES UNLESS APPROVED BY FOREST PRACTICES.

BRIDGE SECTION



PRECAST BLOCK DETAIL

(STANDARD BLOCK WITH SHEAR-KEY SHOWN)



4-PRO

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

DRAWING VERSION
 3/10/2020

CONTRACT #
 30-100161

PROJECT
 MIDDLE MAY

SHEET
 74 OF 84

BRIDGE SITE #5

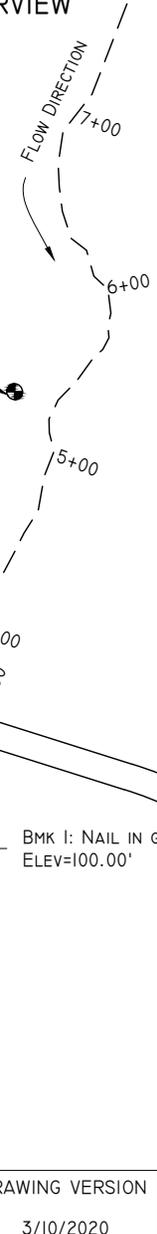
50'x14' MODULAR STEEL BRIDGE INSTALLATION

MY-21 ROAD STATION 6+92 TO 7+42

SITE OVERVIEW

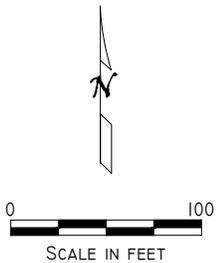
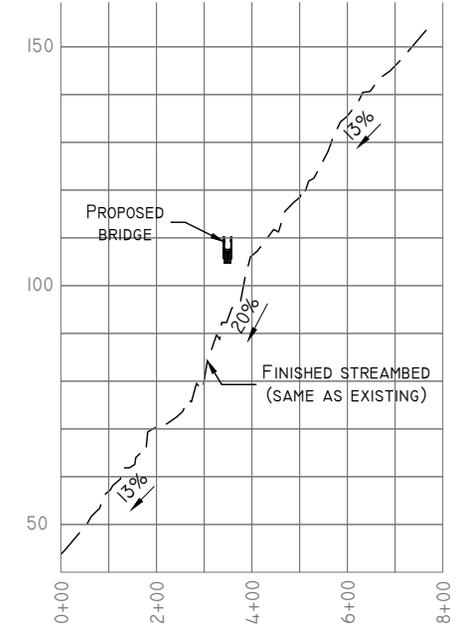
FPA NOTES:

1. IN-STREAM WORK WILL OCCUR BETWEEN JULY 1 AND OCTOBER 1
2. AVERAGE BANKFULL WIDTH = 7.9', BASED ON 11 MEASUREMENTS NEAR THE STREAM CROSSING.
3. THE DESIGN PROVIDES 10' CLEARANCE ABOVE A Q100 WATER ELEVATION OF 94.6'.
4. LANDOWNER: WA DEPT. OF NATURAL RESOURCES
5. LOCATION:
 MY-21 ROAD STATION 6+92 TO 7+42
 T28N R9E SEC 33
 N47.8660,W121.6531



STREAM PROFILE

(10X VERTICAL EXAGGERATION)

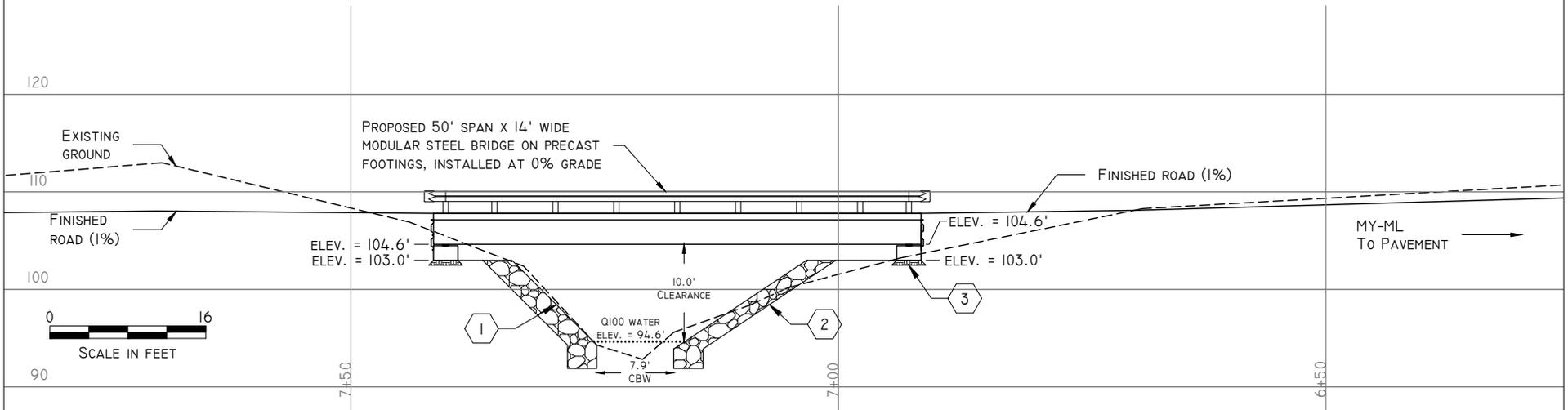


6+92 TO 7+42: INSTALL
50' SPAN X 14' WIDE
MODULAR STEEL BRIDGE

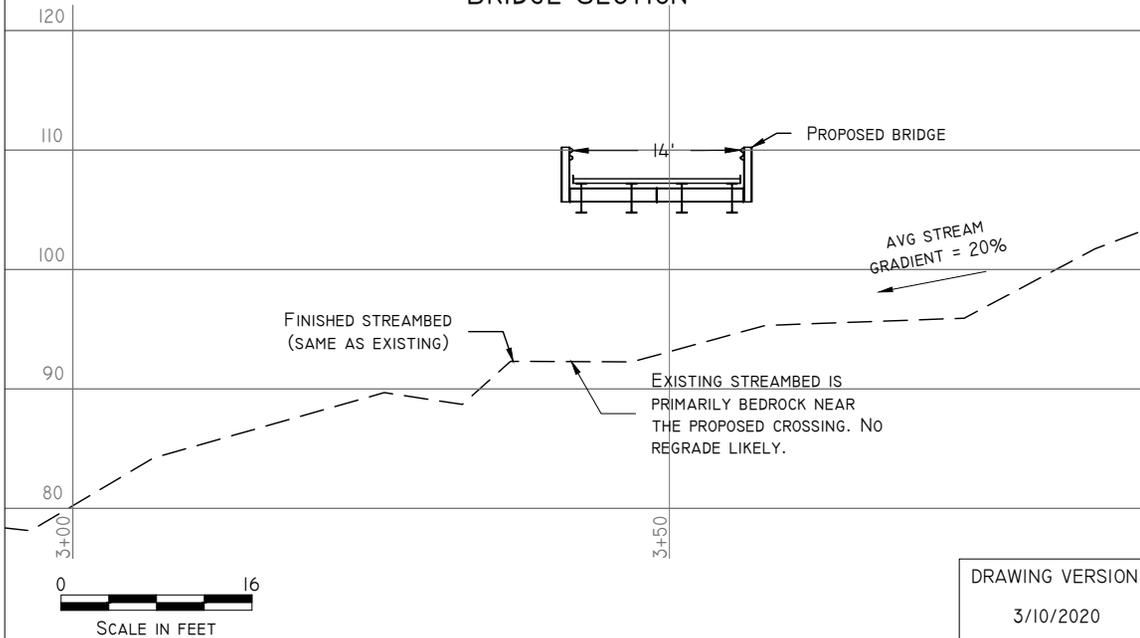
5-STE

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	75 OF 84

BRIDGE SITE #5
50'x14' MODULAR STEEL BRIDGE INSTALLATION
MY-21 ROAD STATION 6+92 TO 7+42
BRIDGE PROFILE - LOOKING UPSTREAM



BRIDGE SECTION



CONSTRUCTION NOTES:

- ① FAR-SIDE BANK IS EXPECTED TO BE COMPOSED OF BEDROCK. IF COMPETENT ROCK IS NOT PRESENT, ARMOR BANK WITH RIPRAP
- ② 3-FOOT THICK RIPRAP ARMORING AT 1/2:1 SLOPE RATIO. TOE ELEVATION SHALL BE A MINIMUM OF 2' BELOW EXISTING STREAMBED. CONSTRUCT WITH A MIX OF LIGHT AND HEAVY LOOSE RIPRAP
- ③ OVEREXCAVATE 0.5' AND PLACE COMPACTED LAYER OF 1/2"-MINUS CRUSHED ROCK AS LEVELING COURSE.

CREATE TEMPORARY EQUIPMENT CROSSING BY PLACING LOGS PARALLEL TO STREAM FLOW SO THAT EQUIPMENT TRACKS REMAIN ABOVE WATER WHILE CROSSING. LIMIT USE TO A MAXIMUM OF THREE PASSES UNLESS APPROVED BY FOREST PRACTICES.

LANDOWNER NAME: WASHINGTON STATE
 DEPARTMENT OF NATURAL RESOURCES

5-PRO

DRAWING VERSION	CONTRACT #	PROJECT	SHEET
3/10/2020	30-100161	MIDDLE MAY	77 OF 84

TECHNICAL BRIDGE SPECIFICATIONS

PART B.1 – MATERIALS

B.1.1 STRUCTURAL STEEL

Structural Steel shall be ASTM Specification A-588 weathering steel. Structural Steel used as main load-carrying tension members or as tension components of flexural members shall be impact tested and shall have a minimum average Charpy V-notch (CVN) toughness of 25 ft-lb at 40°F.

Welded splices are prohibited in main load carrying members.

Mill Test Certificates shall be furnished for all structural steel members used in the fabrication of the bridge. Certified mill test reports for steel members with specified values shall include, in addition to other test results, the results of Charpy V-notch impact tests.

B.1.2 ELASTOMERIC BEARING PADS

Elastomeric bearing pads shall conform to the requirements of AASHTO M251.

PART B.2 – CONSTRUCTION REQUIREMENTS

B.2.1 STEEL BRIDGE FABRICATOR QUALIFICATIONS

Steel bridge fabricator shall be certified under the AISC Quality Certification Program, Certified Bridge Fabricator - Simple (SBR). When fracture critical members are included in the bridge, bridge fabricators shall also have a Fracture Critical Endorsement (FC), under the AISC Quality Certification Program.

B.2.2 STEEL WELDING AND INSPECTION

Welding and weld qualification tests shall conform to the provisions of the current edition of the AASHTO/AWS D1.5 Bridge Welding Code. No welding, including tack and temporary welds, shall be done in the shop or field unless location of the welds are shown on the approved shop drawings or otherwise approved by the State in writing. Purchaser shall provide State proof of welder certification prior to any field welding.

The Purchaser is responsible for non-destructive testing and welding inspection in accordance with, and as required by, AASHTO/AWS D1.5 Bridge Welding Code and as otherwise detailed in the Technical Specifications and Plans. Testing and inspection shall apply to welding performed both in the field and in the shop. After the purchaser's welding testing and inspection is complete, they shall provide copies of procedures, acceptance criteria, results, and inspector qualifications to the State within 48 hours of request.

B.2.3 STEEL SURFACE CLEANING AND PREPARATION

All surfaces of structural steel shall be blast cleaned in accordance with the Steel Structures Painting Council (SSPC), Surface Preparation Specification No. 6, latest edition, (SSPC-SP6), Commercial Blast.

B.2.4 STEEL GALVANIZING

All galvanizing must be done after fabrication and must be in accordance with AASHTO Designation M111-09 (ASTM Designation: A123) and/or AASHTO Designation M232-10 centrifuged to remove excess (ASTM Designation A153) and/or AASHTO M298-10 mechanical galvanization (ASTM B695-04). All bolts used to facilitate field assembly will be A325 Type 1 or 2 galvanized.

B.2.5 PRECAST CONCRETE FABRICATOR QUALIFICATIONS

Precast concrete fabricator shall be certified under the Precast/Prestressed Concrete Institute's (PCI) Plant Certification Program at a level equivalent or higher than B1 – Precast Bridge Products (No Prestressed Reinforcement).

PART B.3 – STRUCTURE DESIGN

B.3.1 PURCHASER'S DESIGN ENGINEER

All design work shall be completed by (or under the direct supervision of) a Professional Engineer, licensed in the State of Washington, in the branch of Civil or Structural Engineering.

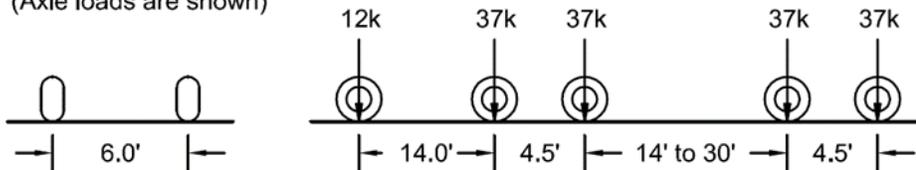
B.3.2 DESIGN METHOD

All design work shall be in conformance with the current edition of the AASHTO LRFD Bridge Design Specifications and all subsequent interim specifications. Design details not covered by the AASHTO Specifications shall be in accordance with normally accepted structural design standards.

B.3.3 DESIGN LOADING

Bridge and foundation shall be designed to HL-93 loading and U-80 special design vehicle with full impact (IM=33%).

U80 TRUCK LOADING - GVW = 80 TONS
(Axle loads are shown)



B.3.4 BRIDGE DESIGN – GENERAL

- A. Bridge shall have integral bridge rails, which shall be thrie-beam or W-Beam with steel posts and shall be designed for TL-1 force requirements in accordance with AASHTO LRFD Appendix A13.2. Bridge Rails are not required to be crash tested. All steel components shall be galvanized. End sections shall conform to WSDOT Standard Plan C-7a, Design C. Rail elements, backup plates, reducer sections, and end sections shall conform to A Guide to Standardized Highway Barrier Hardware published by AASHTO, AGC, and ARTBA. All rail elements shall be formed with minimum 12-gauge. The rail splices shall have a minimum total ultimate strength of 80,000 pounds at each joint. The edges of the rails shall be rolled or rounded so they present no sharp edges.
- B. Top of rail shall be a minimum of 27" above the top of the wearing surface.
- C. Bridge deck shall be continuous full width, with no gaps that allow water and sediment to drain through the bridge deck.
- D. Bridge components shall include functional lifting points to facilitate unloading and placement.

B.3.5 BRIDGE SUPERSTRUCTURE DESIGN – MODULAR STEEL

Bridge superstructure members must meet or exceed the following parameters:

- A. The superstructure shall be a modular design consisting of steel girders and a deck system composed of either precast concrete panels or galvanized corrugated steel with gravel wearing surface.
- B. Bridge shall have endwalls composed of either galvanized steel or precast concrete panels.
- C. Vehicle load deflection limit of $L/500$ calculated in accordance with AASHTO LRFD Section 3.6.1.3.2.
- D. Concrete components of this bridge including, but not limited to, deck, endwalls, and curbs shall be constructed of reinforced concrete with a minimum 28-day compressive strength of 4,000 psi.
- E. Concrete design shall include specifications for:
 - i. Required concrete strength at release and at 28 days.
 - ii. Maximum slump of concrete.
 - iii. Air content of concrete.
 - iv. Reinforcing steel size, grade, and coating if applicable.

B.3.6 BRIDGE SUPERSTRUCTURE DESIGN – CONCRETE SLAB

Bridge superstructure members must meet or exceed the following parameters:

- A. All manufactured components of this bridge including, but not limited to, girders, deck, wingwalls, endwalls, and curbs shall be constructed of reinforced concrete with a minimum 28-day compressive strength of 4,000 psi.
- B. LRFD Article 2.5.2.6.2 – Criteria for Deflection shall be considered required. Vehicle load deflection limit of $L/800$ shall apply.
- C. Design shall include specifications for:
 - i. Required concrete strength at release and at 28 days.
 - ii. Maximum slump of concrete.
 - iii. Air content of concrete.
 - iv. Reinforcing steel size, grade, and coating if applicable.

B.3.7 BRIDGE FOUNDATION DESIGN – SPREAD FOOTING

The foundation shall meet or exceed the parameters outlined below.

- A. Foundation shall consist of pre-cast concrete spread footings, sized to meet design elevations shown on the plans.
- B. All non-galvanized steel members that may come into contact with soil shall be painted with an anti-corrosion coating.
- C. Nominal bearing resistance of the soil is assumed to be 4,000 pounds per square foot.
- D. Design of pre-cast components provided by Purchaser's Engineer shall include specifications for:
 - i. Required concrete strength at release.
 - ii. Required concrete strength for transport.
 - iii. Required concrete strength for exposure to construction loads.
 - iv. Required concrete strength at 28 days.
 - v. Reinforcing steel configuration, size, grade, and coating if applicable.

B.3.8 BRIDGE FOUNDATION DESIGN – TOWER AND PAD FOOTING

The foundation shall meet or exceed the parameters outlined below.

- A. Foundation shall be consist of pre-cast concrete spread footings with steel tower assembly extending to bridge elevation.
- B. All non-galvanized steel members that may come into contact with soil shall be painted with an anti-corrosion coating.
- C. The abutment connections shall be per the bridge manufacturer's written instructions or as designed by the Purchaser's engineer.
- D. Nominal bearing resistance of the soil is assumed to be 4,000 pounds per square foot.
- E. Design of pre-cast components provided by Purchaser's Engineer shall include specifications for:
 - i. Required concrete strength at release.
 - ii. Required concrete strength for transport.
 - iii. Required concrete strength for exposure to construction loads.
 - iv. Required concrete strength at 28 days.
 - v. Reinforcing steel configuration, size, grade, and coating if applicable.

B.3.9 BRIDGE FOUNDATION DESIGN – PRECAST BLOCK ABUTMENT

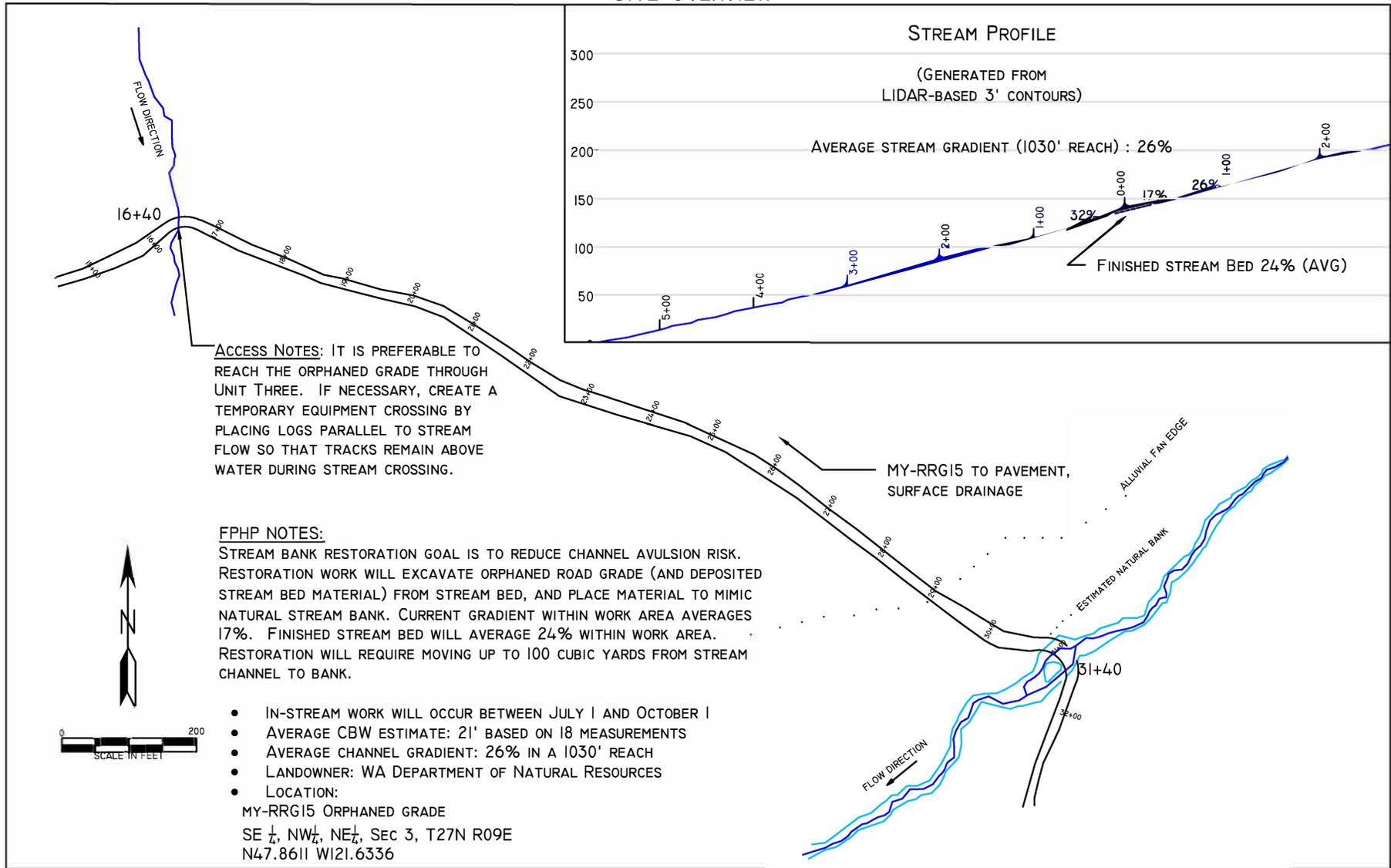
Abutment wall shall consist of Ultrablock[®]-style precast concrete blocks. Bridge shall include precast spread footings firmly attached to abutment walls. Blocks shall meet or exceed the parameters outlined below.

- A. Concrete shall have 28-day compressive strength of at least 2,200 psi and shall be air entrained 4-7% to protect the surface from freeze thaw degradation.
- B. Blocks shall be cast monolithically, no cold joints allowed.
- C. All exposed surfaces shall have a smooth finish.
- D. Block size shall be 2.5 feet wide x 2.5 feet deep x 5 feet long. Dimensional tolerance shall be ½-inch for length, width, and height.
- E. Edges shall be chamfered.
- F. Blocks shall interlock with a shear key system.
- G. Each block shall include a satisfactory embedded lifting device.

STREAM BANK RESTORATION DETAIL

MY-RRG15 ORPHANED ROAD GRADE -- STATION 30+60 TO 31+40

SITE OVERVIEW

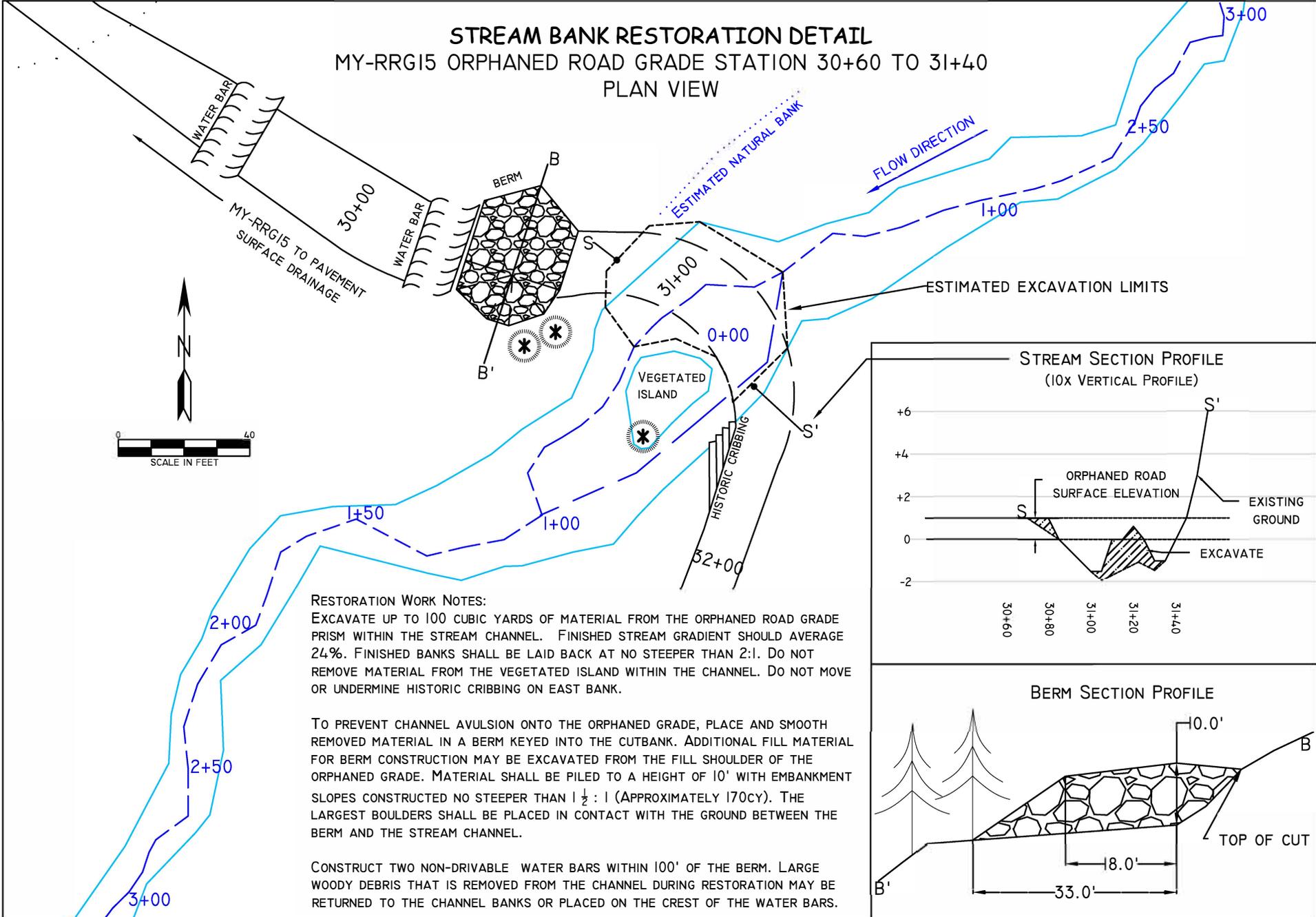


CONTRACT #	PROJECT	SHEET
30-100161	MIDDLE MAY	82 OF 84

STREAM BANK RESTORATION DETAIL

MY-RRG15 ORPHANED ROAD GRADE STATION 30+60 TO 31+40

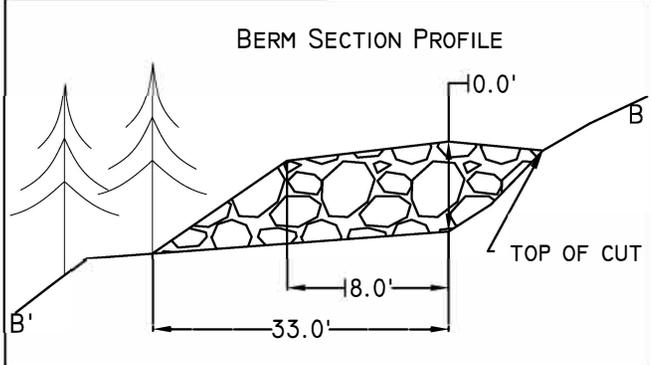
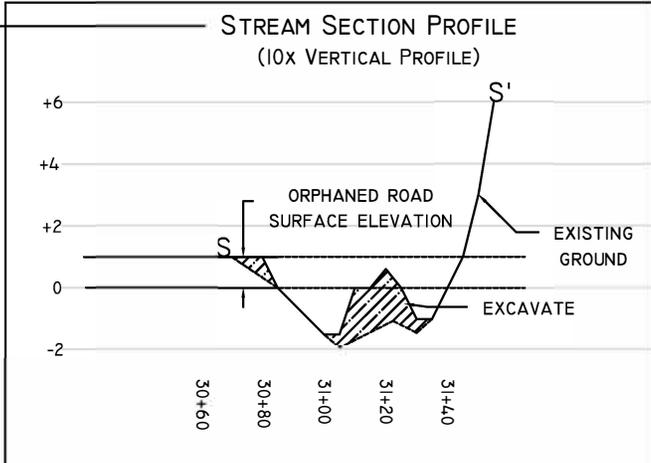
PLAN VIEW



RESTORATION WORK NOTES:
 EXCAVATE UP TO 100 CUBIC YARDS OF MATERIAL FROM THE ORPHANED ROAD GRADE PRISM WITHIN THE STREAM CHANNEL. FINISHED STREAM GRADIENT SHOULD AVERAGE 24%. FINISHED BANKS SHALL BE LAID BACK AT NO STEEPER THAN 2:1. DO NOT REMOVE MATERIAL FROM THE VEGETATED ISLAND WITHIN THE CHANNEL. DO NOT MOVE OR UNDERMINE HISTORIC CRIBBING ON EAST BANK.

TO PREVENT CHANNEL AVULSION ONTO THE ORPHANED GRADE, PLACE AND SMOOTH REMOVED MATERIAL IN A BERM KEYED INTO THE CUTBANK. ADDITIONAL FILL MATERIAL FOR BERM CONSTRUCTION MAY BE EXCAVATED FROM THE FILL SHOULDER OF THE ORPHANED GRADE. MATERIAL SHALL BE PILED TO A HEIGHT OF 10' WITH EMBANKMENT SLOPES CONSTRUCTED NO STEEPER THAN 1 1/2 : 1 (APPROXIMATELY 170CY). THE LARGEST BOULDERS SHALL BE PLACED IN CONTACT WITH THE GROUND BETWEEN THE BERM AND THE STREAM CHANNEL.

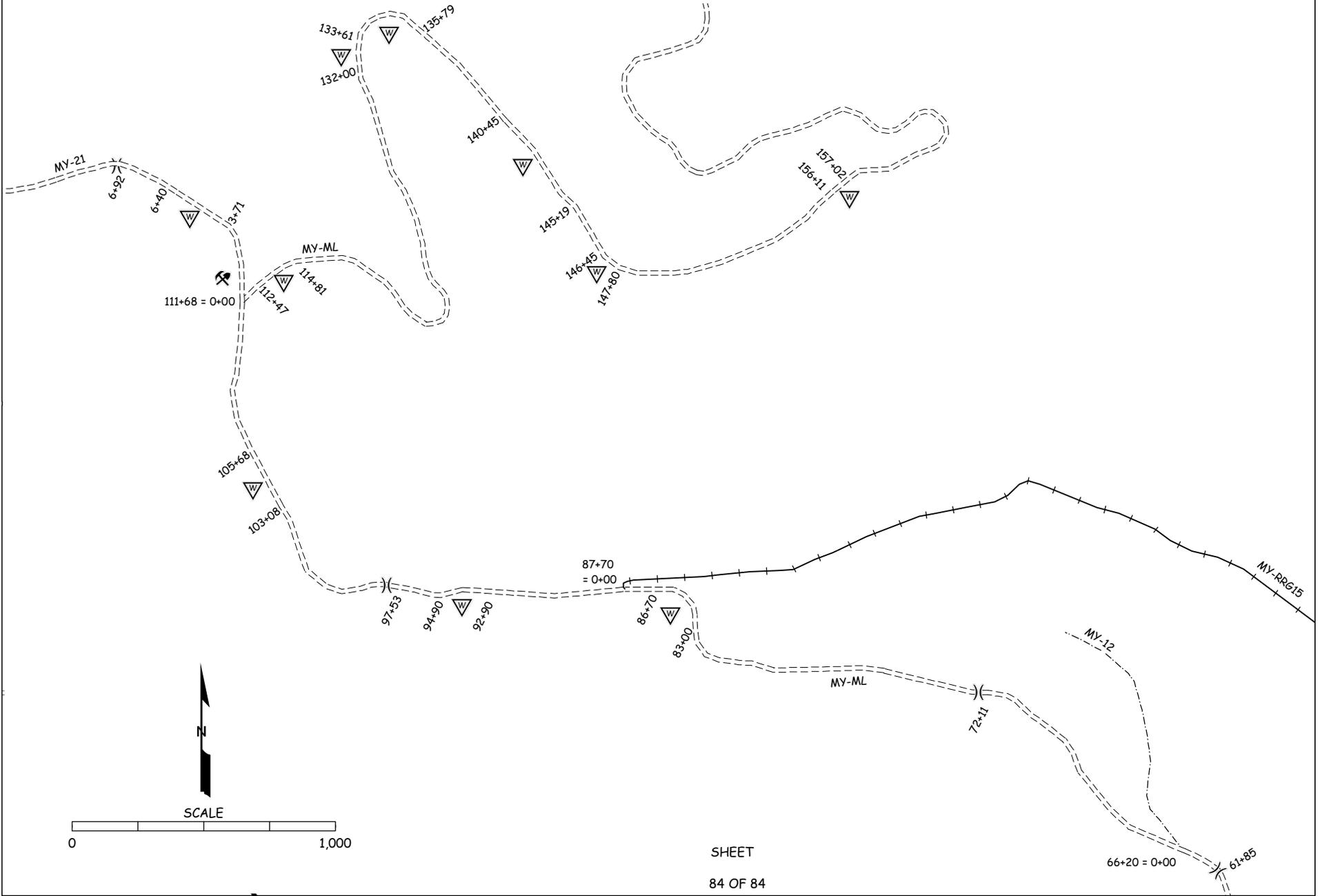
CONSTRUCT TWO NON-DRIVABLE WATER BARS WITHIN 100' OF THE BERM. LARGE WOODY DEBRIS THAT IS REMOVED FROM THE CHANNEL DURING RESTORATION MAY BE RETURNED TO THE CHANNEL BANKS OR PLACED ON THE CREST OF THE WATER BARS.





WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

MIDDLE MAY TIMBER SALE DESIGNATED WASTE AREAS



SUMMARY - Road Development Costs

REGION: Northwest
DISTRICT: Cascade

SALE/PROJECT NAME: Middle May

CONTRACT #: 30 -100161

ROAD NUMBERS:	MY-ML, MY-12, MY-21, MY-2104, MY-2104-01, MY-2106, MY-43	MY-ML	MY-ML, MY-04, MY-RRG15
ROAD STANDARD:	Construction	Reconstruction	Maintenance
NUMBER OF STATIONS:	273.48	33.80	178.00
CLEARING & GRUBBING:	\$50,450	\$3,021	
EXCAVATION AND FILL:	\$396,969	\$4,867	\$3,096
MISC. MAINTENANCE:			\$12,361
ROAD ROCK:	\$404,509	\$33,895	-
ROCK STOCKPILE PROD:	-	-	-
CULVERTS AND FLUMES:	\$59,471	\$5,986	-
STRUCTURES:	\$450,000	\$0	\$0
MOBILIZATION:	\$15,705	\$1,035	\$1,610
TOTAL COSTS:	\$1,377,103	\$48,804	\$17,067
COST PER STATION:	\$5,035	\$1,444	\$96
ROAD DEACTIVATION & ABANDONMENT COSTS:		\$13,665	
		TOTAL (All Roads) =	\$1,456,639
		SALE VOLUME MBF =	9,500
		TOTAL \$/MBF =	\$153

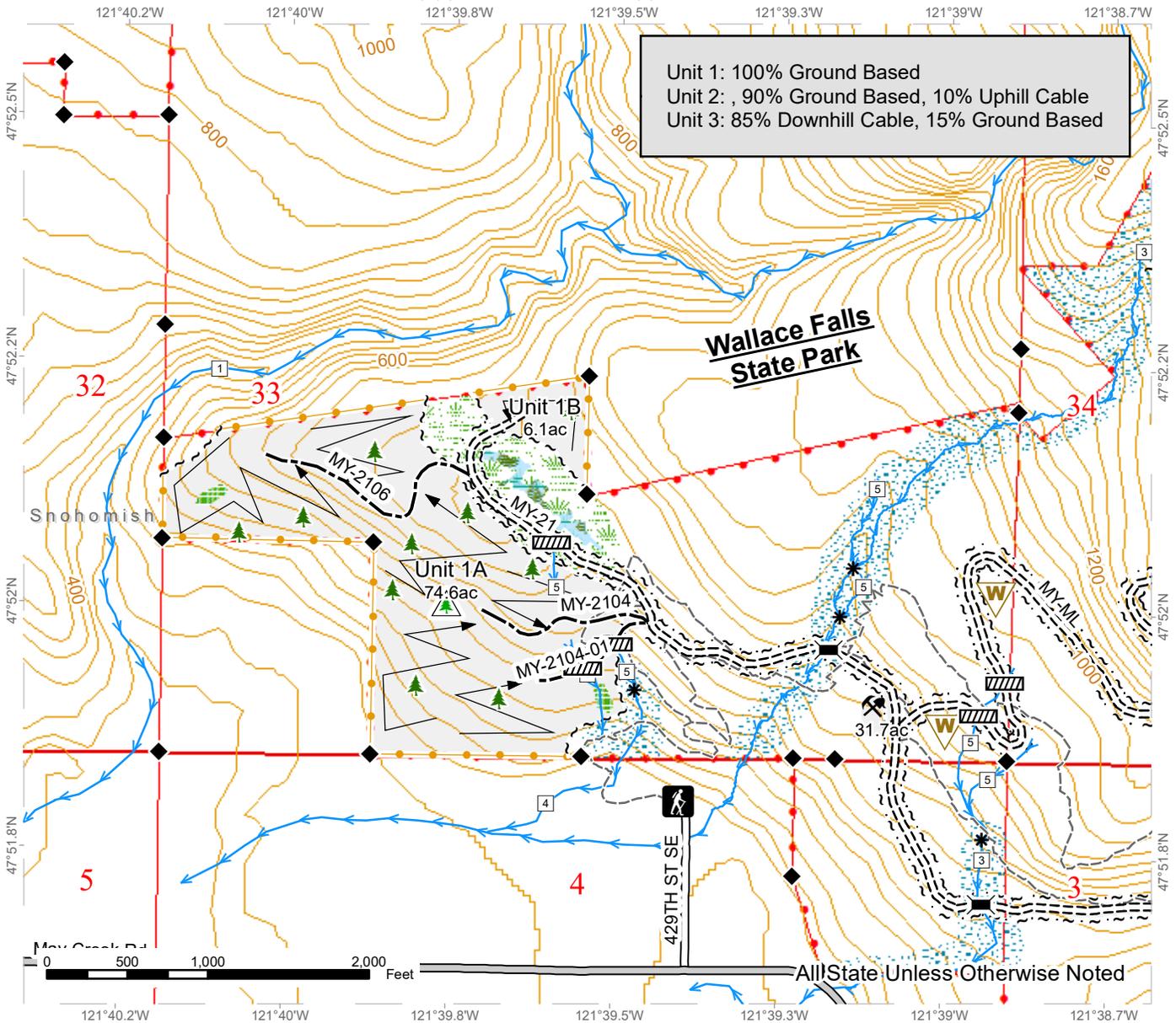
Compiled by: A. Halgren

Date: 12/3/2019

LOGGING PLAN MAP

SALE NAME: MIDDLE MAY
AGREEMENT#: 30-100161
TOWNSHIP(S): T27R9E, T28R9E
TRUST(S): Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Snohomish
ELEVATION RGE: 360-1880



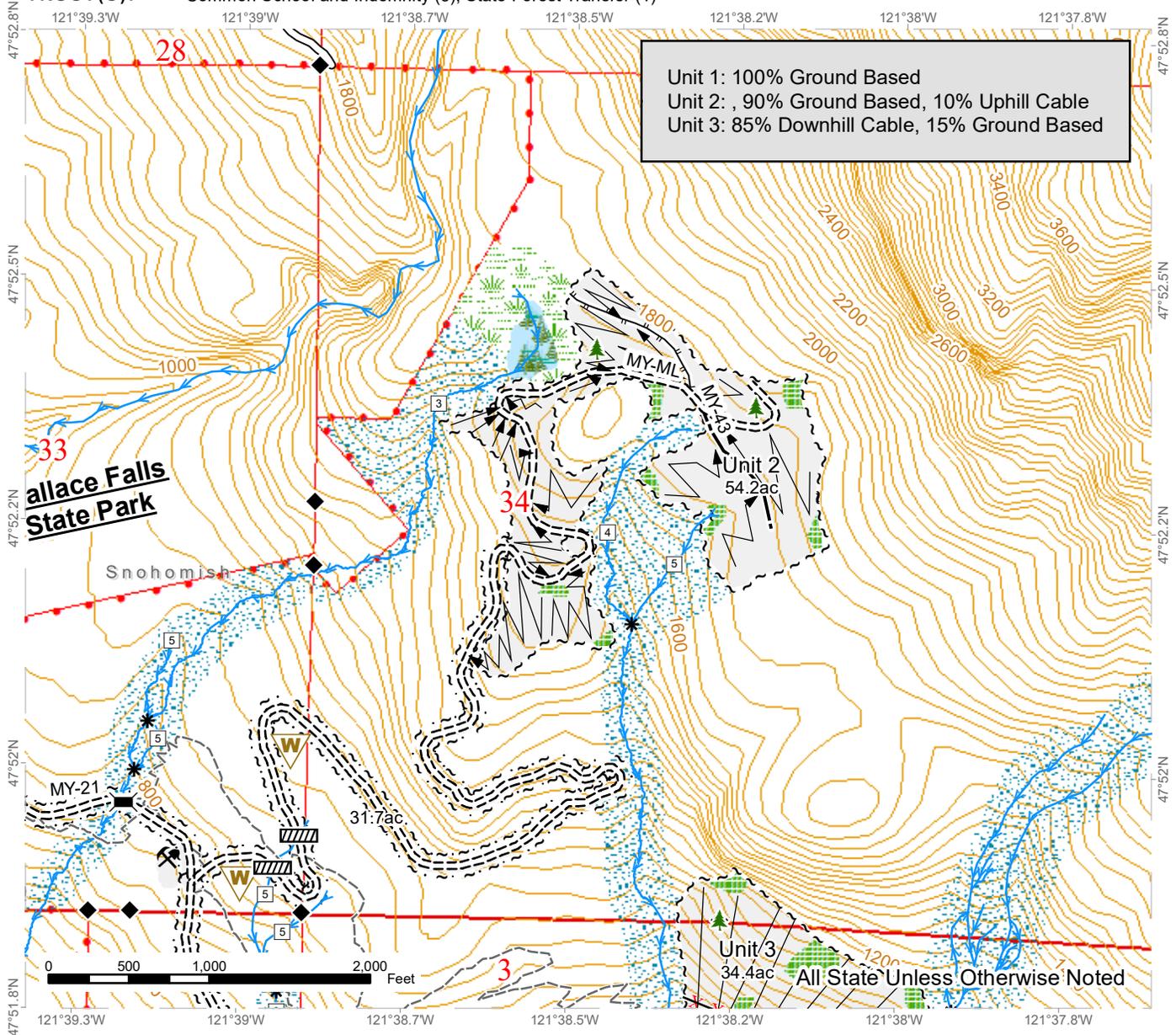
Harvest Unit	Sale Boundary Tags	County Road	Bridge
Leave Tree Area	Timber Type Change	Existing Roads	Culvert
Riparian Mgt Zone	Special Mgmt Area	Required Construction	Leave Tree Area <1/4-acre
Forested Wetland	Leave Tree Tags	Optional Construction	Non-Tradeable Leave Trees
Wetland Mgt Zone	Right of Way Tags	Old Grades/Trails	Trailhead
DNR Managed Lands	Take / Removal Trees	Streams	Rock Pit
Ground Harvest	Property Line	Stream Type	Waste Area
	Flag Line	Stream Type Break	Survey Monument



LOGGING PLAN MAP

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Unit 1: 100% Ground Based
 Unit 2: 90% Ground Based, 10% Uphill Cable
 Unit 3: 85% Downhill Cable, 15% Ground Based

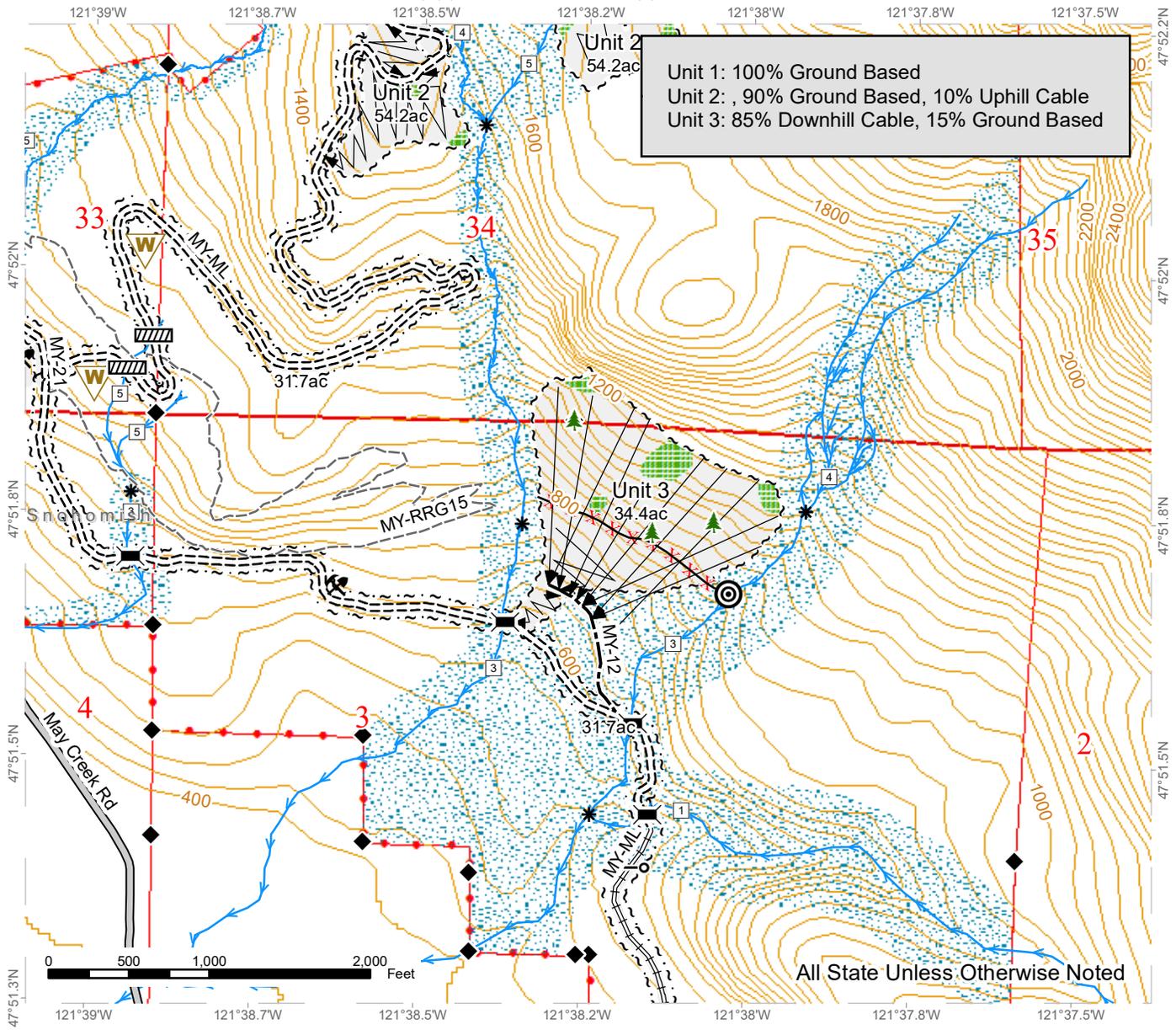
Harvest Unit	Sale Boundary Tags	Required Decommission	Bridge
Leave Tree Area	Timber Type Change	Existing Roads	Culvert
Riparian Mgt Zone	Special Mgmt Area	Required Construction	Leave Tree Area <1/4-acre
Forested Wetland	Leave Tree Tags	Optional Construction	Rock Pit
Wetland Mgt Zone	Right of Way Tags	Old Grades/Trails	Waste Area
DNR Managed Lands	Take / Removal Trees	Designated Skid Trail	Survey Monument
Ground Harvest	Property Line	Streams	Stream Type Break
Cable Harvest	Flag Line	Stream Type	
		Stream Type Break	



LOGGING PLAN MAP

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Harvest Unit	Sale Boundary Tags	Required Decommission	Bridge
Leave Tree Area	Timber Type Change	County Road	Culvert
Riparian Mgt Zone	Special Mgmt Area	Required Construction	Gate Installation
DNR Managed Lands	Leave Tree Tags	Required Reconstruction	Leave Tree Area <1/4-acre
Ground Harvest	Right of Way Tags	Optional Construction	Stream Bank Restoration
Cable Harvest	Take / Removal Trees	Old Grades/Trails	Rock Pit
	Property Line	Streams	Waste Area
	Flag Line	Stream Type	Survey Monument
		Stream Type Break	

