

**TIMBER NOTICE OF SALE**

**SALE NAME:** BOUNDARY BASCULE

**AGREEMENT NO:** 30-090289

**AUCTION:** January 27, 2016 starting at 10:00 a.m.,  
Olympic Region Office, Forks, WA

**COUNTY:** Clallam

**SALE LOCATION:** Sale located approximately 9 miles southwest of Joyce, WA

**PRODUCTS SOLD  
AND SALE AREA:**

All timber, except trees marked with a ring of blue paint or bounded out by Leave Tree Area Tags, bounded by the following: Timber Sale Boundary Tags in Units 1 and 2; Timber Sale Boundary Tags and the PA-S-1400 in Unit 3; and Right-of-Way Boundary Tags in Unit 4.

In no instance shall downed red cedar with a DBH greater than 21 inches be removed. All timber that has been on the ground for five years or more shall be left undisturbed and not yarded. Five years is defined by more than 1.5 inches of sap rot; on part(s) of Sections 4, 8, 9 and 16 all in Township 30 North, Range 9 West, W.M., containing 180 acres, more or less.

**CERTIFICATION:** This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: BV-SFIS-US09000572)

**ESTIMATED SALE VOLUMES AND QUALITY:**

Species	Avg DBH	Ring Count	Total MBF	MBF by Grade								
				1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	13.9	9	4,571				208		1,939	1,532	594	298
Red alder	13.9		771						209	176	51	335
Hemlock	11.7	10	664						198	233	128	105
Red cedar	15.9		217							167	50	
Maple	16.2		66					6	14		8	38
Grand fir	25.8	5	42						35	6	1	
Sale Total			6,331									

**MINIMUM BID:** \$635,000.00

**BID METHOD:** Sealed Bids

**PERFORMANCE  
SECURITY:**

\$100,000.00

**SALE TYPE:** Lump Sum

**EXPIRATION DATE:** October 31, 2018

**ALLOCATION:** Export Restricted

**BID DEPOSIT:** \$63,500.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

**HARVEST METHOD:** Cable - 97%, Ground - 3% - The following types of equipment are allowed in areas mapped as "Ground Methods": tracked skidder, shovel, and cable. Tracked skidders, feller-buncher, and shovels shall not operate on sustained slopes over 40% without written permission from the Contract Administrator. Ground based equipment with self-leveling shovels are permitted on slopes up to 60%. Lead-end suspension is required for all yarding activities. Full suspension is required for yarding over streams.

Falling, yarding, and timber hauling will not be permitted from November 1 through April 30 unless permission is granted in writing by the Contract Administrator. Hand falling will be allowed during the November 1 through April 30 restriction period. In

## TIMBER NOTICE OF SALE

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addition, falling and yarding will not be permitted on weekends, state recognized holidays, or between the hours of 8:00 p.m. and 6:00 a.m. unless authorized in writing by the Contract Administrator.

### **ROADS:**

78.90 stations of required construction. 12.21 stations of optional construction. 205.70 stations of required maintenance. 123.70 stations of optional maintenance.

No operation of road construction or maintenance equipment will be allowed from November 1 through April 30, on weekends, state recognized holidays, or between the hours of 8:00 p.m. and 6:00 a.m. unless authorized in writing by the Contract Administrator.

Due to marbled murrelet timing restrictions, on the following roads, any road work, right-of-way timber falling and yarding, rock pit operations, or operation of heavy equipment is not permitted from one hour before official sunrise to two hours after official sunrise and from one hour before official sunset to one hour after official sunset from April 1 through September 23: PA-S-1090 stations 16+40 to 22+00, PA-S-1091 stations 0+00 to 13+80, Place Pit, PA-I-2600 stations 0+00 to 14+00, PA-I-2610 stations 0+00 to 12+00, and PA-I-2620 stations 0+00 to 6+10. In addition, shooting of Sirloin Pit shall not take place from April 1 through September 23. The marbled murrelet timing restriction does not apply to the hauling of timber, rock, or equipment.

The S-1300 Road is to be built by 10/31/2017 per Road Plan Clause 1-20.

### **ACREAGE DETERMINATION**

#### **CRUISE METHOD:**

The sale acres were determined by GPS. Units 1 through 3 were cruised using a variable plot cruise method and Unit 4 right-of-way was cruised using ITS method.

#### **FEES:**

\$112,375.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

#### **SPECIAL REMARKS:**

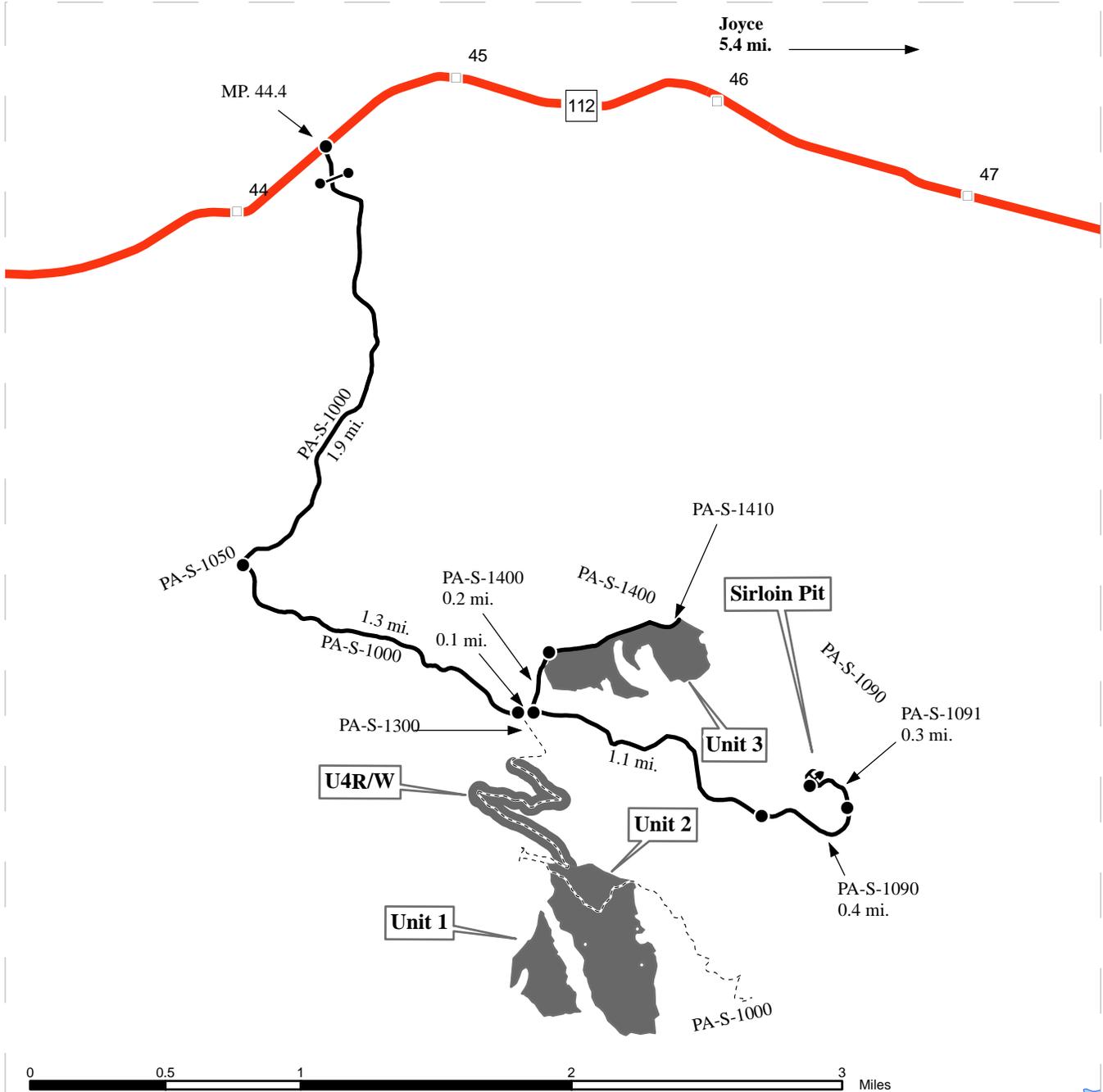
There are locked gates on the PA-S-1000 and PA-I-2600 Roads. Please contact Olympic Region Dispatch Center at 360-374-2800 to check out an AA1 Key.

Purchaser may remove biomass within 100 feet of roads and landings within the sale area.

# DRIVING MAP

SALE NAME: Boundary Bascule  
 AGREEMENT#: 30-090289  
 TOWNSHIP(S): T30N R09W  
 TRUST(S): State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

REGION: Olympic  
 COUNTY(S): Clallam  
 ELEVATION RGE: 640-2000



	Timber Sale Unit
	Highways
	Milepost Markers
	Sadie Cr. Trail
	Forest Road
	Gate
	Rock Pit

**DRIVING DIRECTIONS:**

Drive west on Highway 112 to milepost 44.4 and turn left (south) onto the PA-S-1000 Road. Go thru gate (AA-1 lock), drive 1.9 miles, turn left (southeast) and drive 1.3 miles. Park and walk the PA-S-1300 (Sadie Cr. Trail) to U4R/W and Unit 2. Walk cross-country to U1 from Unit 2.

Continue driving 0.1 miles on the PA-S-1000. Turn left (north) onto PA-S-1400 and drive 0.2 miles to Unit 3.

From Junction with PA-S-1400 drive 1.1 miles. Turn left (east) onto PA-S-1090 and drive 0.4 miles. Turn left (north) onto PA-S-1091 and drive 0.3 miles to Sirloin Pit.

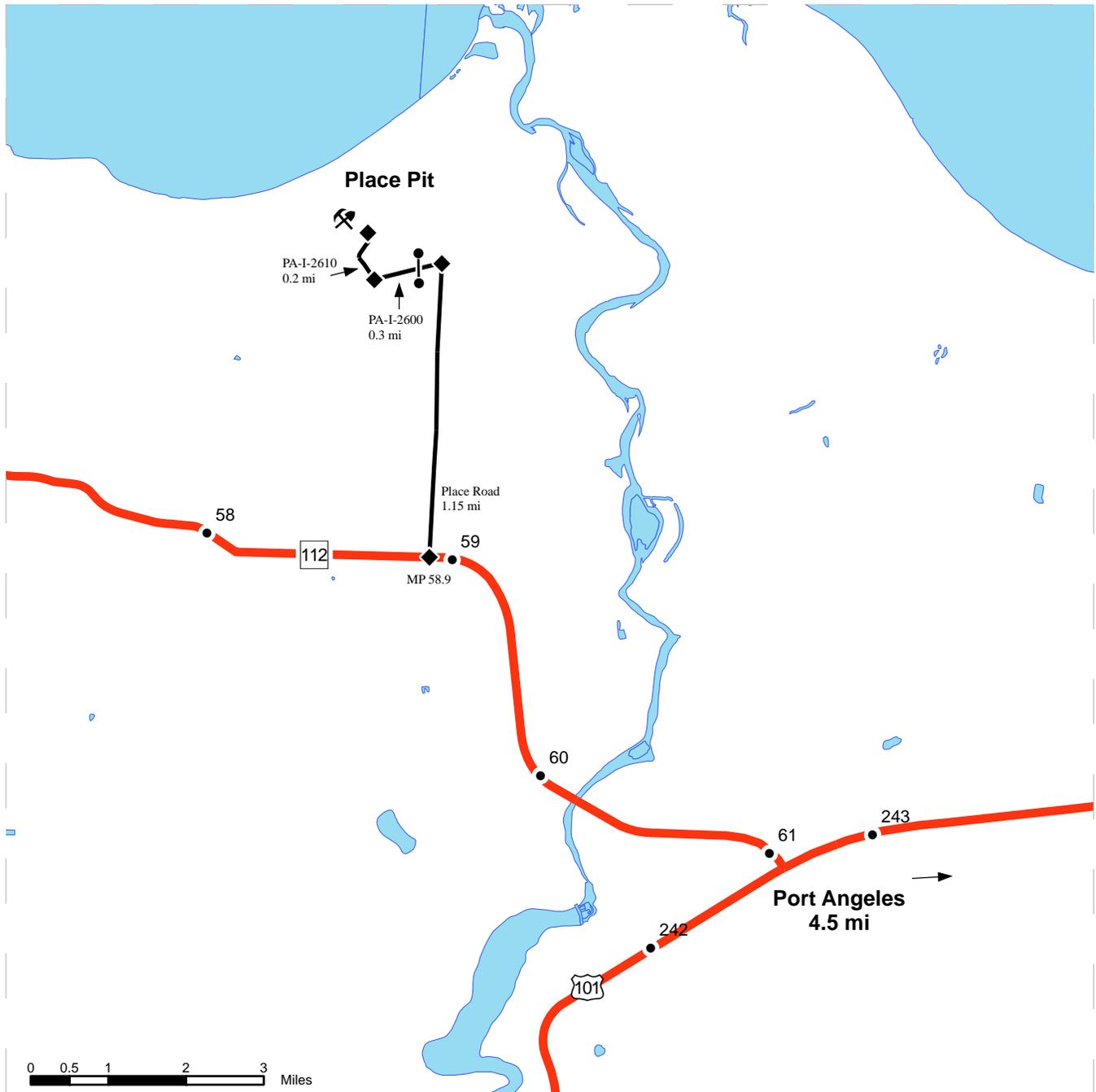
Alternate foot routes to Units 1 & 2: Park at the end of the PA-S-1000 Road and walk west into the bottom of Units 1 & 2. Near the end of the S-1000 one can also walk northwest on the Sadie Cr. Trail into the top of Unit 2.



# DRIVING MAP 2

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T31N R07W  
**TRUST(S):** State Forest Transfer (01)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 200'



-  Rock Pit
-  Distance Indicator
-  Milepost Markers
-  Gate

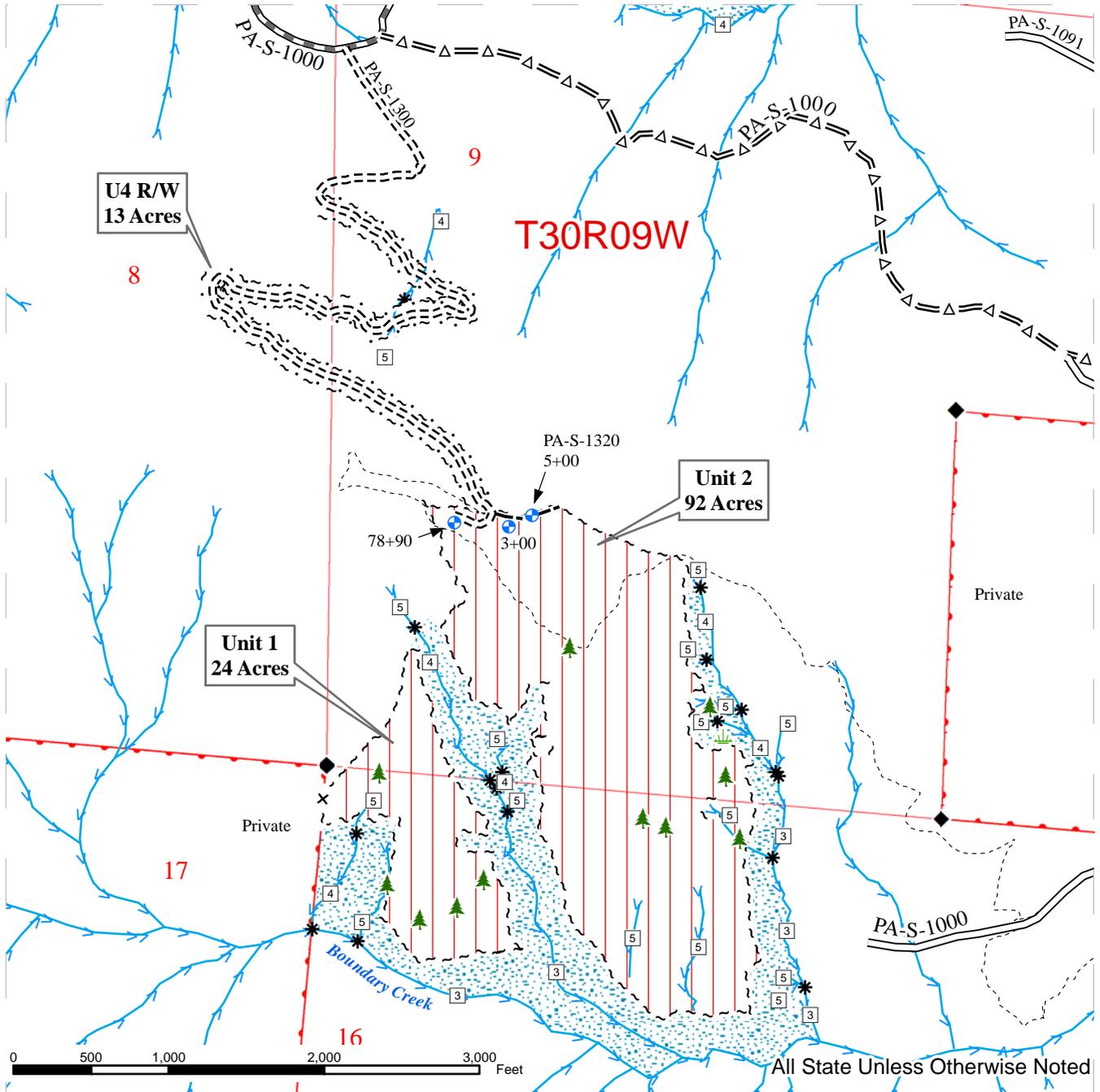
**DRIVING DIRECTIONS:**  
 Place Pit: Drive 4.5 miles west of Port Angeles to State Route 112. Turn northwest (right) and drive to MP 58.9. Turn north (right) onto Place Road and drive to MP 1.15. Turn west (left) onto the PA-I-2600/2610. AA-1 required for gate. Drive 0.5 miles to the pit.



# TIMBER SALE MAP

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T30N R09W  
**TRUST(S):** State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 640-2000



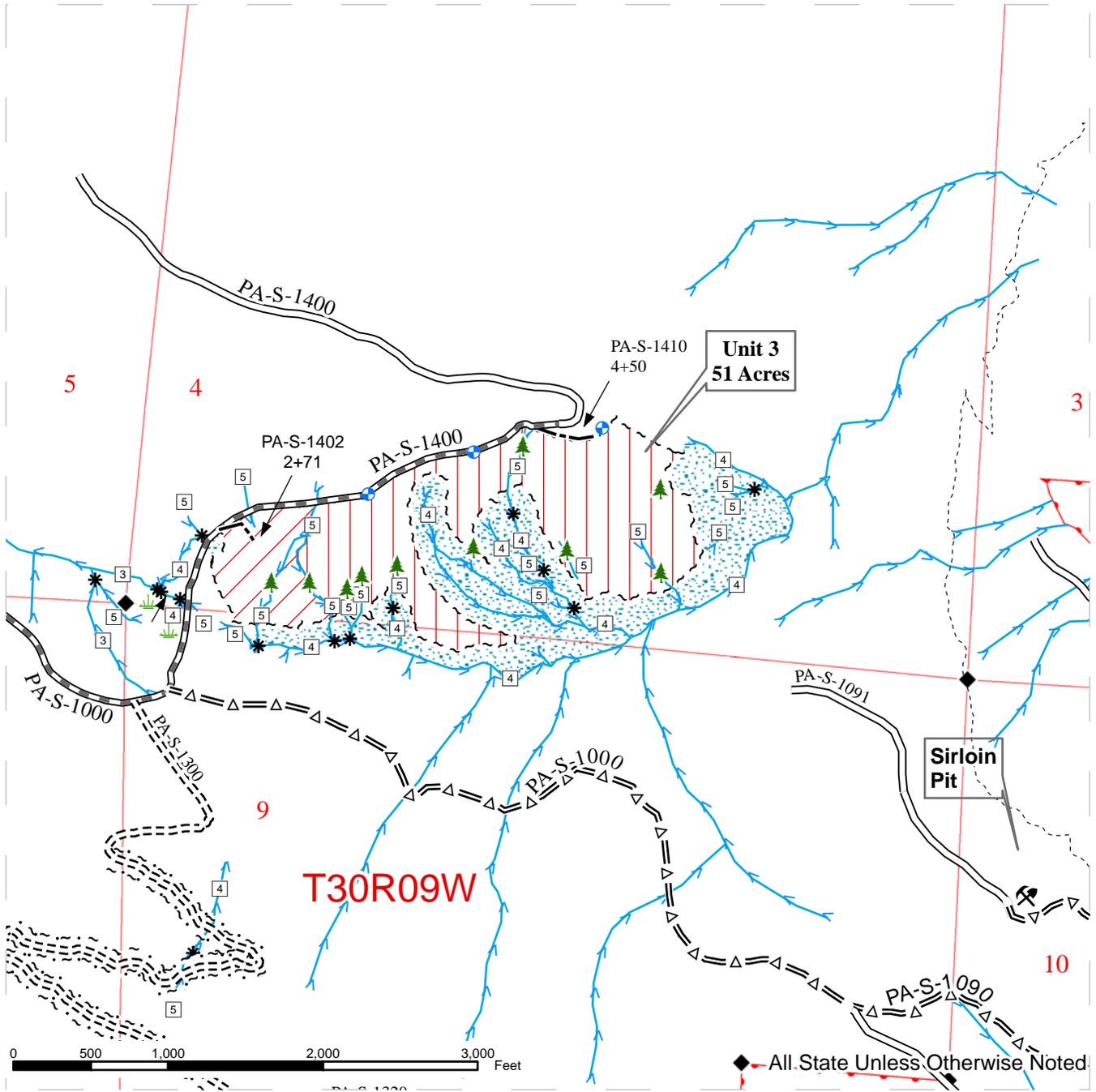
~ ~ ~	Sale Boundary Tags	—	Existing Road	→	Stream
- - -	Right of Way	=Δ=	Optional Maintenance	[3]	Stream Type
x ~ x	Property Line w/Tags	—▲—	Required Maintenance	*	Stream Type Break
[ / ]	Ground Methods	—	Optional Construction	↓	Wetland
[   ]	Cable Methods	---	Required Construction	[•••]	RMZ/WMZ
⊕	Cable Landing	⚒	Rock Pit	◆	Monumented Corners
🌲	Leave Tree Area	----	Sadie Creek Trail	[ ]	DNR Managed Lands



# TIMBER SALE MAP

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T30N R09W  
**TRUST(S):** State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 640-2000



◆ All State Unless Otherwise Noted

~ ~ ~ Sale Boundary Tags	— Existing Road	→ Stream
- - - Right of Way	=Δ= Optional Maintenance	③ Stream Type
x ~ x Property Line w/Tags	▬ Required Maintenance	* Stream Type Break
▨ Ground Methods	--- Optional Construction	🌱 Wetland
▩ Cable Methods	▨▨▨ Required Construction	🌿 RMZ/WMZ
📍 Cable Landing	⚒ Rock Pit	◆ Monumented Corners
🌲 Leave Tree Area	⋯ Sadie Creek Trail	▭ DNR Managed Lands

**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

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

**Export Restricted Lump Sum AGREEMENT NO. 30-090289**

**SALE NAME: BOUNDARY BASCULE**

**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 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-011 Right to Remove Forest Products and Contract Area

Purchaser was the successful bidder on January 27, 2016 and the sale was confirmed on \_\_\_\_\_. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase as much of the following forest products as can be cut and removed during the term of this contract: All timber, except trees marked with a ring of blue paint or bounded out by Leave Tree Area Tags, bounded by the following: Timber Sale Boundary Tags in Units 1 and 2; Timber Sale Boundary Tags and the PA-S-1400 in Unit 3; and Right-of-Way Boundary Tags in Unit 4.

In no instance shall downed red cedar with a DBH greater than 21 inches be removed. All timber that has been on the ground for five years or more shall be left undisturbed and not yarded. Five years is defined by more than 1.5 inches of sap rot; located on approximately 180 acres on part(s) of Sections 4, 8, 9, and 16 all in Township 30 North, Range 9 West W.M. in Clallam County(s) as designated on the sale area and as shown on the attached timber sale map.

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 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-025 Schedules

The following attached schedules are hereby incorporated by reference:

Schedule	Title
A	Specifications for Slash Piling
B	Green Tree Retention Plan
C	Biomass Removal Schedule
D	Cable Yarding in Units 1 and 2

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to October 31, 2018.

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-051 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 total contract price.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the total contract price.

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 total contract price.

All payments, except the initial deposit, will be deducted from the total contract price to determine the unpaid portion of the contract.

- e. Payment of \$456.00 per acre per annum for the acres on which an operating release has not been issued.
- 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. 812521 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, PRT-812521 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-091 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, the added forest products become a part of this contract. The State shall determine the volume added and shall calculate the increase to the total contract price using the rates set forth in clause G-101, G-102, or G-103. If the sale area is reduced, the State shall determine the volume to be reduced. The State shall calculate the reduction to the total contract price using the rates set forth in clause G-101, G-102, or G-103.

G-101 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 the Scribner log scale volume, as defined by the Northwest Log Rules Advisory Group, shall be determined by the Contract Administrator. Added forest products shall be paid for at the following contract payment rates per Mbf Scribner log scale.

Contract Item	Appraised Price	Overbid Factor	Price	Fees	Contract Payment Rate*%
Douglas fir	\$99.00	0	\$0.00	\$9.00	\$9.00
Grand fir	\$81.15	0	\$0.00	\$9.00	\$9.00
Hemlock	\$75.36	0	\$0.00	\$9.00	\$9.00
Maple	\$65.88	0	\$0.00	\$9.00	\$9.00
Red alder	\$95.57	0	\$0.00	\$9.00	\$9.00
Red cedar	\$235.01	0	\$0.00	\$9.00	\$9.00
Other	\$102.28	0	\$0.00	\$9.00	\$9.00

G-106 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 State's 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 rate set forth in clause G-101, G-102 or G-103.

G-111 Title and Risk of Loss

Title to the forest products under this contract passes to the Purchaser after they are removed from the sale area, if adequate advance payment or payment security has been provided to the State under this contract. Purchaser bears all risk of loss of, or damage to, and has an insurable interest in, the forest products described in this contract from the time the sale is confirmed under RCW 79.15.120. Breach of this contract shall have no effect on this provision.

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: BV-SFIS-US09000572.

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.

Road is defined as the road bed, including but not limited to its component parts, such as 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. 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.

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 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 Forks, 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 post office address:

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; PA-S-1000, PA-S-1300, PA-S-1400, PA-S-1090, PA-S-1091, PA-I-2600, PA-I-2610, PA-I-2620, and all new construction. 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-370 Blocking Roads

Purchaser shall not block the PA-S-1000, unless authority is granted in writing by the Contract Administrator.

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:

Easement, including the terms and provisions thereof,

For: Road

In Favor of: Washington State Department of Natural Resources

Disclosed by Application No.: 50-005478

Granted: 06/15/1959

Expires: Indefinite

Section P: Payments and Securities

P-011 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 Clause P-020, 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-020 Payment for Forest Products

Purchaser agrees to pay the total, lump sum contract price of \$169,354.00. The total contract price consists of a \$0.00 contract bid price plus \$169,354.00 in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause. Purchaser shall be liable for the entire purchase price, and will not be entitled to any refunds or offsets unless expressly stated in this contract.

THE PURCHASE PRICE SHALL NOT BE AFFECTED BY ANY FACTORS, INCLUDING: the amount of forest products actually present within the contract area, the actual acreage covered by the contract area, the amount or volume of forest products actually cut or removed by purchaser, whether it becomes physically impossible or uneconomic to remove the forest products, and whether the subject forest products have been lost or damaged by fire or any other cause. The only situations Purchaser may not be liable for the full purchase price are governed by clause G-066, concerning governmental regulatory actions taken during the term of the contract.

**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-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 H: Harvesting Operations****H-010 Cutting and Yarding Schedule**

Falling and yarding will not be permitted from November 1 through April 30 unless permission is granted in writing by the Contract Administrator. Hand falling will be allowed during the November 1 through April 30 restriction period. In addition, falling and yarding will not be permitted on weekends, state recognized holidays, or between

the hours of 8:00 p.m. and 6:00 a.m. 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 100 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 area, 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-016 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. A skid trail 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. Location of the skid trails must be marked by Purchaser and 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. Purchaser will not have more than two skid trails open to active skidding at any one time. All other skid trails used for skidding timber will be closed.
- h. Once a skid trail is closed, Purchaser will not reopen a skid trail unless approved in writing by the Contract Administrator.
- i. 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 12 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-018 Temporary Stream Crossings

A temporary stream crossing is required to access parts of Unit 3 east of the PA-S-1402.

Purchaser shall comply with the following during the yarding operation:

- a. Adhere to the approved Hydraulic Permit Application (HPA) or Forest Practice Application (FPA) with approved hydraulic project work, if required, amend a current FPA or obtain a new FPA prior to commencing any new stream crossing construction.
- b. Location of the temporary stream crossing must be approved by the Contract Administrator.
- c. A temporary stream crossing shall not exceed 20 feet in width, including rub trees.
- d. Purchaser shall suspend operations during periods of wet weather when a high potential for sediment delivery into typed waters may occur.
- e. Temporary stream crossings shall be removed at the time of completion of yarding as 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-035 Fall Trees Into Sale Area

Trees shall be felled into the sale area unless otherwise approved by the Contract Administrator.

H-051 Branding and Painting

Purchaser shall provide a State of Washington registered log brand, acceptable to the State, unless the State agrees to furnish the brand. 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-120 Harvesting Equipment

Forest products sold under this contract shall be harvested using cable and ground methods. The following types of equipment are allowed in areas mapped as "Ground Methods": tracked skidder, shovel, and cable. Ground based equipment with self-leveling shovels are permitted on slopes up to 60%. Tracked skidders, feller-buncher, and shovels shall not operate on sustained slopes over 40%, unless authority to use other equipment is granted in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities. Full suspension is required for yarding over streams and through Type 4 RMZ as per Schedule D.

H-130 Hauling Schedule

The hauling of forest products will not be permitted from November 1 through April 30 unless authorized in writing by the Contract Administrator.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

1. Purchaser shall immediately repair all gate damage resulting from operations to an equal or better condition than existed at time of the sale.

2. During harvest operations, trail closure signs must be posted on any recreation trails traversing the harvest area or haul route.
3. Construction and use of temporary Type 5 equipment crossings will be restricted from October 1 through May 31 unless permitted in writing by the Contract Administrator.
4. Purchaser may remove biomass within 100 feet of roads and landings within the sale area in accordance with the attached Biomass Removal Schedule.
5. Slash generated during cable yarding shall be stacked in dirt free piles and shall not block roads or interfere with functioning of drainage structures, ditches, or stream channels. Slash and displaced soil shall be removed from swales and natural drainage channels concurrent with yarding. Landing and processing slash shall be stacked in dirt free piles in accordance with the attached Specifications for Slash Piling Schedule or removed from State Lands as biofuels.
6. Purchaser shall notify all employees and contractors working on this sale that any danger tree, marked or unmarked, may be felled. Any felled marked danger tree shall be replaced with a suitable tree of similar size and species as approved by the Contract Administrator.
7. Contract Administrator shall approve any trees used for cable operations.
8. Purchaser shall mark RMZ corridors for Contract Administrator approval.

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

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.

H-230 Tops and Limbs Outside the Sale Boundary

Tops and limbs outside the sale boundary as a result of Purchaser's operation shall be removed concurrently with the yarding operation unless otherwise directed by the Contract Administrator.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 9/4/2014 are hereby made a part of this contract.

**C-050 Purchaser Road Maintenance and Repair**

Purchaser shall perform work at their own expense on all new construction, pre/post haul maintenance roads, and all existing forest roads used. All work shall be completed to the specifications detailed in the Road Plan.

**C-060 Designated Road Maintainer**

If required by the State, Purchaser shall perform maintenance and replacement work as directed by the Contract Administrator on all other roads used and not listed in Clause C-050. Purchaser shall furnish a statement in a form satisfactory to the State showing the costs incurred while performing this work. Costs shall be based on the rates set forth in the State's current Equipment Rate Schedule on file at the region and Olympia offices. The State shall reimburse Purchaser for said costs within 30 days of receipt and approval of the statement.

**C-080 Landing Locations Approved Prior to Construction**

Landings shall be marked by Purchaser and approved by the Contract Administrator prior to construction.

**C-140 Water Bars**

Purchaser shall, as directed by the Contract Administrator, construct water bars across haul roads, skid trails and fire trails as necessary to control soil erosion and water pollution.

**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-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

During the "closed season", 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 typed water 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-110 Resource Protection

No equipment may operate within 30 feet of any stream unless authority is granted in writing by the Contract Administrator.

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.

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 4 to 6 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 (ECY). 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, the Purchaser is responsible for notifying the following:

Appropriate Department of Ecology regional office (contact information below).

DNR Contract Administrator

ECY - Northwest Region:

1-425-649-7000

(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

ECY - Southwest Region:

1-360-407-6300

(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

ECY - Central Region:

1-509-575-2490

(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

ECY - Eastern Region:

1-509-329-3400

(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

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, Purchaser shall repair any damage to and clean out all logging debris from recreational trail(s).

Section D: Damages

D-013 Liquidated Damages or Failure to Perform

The following clauses provide for payments by Purchaser to the State for breaches of the terms of this contract other than failure to perform. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State, which will be 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.

Clause P-020 governs Purchaser's liability in the event Purchaser fails to perform any of the contract requirements other than the below liquidated damage clauses without written approval by the State. Purchaser's failure to pay for all or part of the forest products sold in this contract prior to expiration of the contract term results in substantial injury to the State. Therefore, Purchaser agrees to pay the State the full lump sum contract price in P-020 in the event of failure to perform.

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 sale area.

**DRAFT**

**DRAFT**

**DRAFT**

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

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

\_\_\_\_\_  
Purchaser

\_\_\_\_\_  
Susan K. Trettevik  
Olympic Region Manager

Date: \_\_\_\_\_  
Address: \_\_\_\_\_

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

CORPORATE ACKNOWLEDGEMENT

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 \_\_\_\_\_

**Schedule A**  
**Specifications for Slash Piling**

The area shall be piled by creating circular piles of slash and brush conforming to the following specifications:

A. Piles shall be a minimum of 12 feet tall by 8 feet wide to a maximum of 30 feet tall and 16 feet wide. Piles shall be cone shaped and stable.

B. Piles shall be free of topsoil, large rotten logs, and large stumps. No material larger than 8 inches in diameter shall be piled. Any unburnable material shall be well scattered.

C. Piles shall not be placed on large stumps or logs.

D. Piles shall be stacked a minimum of 50 feet from all unit boundaries, Riparian Management Zones, leave trees, and any standing timber; a minimum of 100 feet from any public roads and highways; and a minimum of 200 feet from any structures.

E. Piling shall be completed using an approved hydraulic shovel and grapples.

F. Slash and displaced soil shall be removed from swales and natural drainage channels concurrent with yarding.

G. Slash may be processed as biofuels and removed from State Land as part of this contract.

**Schedule B**  
**Green Tree Retention Plan**

Leave the following:

1. All trees banded with blue paint and all leave tree area clumps shall remain standing. The perimeter of the leave tree clumps are designated by Leave Tree Area Tags. The tags face outward from the leave tree clumps.

Unit #	# of Individually Marked Trees	# of Clumps	# of Trees Clumped	Total # of Leave Trees
1	2	4	241	243
2	394	6	392	786
3	105	10	509	614

Permission to substitute leave trees must be granted by the Contract Administrator.

**Schedule C**  
**Biomass Removal Schedule**

Purchaser may remove biomass within 100 feet of roads and landings within the sale area.

Biomass is defined as the 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, and is eligible for removal under the terms of this contract.

**Schedule D**  
**Cable Yarding in Units 1 and 2**

There will be cable yarding in Units 1 and 2. Protection measures will include:

- Logging corridors will be placed to minimize the falling of any trees within the riparian management zone. Prior to felling trees in an inner gorge, bedrock hollow, or unharvested portion of a convergent headwall, the proposed corridors shall be flagged in the field and trees proposed for felling shall be marked. These corridors and marked trees shall be reviewed and approved by the Olympic Region Geologist before operations may begin.
- Yarded logs must be fully suspended above inner gorges and bedrock hollows. If full suspension cannot be achieved, further consultation with a Licensed Engineering Geologist or Licensed Geologist with training and experience in slope stability evaluation shall be done to assess the impacts to slope stability Stability map.
- Full suspension required in the inner riparian zone (inner 25 feet on both sides of stream). Logs must not contact inner riparian zone slopes.
- Yarding corridors shall average 12 feet or less in width.
- Yarding corridors shall be located in natural voids, where possible, while avoiding Type 5 streams, the identified Type 5 inner gorge (see Forest Practices map), and any concentrations of snags.
- Trees that are cut or damaged during yarding operations in the RMZ will remain on site as live trees, snags, or down woody debris.
- Immediately following cable yarding operations, the corridors will be inspected by the Contract Administrator to ascertain whether any further mitigation requirements are necessary.



## 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 (specifically required by the contract) prior to haul*

#### EXCISE TAX EXEMPT ACTIVITIES

**Temporary Optional Construction:** **linear feet**  
*Optional roads to be constructed and then abandoned*

**Temporary Optional Reconstruction:** **linear feet**  
*Optional roads to be reconstructed and then abandoned*

**New Abandonment:** **linear feet**  
*Abandonment of roads constructed or reconstructed under the contract*

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 4/09)

Cruise acreage adjusted. See cruise for correct acreage.

### PRE-CRUISE NARRATIVE

Sale Name: <b>Boundary Bascule</b>	Region: <b>Olympic</b>
Agreement #: <b>30-090289</b>	District: Straits
Contact Forester: Jason Teller Phone / Location: (360) 461-6995	County(s): Clallam, Choose a county
Alternate Contact: Gary McLaughlin Phone / Location: (360) 457-2570 x241	Other information: Click here to enter text.

Type of Sale: Lump Sum	
Harvest System: Uphill Cable Click here to enter text.	85%
Harvest System: Ground based Click here to enter text.	15%
Harvest System: Select harvest system Click here to enter text.	Click here to enter percent sale acres.

### UNIT ACREAGES AND METHOD OF DETERMINATION:

Unit #	Legal Description (Enter only one legal for each unit) Sec/Twp/Rng	Grant or Trus t	Gross Proposa l Acres	Deductions from Gross Acres (No harvest acres)				Net Harve st Acres	Acreage Determinatio n  (List method and error of closure if applicable)
				RMZ/ WMZ Acres	Leave Tree Acres	Existing Road Acres	Other Acres (describ e)		
1	T30 R09 Sec. 9, 16	03-80% 07-20%	29.4	0	1.8	0	0	27.6	GPS (Garmin)
2	T30 R09 Sec. 9, 16	01-50% 03-38% 07-12%	96.8	0	2.8	0	0	94.0	GPS (Garmin)
3	T30 R09 Sec. 4, 9	01	54.8	0	4.3	0	0	50.5	GPS (Garmin)
U2R/W	T30 R09 Sec. 8, 9	01-30% 07-70%	15.2	0	0	2.0	0	13.2	Combination
	Enter Sec / Twp / Rng								Choose an item.
	Enter Sec / Twp / Rng								Choose an item.
<b>TOTAL ACRES</b>			196.2		8.9	2.0		185.3	

### HARVEST PLAN AND SPECIAL CONDITIONS:

Unit #	Harvest Prescription: (Leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Blue painted leave trees, yellow Leave Tree Area tags with pink flashers, Timber Sale Boundary tags with pink flashers, pink & white flagging at TSB	No	243 total leave trees – 2 individuals, 241 clumped in 4 LTA's

	waypoints.		
2	Blue painted leave trees, yellow Leave Tree Area tags with orange and/or pink flashers, Timber Sale Boundary tags with pink flashers, pink & white flagging at TSB waypoints.	No	786 total leave trees – 394 individuals, 392 clumped in 6 LTA's
3	Blue painted leave trees, yellow Leave Tree Area tags with pink flashers, Timber Sale Boundary tags with pink flashers, pink & white flagging at TSB waypoints.	No	614 total leave trees – 105 individuals, 509 clumped in 10 LTA's
U2R/W	Orange Right Of Way tags with orange flashers.	No	N/A

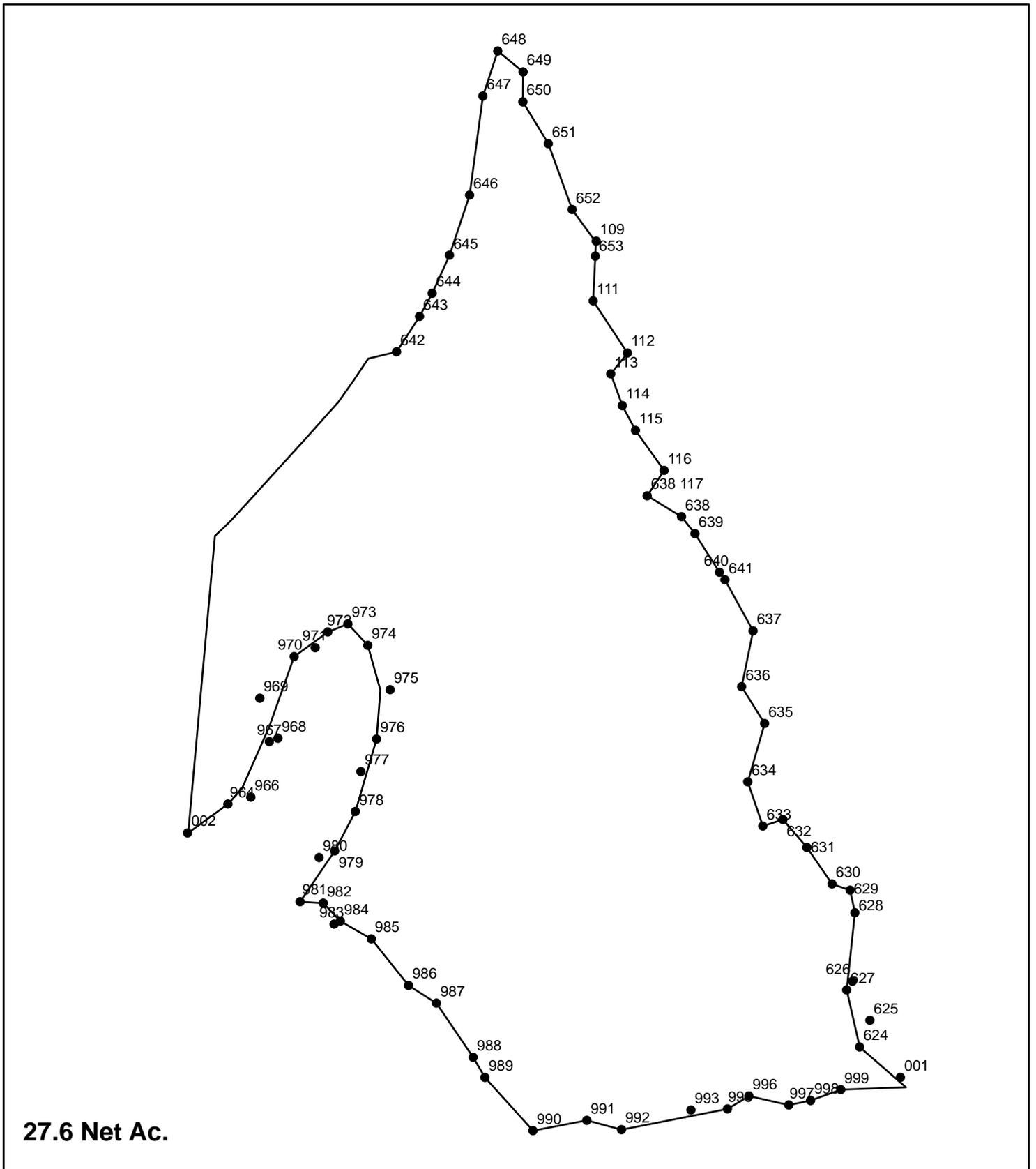
**OTHER PRE-CRUISE INFORMATION:**

Unit #	Primary,secondary Species / Estimated Volume (MBF)	Access information (Gates, locks, etc.)	Photos, traverse maps required
1	DF, WH / 1,029	State gate, PA-S-1000; AA-1 lock	Yes
2	DF, WH / 3,888	State gate, PA-S-1000; AA-1 lock	Yes
3	WH, DF / 2,142	State gate, PA-S-1000; AA-1 lock	Yes
U2R/W	WH, RA / 305	State gate, PA-S-1000; AA-1 lock	Yes
TOTAL MBF	7,364		

**REMARKS:**

U2: There are three 50-ft. radius seep buffers within unit area. They appear as circles on the U2 traverse map, and the area of each has been deducted from the gross acres.

Prepared By: Jason A. Teller Date: 11/05/2014	Title: Forester 1	CC:
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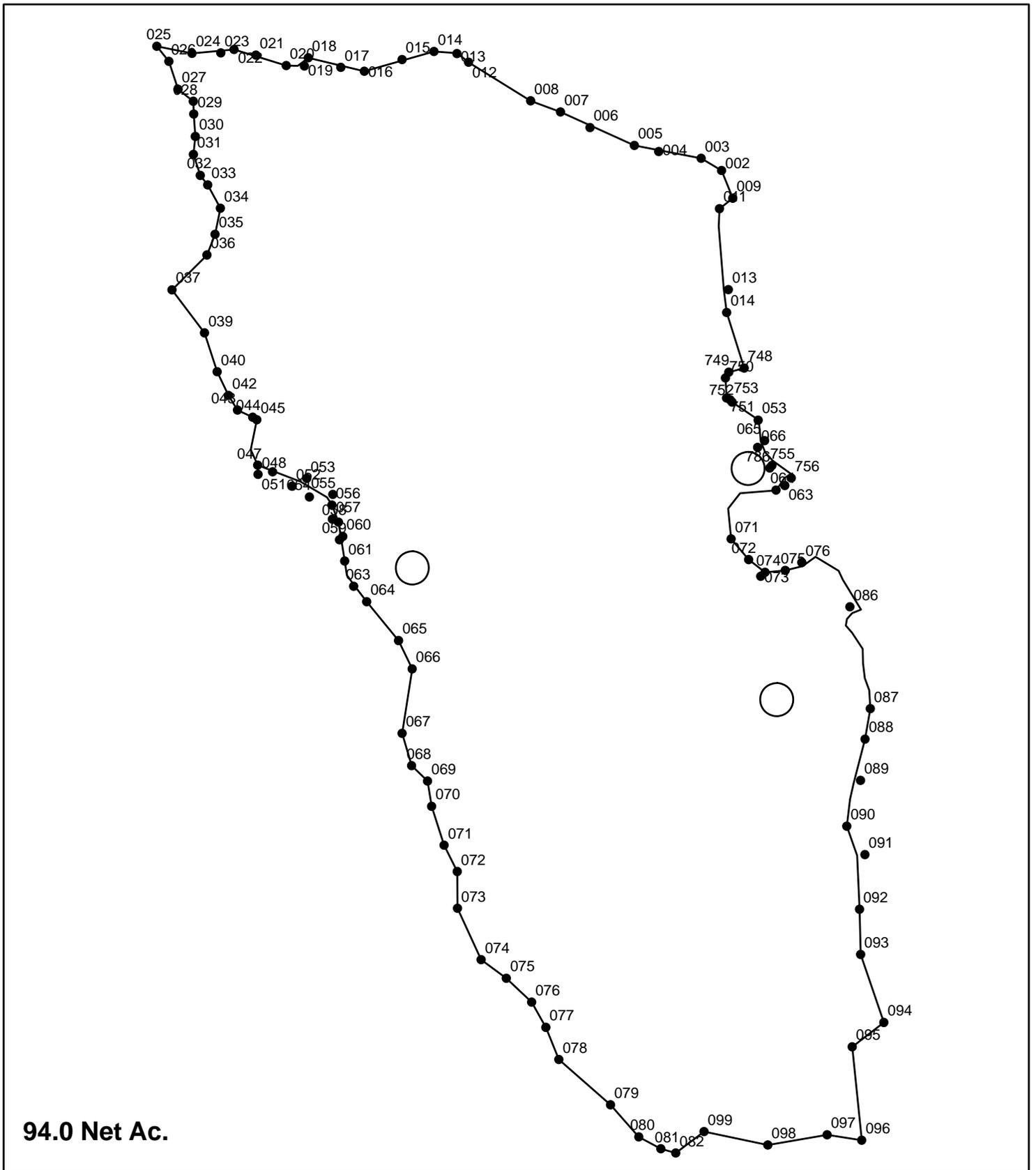
## Boundary Bascule Unit 1 - Traverse Map

Nov. 14, 2014



1 inch = 251 feet





94.0 Net Ac.

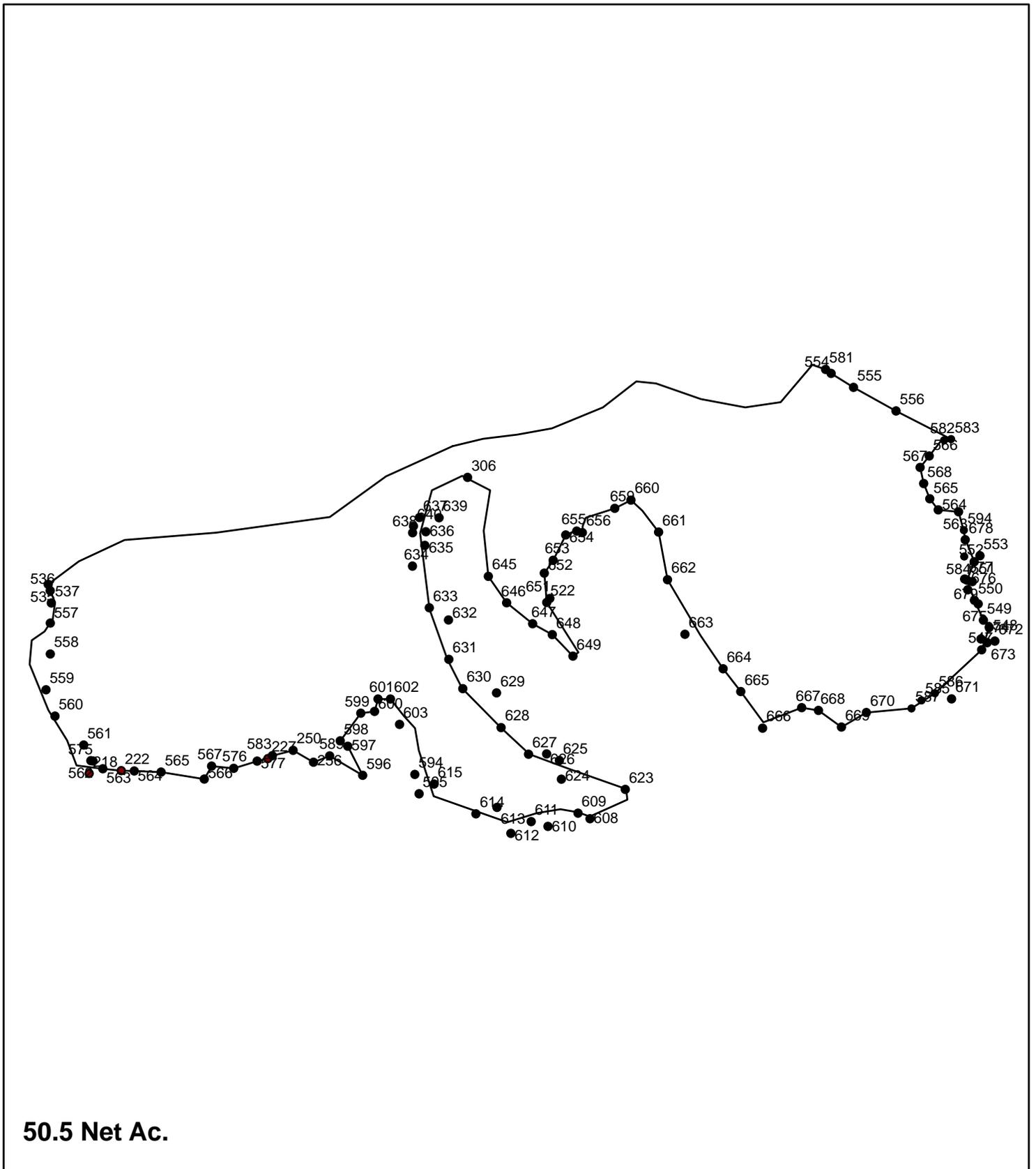
## Boundary Bascule Unit 2 - Traverse Map

Nov. 14, 2014



1 inch = 402 feet





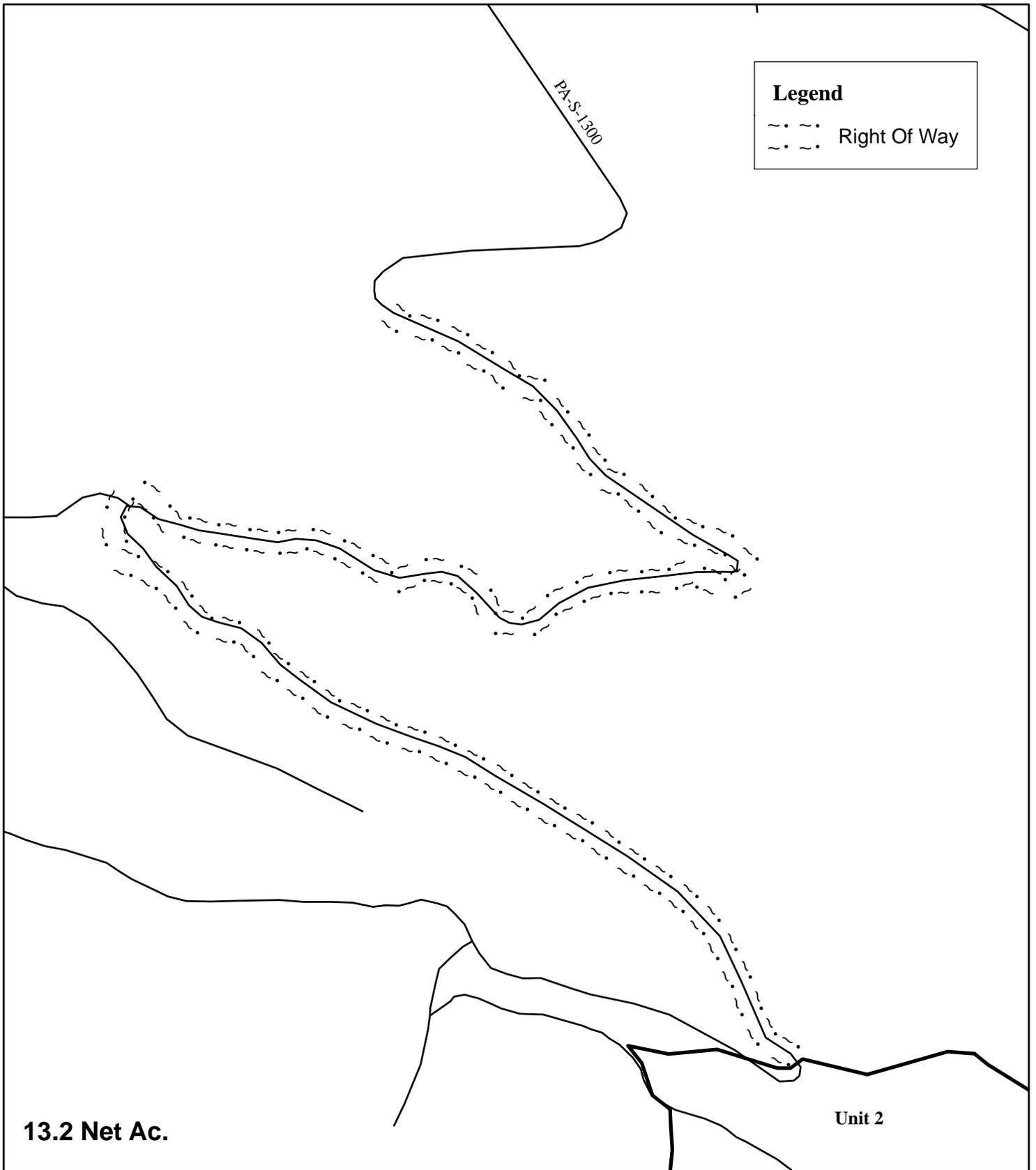
## Boundary Bascule Unit 3 - Traverse Map

Nov. 10, 2014



1 inch = 444 feet





# Boundary Bascule - U2R/W - Traverse Map

Nov. 14, 2014



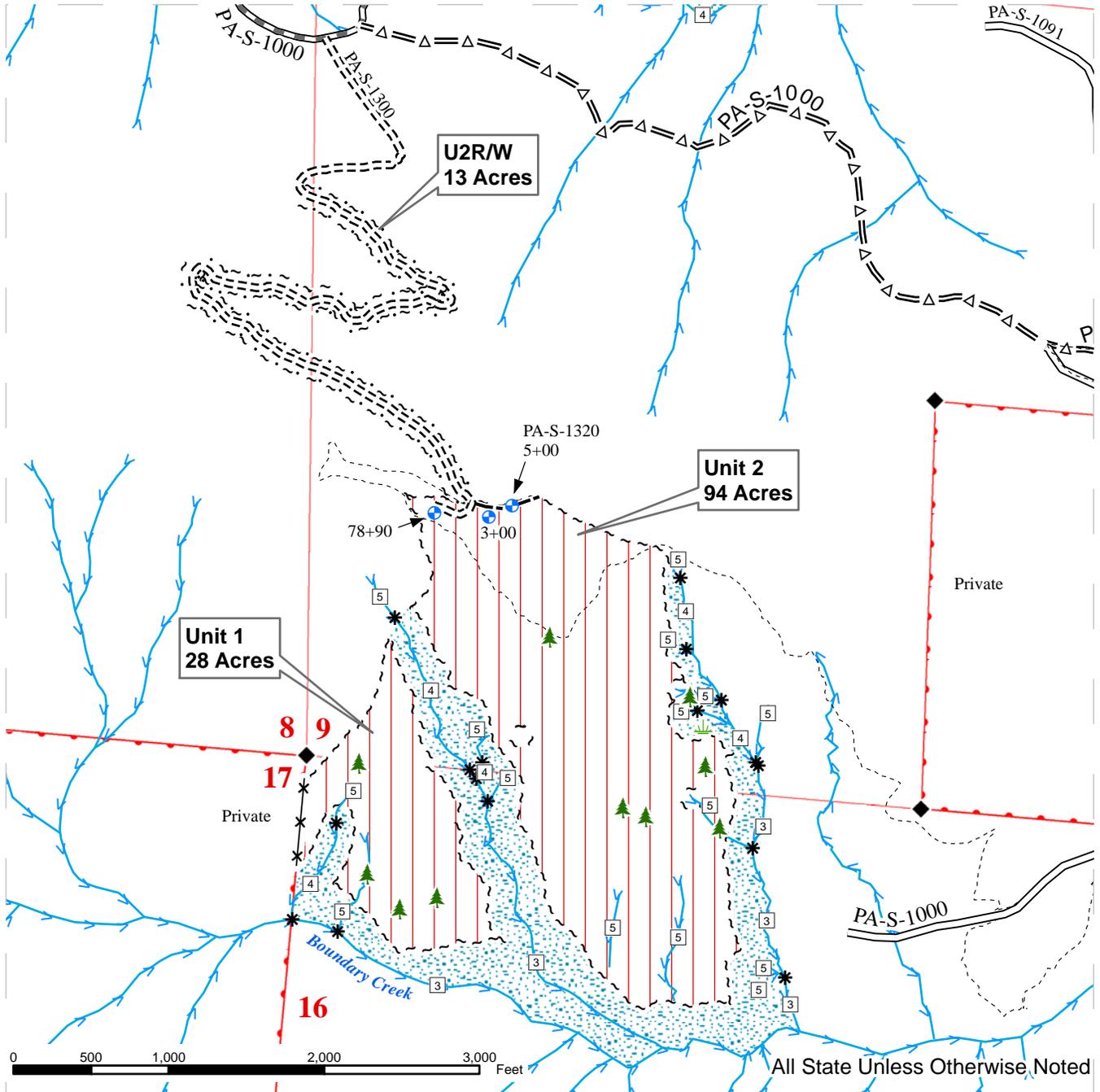
1 inch = 349 feet



# TIMBER SALE MAP - DRAFT

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T30N R09W  
**TRUST(S):** State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 640-2000

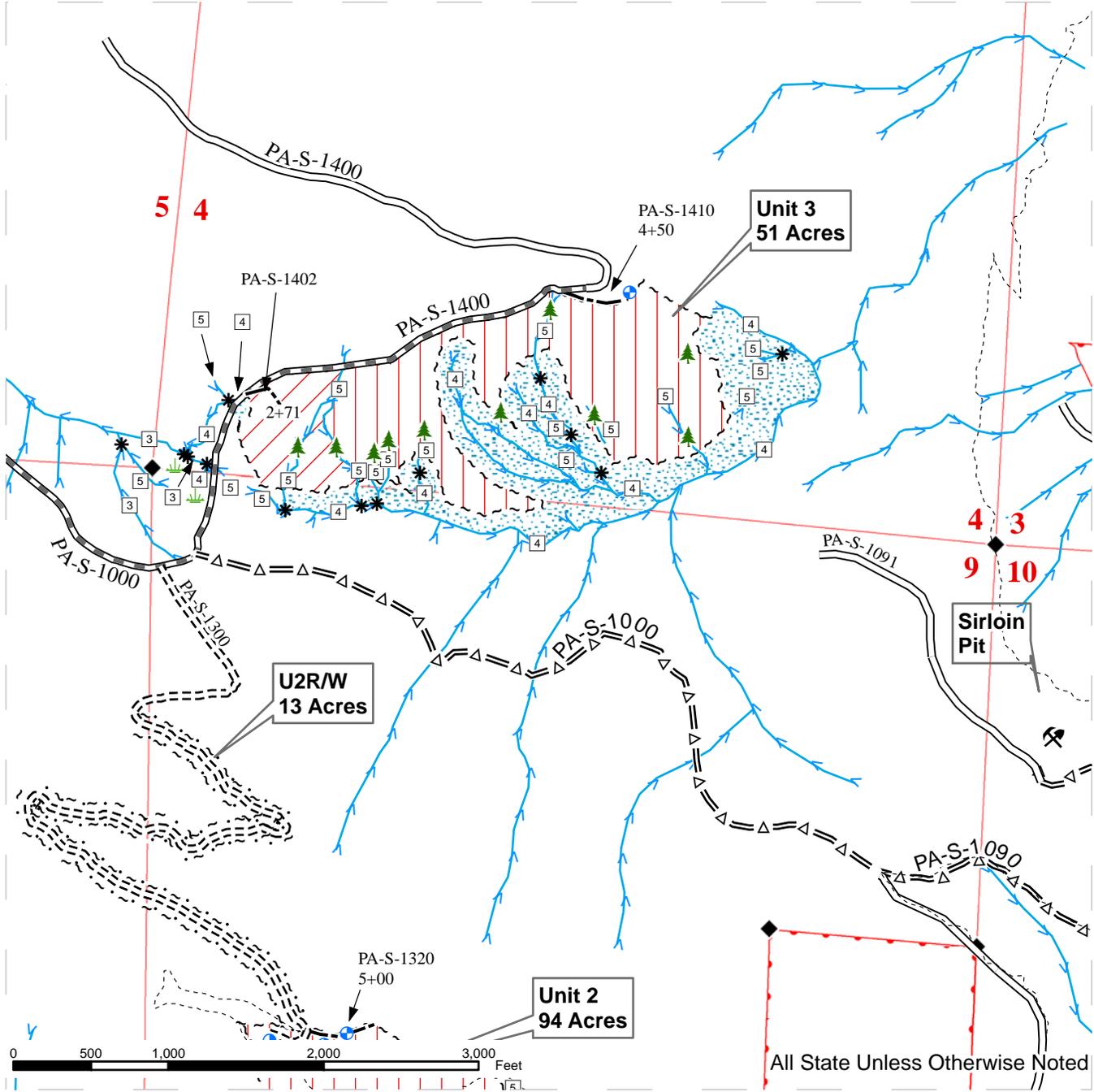


	Cable Methods		Wetland	<b>Roads</b>	
	Ground Methods		RMZ/WMZ	<b>Type</b>	
	DNR Managed Lands		Typed Water		Existing Road
	Sale Boundary Tags		Monumented Corners		Optional Construction
	Right of Way		Rock Pit		Optional Maintenance
	Stream		Boundary Creek Trail		Required Construction
	Stream Type Break				Required Maintenance
	Leave Tree Area				Property Line (bound by Timber Sale Boundary tags)

# TIMBER SALE MAP - DRAFT

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T30N R09W  
**TRUST(S):** State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 640-2000



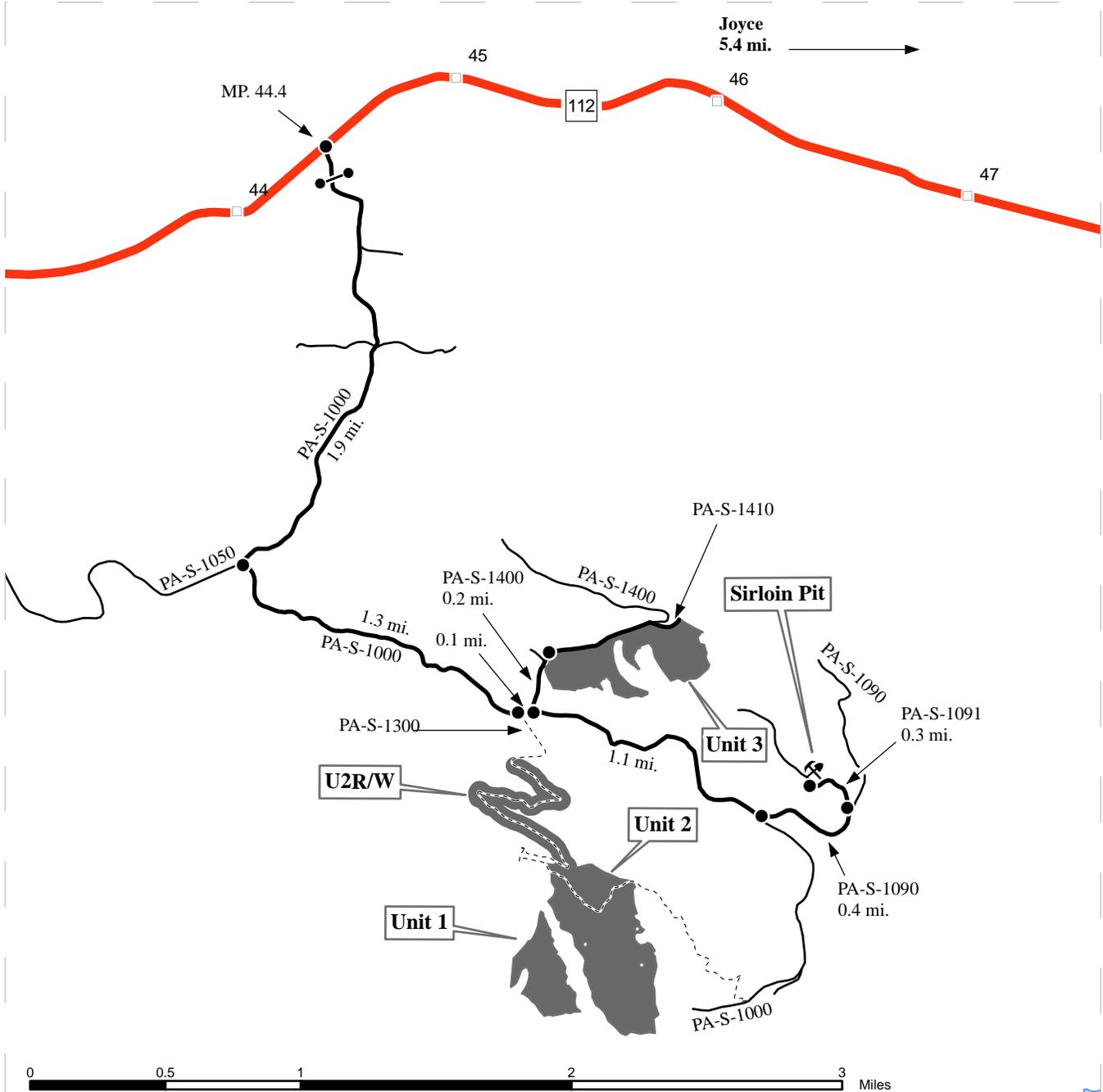
All State Unless Otherwise Noted

Cable Methods	Wetland	<b>Roads</b>
Ground Methods	RMZ/WMZ	<b>Type</b>
DNR Managed Lands	Typed Water	Existing Road
Sale Boundary Tags	Monumented Corners	Optional Construction
Right of Way	Rock Pit	Optional Maintenance
Stream	Boundary Creek Trail	Required Construction
Stream Type Break		Required Maintenance
Leave Tree Area		Property Line (bound by Timber Sale Boundary tags)

# DRIVING MAP

**SALE NAME:** Boundary Bascule  
**AGREEMENT#:** 30-090289  
**TOWNSHIP(S):** T30N R09W  
**TRUST(S):** State Forest Board Transfer (01), Common School (03), Capitol Grant (07)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 640-2000



- Timber Sale Unit
- Highways
- Milepost Markers
- Sadie Cr. Trail
- Forest Road
- Gate
- Rock\_Pit

**DRIVING DIRECTIONS:**

Drive west on Highway 112 to milepost 44.4 and turn left (south) onto the PA-S-1000 Road. Go thru gate (AA-1 lock), drive 1.9 miles, turn left (southeast) and drive 1.3 miles. Park and walk the PA-S-1300 (Sadie Cr. Trail) to U2R/W and Unit 2. Walk cross-country to U1 from Unit 2.

Continue driving 0.1 miles on the PA-S-1000. Turn left (north) onto PA-S-1400 and drive 0.2 miles to Unit 3.

From Junction with PA-S-1400 drive 1.1 miles. Turn left (east) onto PA-S-1090 and drive 0.4 miles. Turn left (north) onto PA-S-1091 and drive 0.3 miles to Sirloin Pit.

Alternate foot routes to Units 1 & 2: Park at the end of the PA-S-1000 Road and walk west into the bottom of Units 1 & 2. Near the end of the S-1000 one can also walk northwest on the Sadie Cr. Trail into the top of Unit 2.



# Cruise Narrative

<b>Sale Name:</b> Boundary Bascule	<b>Region:</b> Olympic
<b>Agreement #:</b> 30-090289	<b>District:</b> Straits
<b>Lead Cruiser:</b> Richard B. Klein Contract Cruise Job No. 2014-063	<b>Completion Date:</b> Field Work 12/18/2014 Report 12/31/2014 Revision 4/28/2015
<b>Other Cruisers:</b> James C. Murphy	

## Unit acreage specifications:

Unit #	Cruised Acres	Cruised acres agree with sale acres? Y/N	If acres do not agree explain why.
1	24.5	Y	
2	91.9	Y	
3	50.5	Y	
U2 R/W	13.2	Y	
<b>Total</b>	<b>180.1</b>	<b>Y</b>	

## Unit cruise specifications:

Unit #	Sample Type (VP,FP,ITS,100 %)	Expansion Factor (baf,full/half)	Sighting Height (4.5', 16')	Grid Size (plot spacing)	Plot Ratio (cruise/count)	Number of plots
1	VP	40 full	16'	3.5 ch x 3.5 ch	2:1	20
2	VP	40 full	16'	6 ch x 3.5 ch	1:1	45
<del>3</del>	<del>VP</del>	<del>47 full</del>	<del>16'</del>	<del>4 ch x 4 ch</del>	<del>2:1</del>	<del>32</del>
U2 R/W	ITS	5	N/A	20% of area	25% of trees	11
<b>3</b>	<b>VP</b>	<b>54.45</b>	<b>4.5</b>	<b>250'X250,</b>	<b>1:1</b>	<b>32</b>

## Sale/Cruise Description:

<b>Minor species cruise intensity</b>	Minor species sampled using same cruise plots.					
<b>Minimum cruise spec:</b>	40% of Form Factor at 16 ft. D.O.B or 5 inch top or merchantable top					
<b>Average ring count:</b>	<b>DF =</b>	9	<b>WH =</b>	10	<b>SS =</b>	5
<b>Leave/take tree description:</b>	Leave tree clumps are bounded out with yellow tags, pink flashers and blue paint. Individual leave trees are marked with blue bands and two blue butt marks.					
<b>Other conditions:</b>	Exterior boundaries are marked with white tags and pink flashers					

**Sort Description:**

**HQ** – Logs meeting the following criteria: Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1 ½" in diameter, numbering not more than an average of one per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators ½" in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log. (minimum diameter 8".)

**HB** – Logs meeting the following criteria: Surface characteristics for a B sort will have sound tight knots not to exceed 1 ½" in diameter. May include logs with not more than two larger knots up to 2 ½" in diameter. Logs will have a growth ring count of 6 or more rings per inch in the outer third to end of the log. (minimum diameter 8".)

**R** – Logs meeting the following criteria: Gross diameter of 12 inches or greater, excessive knots greater than 2 ½ inches with recovery less than 65% of the net scale.

**Field Observations:**

Boundary Bascule includes over 80% uphill cable yarding, with ground-based harvesting in western-most portions of U-3 and for timber in U-2 R/W only. Terrain slopes over 55% gradient on the majority of Units 1 & 2. Access is via the PA-S-1000, PA-S-1400 & PA-S-1300 roads. The sale includes required construction following an existing old road grade for the PA-S-1300 road, and also includes optional use & maintenance of the PA-S-1090 road en-route to the "Sirloin Pit" potentially usable as a rock source for road surfacing material. A recreational hiking trail – the "Boundary Creek Trail" – extends across north part of interior of U-2.

Overall, the sale is composed of +90% conifer, with +10% red alder intermixed. Douglas fir is major species and composes +71% of the volume overall. Western hemlock and red cedar are the predominant minor conifer species in the sale and include +17% and +3% of the overall volume respectively. Trace quantities only of grand fir and bigleaf maple also picked up in the cruise, but these two species combined comprise +1.5% only of the overall sale volume.

The overall stocking for this sale is 291 trees per acre; 313 BA/acre; 39 MBF/acre with a 14.1" average DBH by stem count & 57' average bole length. Highest volume per acre by a significant margin, however, occurs in U3 with comprises 27% of the total sale land but includes 44% of the overall sale volume. U3 includes 187 trees per acre, 359 BA/acre; 63 MBF/acre with 18.8" average DBH & 79' average bole.

On an overall basis: Douglas Fir averages 14.2 DBH with a bole height of 60'; dominants over 32" with over 120' bole lengths recorded in places. High quality Douglas Fir recorded in U3 and to a limited extent in the other units and accounts for 11% of the DF volume. Estimated stand ages: U1 – 68 yrs.; U2 – 62 yrs.; U3 – 84yrs.

**Grants:** 01, 03 & 07

**Prepared By:**

Peter C. Blansett, Principal Forester; [pblansett@sanforest.com](mailto:pblansett@sanforest.com)  
S.A. Newman, Forest Engineers, Inc.; est. 1946  
Offices: 3216 Wetmore Avenue, Suite 205, Everett, WA 98201-4368  
Mail: P. O. Box 156, Everett WA 98206-0156  
Phone 425-259-4411; Facsimile 425-258-4435  
Web: [www.sanforest.com](http://www.sanforest.com)

**Special Notes:**

Kevin Peterson DNR has edited this contract cruise, the original sale acres have been changed. I updated the new acreage and removed a plot from Unit 1 and two plots from Unit 2, as they were no longer within the timber sale boundary.

Total Volume has gone from 7,153 MBF to 7017 MBF.

**Special Note:**

The cruise for Unit 3 has been revised with a new cruise. The new cruise was conducted on Nov. 5, 2015 and volumes have been adjusted to the sale accordingly. Cruised by Richards, Kirner and Petersen.  
D. Richards, Chief check cruiser, WADNR

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T30N R09W S04 TyU3 THRU T30N R09W S16 Ty0002				Project: <b>BASCULE2</b>										Page <b>1</b>							
				Acres <b>180.10</b>										Date <b>11/6/2015</b>			Time <b>9:32:00AM</b>				
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	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
RA	D	2S		27	10.3	1,291	1,158	209			88	12	5	76	19	29	14	200	1.55	5.8	
RA	D	3S		22	10.8	1,096	978	176		74	26		5	67	27	30	11	111	0.94	8.8	
RA	D	4S		7	9.4	311	282	51	15	85			10	54	3	33	31	7	48	0.53	5.9
RA	D	PU		44	6.7	1,994	1,861	335	37	47	16	0	16	53	5	26	24	6	37	0.45	50.1
<b>RA Totals</b>				12	8.8	4,692	4,279	771	17	43	37	4	10	63	2	25	26	7	61	0.63	70.6
DF	D	2S		36	4.7	9,782	9,323	1,679			59	41			1	99	40	14	316	1.81	29.5
DF	D	3S		31	4.2	8,198	7,850	1,414		98	2		0	1	12	87	38	8	95	0.71	83.0
DF	D	4S		13	.7	3,319	3,297	594	68	32			18	37	10	34	27	5	31	0.34	104.7
DF	D	PU		7	1.2	1,663	1,643	296	82	9	9		62	30		7	18	5	21	0.25	76.9
DF	HQ	SM		5	2.3	1,182	1,155	208				100			11	89	39	21	718	3.46	1.6
DF	HQ	2S		5	2.9	1,402	1,360	245			27	73				100	39	15	389	2.13	3.5
DF	HQ	3S		3	.0	660	660	119		100					8	92	37	10	128	0.88	5.2
<b>DF Totals</b>				72	3.5	26,206	25,288	4,554	14	38	25	23	6	7	6	80	29	7	83	0.71	304.4
DF	D	D	2S	89	28.6	116	83	15			42	58				100	40	15	250	1.68	.3
DF	D	D	PU	11		10	10	2		100						100	36	7	60	0.59	.2
<b>DF Totals</b>				0	26.3	126	93	17		11	37	52				100	39	12	187	1.34	.5
RC	D	3S		77	10.9	1,041	928	167		47	39	14		5	48	46	34	9	106	1.00	8.8
RC	D	4S		23	.2	277	277	50	84	16			32	2	18	48	19	5	21	0.40	13.2
<b>RC Totals</b>				3	8.6	1,319	1,205	217	19	40	30	11	7	4	42	47	25	7	55	0.73	22.0
WH	D	2S		26	11.4	1,124	995	179			49	51				100	40	16	379	2.33	2.6
WH	D	3S		36	2.9	1,334	1,295	233		93	3	4	0		11	89	38	9	104	0.76	12.4
WH	D	4S		19	.9	718	712	128	60	40			9	25	41	24	29	5	34	0.35	20.9
WH	D	PU		16		585	585	105	100				42	46		12	21	5	23	0.26	25.1
WH	HQ	2S		3		102	102	18				100				100	36	18	480	2.73	.2
<b>WH Totals</b>				10	4.5	3,863	3,689	664	28	40	14	18	9	12	12	68	28	6	60	0.56	61.3
BM	D	1S		9	48.9	64	33	6				100				100	30	19	230	3.77	.1
BM	D	2S		21	18.7	95	77	14			100		15	85			27	14	175	1.65	.4
BM	D	4S		12	25.0	62	46	8	42	58			58			42	28	7	30	0.59	1.5
BM	D	PU		58	16.6	249	208	37	16	52	32		8	75	8	9	25	7	45	0.56	4.6
<b>BM Totals</b>				1	22.5	470	364	66	15	37	39	9	15	70	5	10	26	8	54	0.72	6.7
GF	D	2S		84	9.4	217	197	35			39	61				100	40	17	505	2.70	.4
GF	D	3S		14		32	32	6		100			8			92	33	10	123	0.81	.3
GF	D	4S		2		4	4	1		100			100				19	6	20	0.37	.2
<b>GF Totals</b>				1	8.1	254	233	42		16	33	52	3			97	33	13	274	1.80	.9
<b>Totals</b>					4.8	36,929	35,151	6,331	16	38	25	20	7	15	7	71	28	7	75	0.68	466.3

TC PSTATS		<b>PROJECT STATISTICS</b>							PAGE	<b>1</b>	
		<b>PROJECT</b>		<b>BASCULE2</b>			DATE		11/6/2015		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09	04	BOUNDARY BAS	U3	THR	180.10	111	972	S	W	
30N	09W	16	BASCULE	0002							
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		111	972	8.8							
CRUISE		72	505	7.0	53,164	.9					
DBH COUNT											
REFOREST											
COUNT		39	215	5.5							
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	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	213	189.9	13.9	57	53.6	199.5	26,206	25,288	6,510	6,337	
DOUG FIR-D	1	.2	23.0	120	0.1	.5	126	93	26	26	
WHEMLOCK	102	46.2	11.7	47	10.1	34.6	3,863	3,689	998	969	
R ALDER	154	41.1	13.9	53	11.6	43.2	4,692	4,279	1,252	1,151	
WR CEDAR	26	13.9	15.9	57	4.8	19.1	1,319	1,205	417	401	
BL MAPLE	7	3.6	16.2	54	1.3	5.2	470	364	141	127	
GRAND F	2	.3	25.8	110	0.2	1.0	254	233	51	51	
<b>TOTAL</b>	<b>505</b>	<b>295.2</b>	<b>13.7</b>	<b>55</b>	<b>81.8</b>	<b>303.1</b>	<b>36,929</b>	<b>35,151</b>	<b>9,394</b>	<b>9,062</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF	<b>SAMPLE TREES - BF</b>				<b># OF TREES REQ.</b>		<b>INF. POP.</b>		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		118.2	8.1	330	359	388					
DOUG FIR-D											
WHEMLOCK		152.1	15.0	128	151	173					
R ALDER		116.8	9.4	68	75	82					
WR CEDAR		134.0	26.8	132	180	228					
BL MAPLE		79.8	32.5	98	146	193					
GRAND F		92.9	87.0	175	1,340	2,505					
<b>TOTAL</b>		<b>152.9</b>	<b>6.8</b>	<b>207</b>	<b>222</b>	<b>238</b>	<b>934</b>	<b>233</b>	<b>104</b>		
CL	68.1	COEFF	<b>SAMPLE TREES - CF</b>				<b># OF TREES REQ.</b>		<b>INF. POP.</b>		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		99.8	6.8	78	84	89					
DOUG FIR-D											
WHEMLOCK		141.8	14.0	32	38	43					
R ALDER		119.2	9.6	17	19	21					
WR CEDAR		116.0	23.2	48	62	77					
BL MAPLE		86.1	35.0	34	52	70					
GRAND F		86.6	81.1	53	281	509					
<b>TOTAL</b>		<b>131.9</b>	<b>5.9</b>	<b>51</b>	<b>54</b>	<b>57</b>	<b>695</b>	<b>174</b>	<b>77</b>		
CL	68.1	COEFF	<b>TREES/ACRE</b>				<b># OF PLOTS REQ.</b>		<b>INF. POP.</b>		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		107.6	10.2	171	190	209					
DOUG FIR-D		1053.6	99.9	0	0	0					
WHEMLOCK		208.5	19.8	37	46	55					
R ALDER		194.4	18.4	34	41	49					
WR CEDAR		242.5	23.0	11	14	17					
BL MAPLE		422.1	40.0	2	4	5					
GRAND F		835.0	79.2	0	0	0					
<b>TOTAL</b>		<b>64.8</b>	<b>6.1</b>	<b>277</b>	<b>295</b>	<b>313</b>	<b>168</b>	<b>42</b>	<b>19</b>		

**PROJECT STATISTICS**  
**PROJECT BASCULE2**

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09	04	BOUNDARY BAS	U3	THR	180.10	111	972	S	W
30N	09W	16	BASCULE	0002						

CL	68.1	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR		73.2	6.9	186	200	213			
DOUG FIR-D		1053.6	99.9	0	0	1			
WHEMLOCK		151.6	14.4	30	35	40			
R ALDER		199.2	18.9	35	43	51			
WR CEDAR		278.9	26.4	14	19	24			
BL MAPLE		462.3	43.8	3	5	7			
GRAND F		741.6	70.3	0	1	2			
<b>TOTAL</b>		37.5	3.6	292	303	314	56	14	6

CL	68.1	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR		82.3	7.8	23,314	25,288	27,261			
DOUG FIR-D		1053.6	99.9	0	93	185			
WHEMLOCK		151.9	14.4	3,158	3,689	4,220			
R ALDER		207.4	19.7	3,437	4,279	5,121			
WR CEDAR		256.9	24.4	912	1,205	1,499			
BL MAPLE		549.4	52.1	174	364	554			
GRAND F		759.2	72.0	65	233	401			
<b>TOTAL</b>		52.1	4.9	33,413	35,151	36,889	109	27	12

CL	68.1	COEFF	NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15
DOUG FIR		75.3	7.1	5,884	6,337	6,789			
DOUG FIR-D		1053.6	99.9	0	26	51			
WHEMLOCK		147.7	14.0	834	969	1,105			
R ALDER		204.7	19.4	928	1,151	1,375			
WR CEDAR		239.8	22.7	310	401	492			
BL MAPLE		473.9	44.9	70	127	184			
GRAND F		749.6	71.1	15	51	86			
<b>TOTAL</b>		43.6	4.1	8,687	9,062	9,437	76	19	8

<b>T30N R09W S04 TU3</b>										<b>T30N R09W S04 TU3</b>				
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>					
30N	09W	04	BOUNDARY BAS	U3	50.50	32	118	S	W					

S Sp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent 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		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
DF	D	2S	54	2.7	21,955	21,365	1,079		46	54					100	40	15	381	2.08	56.0	
DF	D	3S	17	1.7	7,159	7,038	355		100	0			1	3	3	94	38	8	103	0.79	68.4
DF	D	4S	4		1,458	1,458	74	76	24				16	36	21	27	25	6	27	0.36	53.5
DF	D	PU			152	152	8	75	25				100				9	5	10	0.21	15.1
DF	HQ	SM	11	2.3	4,216	4,119	208			100					11	89	39	21	718	3.46	5.7
DF	HQ	2S	11	3.2	4,599	4,452	225			20	80					100	40	16	435	2.31	10.2
DF	HQ	3S	3		947	947	48		100							100	40	10	160	1.02	5.9
<b>DF</b>	<b>Totals</b>		78	2.4	40,486	39,532	1,996	3	21	27	48		1	2	2	95	33	10	184	1.28	214.9
DF	D	2S	89	28.6	413	295	15		42	58					100	40	15	250	1.68	1.2	
DF	D	PU	11		35	35	2		100						100	36	7	60	0.59	.6	
<b>DF</b>	<b>D</b>	<b>Totals</b>	1	26.3	448	330	17	11	37	52					100	39	12	187	1.34	1.8	
WH	D	2S	35	12.2	1,994	1,750	88		41	59					100	40	16	376	2.52	4.7	
WH	D	3S	38		1,930	1,930	97		100						9	91	39	9	110	0.78	17.5
WH	D	4S	13		643	643	32	45	55				15	37		48	26	6	33	0.38	19.6
WH	D	PU	14		664	664	34	100							63	37	28	5	29	0.31	22.6
<b>WH</b>	<b>Totals</b>		10	4.7	5,232	4,988	252	19	46	14	21		2	13	4	81	31	7	78	0.69	64.4
RC	D	3S	65	12.4	1,751	1,534	77		53	29	18				100	38	9	116	1.22	13.2	
RC	D	4S	35		795	795	40	81	19				17		23	60	19	5	21	0.43	37.8
<b>RC</b>	<b>Totals</b>		5	8.5	2,546	2,329	118	28	41	19	12		6		8	86	24	6	46	0.76	51.0
RA	D	2S	42	8.1	990	909	46		100				22	43		35	30	13	170	1.48	5.3
RA	D	3S	14	5.4	313	296	15		100					100			28	10	105	0.96	2.8
RA	D	4S	32	6.3	727	681	34	22	78				15	36		49	31	7	47	0.52	14.4
RA	D	PU	12		256	256	13	97	3				25	60	15		14	5	13	0.28	20.1
<b>RA</b>	<b>Totals</b>		4	6.3	2,286	2,143	108	19	39	42			17	51	2	30	23	7	50	0.65	42.6
BM	D	1S	32	48.9	229	117	6			100				100			30	19	230	3.77	.5
BM	D	2S	12	20.0	51	41	2			100			100				20	12	80	1.40	.5
BM	D	4S	47	25.0	221	166	8	42	58				58			42	28	7	30	0.59	5.5
BM	D	PU	9	50.0	64	32	2	100					100				15	6	9	0.24	3.7
<b>BM</b>	<b>Totals</b>		1	37.1	565	355	18	29	27	11	33		47	33		20	23	7	35	0.75	10.2
GF	D	2S	84	9.4	775	702	35		39	61					100	40	17	505	2.70	1.4	
GF	D	3S	14		115	115	6		100				8			92	33	10	123	0.81	.9
GF	D	4S	2		14	14	1		100				100				19	6	20	0.37	.7
<b>GF</b>	<b>Totals</b>		2	8.1	904	831	42		16	33	52		3			97	33	13	274	1.80	3.0
<b>Type</b>	<b>Totals</b>			3.7	52,467	50,509	2,551	7	25	26	42		2	5	3	90	30	9	130	1.07	387.9

<b>T30N R09W S09 T0004</b>										<b>T30N R09W S09 T0004</b>				
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>					
30N	09W	09	BASCULE RW	0004	13.20	11	405	S	W					

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			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	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
WH	D	2S		27	12.1	2,457	2,161	29			58	42			100	39	14	281	1.66	7.7	
WH	D	3S		41	4.3	3,345	3,203	42			100				100	38	9	108	0.73	29.6	
WH	D	4S		27		2,073	2,073	27	56	44			6	37	23	34	30	5	36	0.32	58.1
WH	D	PU		5		362	362	5	100					100		24	5	30	0.24	12.1	
<b>WH</b>	<b>Totals</b>			56	5.3	8,237	7,798	103	19	53	16	12	2	14	6	78	32	7	73	0.56	107.5
RA	D	2S		8	8.3	288	264	3			100			100		30	12	147	1.16	1.8	
RA	D	3S		8	4.9	246	234	3		54	46		18	82		24	11	97	0.97	2.4	
RA	D	4S		4		120	120	2		100				100		32	6	50	0.34	2.4	
RA	D	PU		80	.5	2,344	2,332	31	59	36	2	4	19	60	18	3	26	6	33	0.30	70.1
<b>RA</b>	<b>Totals</b>			21	1.6	2,997	2,949	39	47	37	14	3	16	63	18	2	26	6	38	0.35	76.7
DF	D	2S		59	2.0	1,361	1,333	18			45	55		15	85	37	15	320	1.98	4.2	
DF	D	3S		32	1.9	736	722	10		62	38			10	90	38	9	104	0.81	6.9	
DF	D	4S		9		181	181	2	69	31			31	38	31	26	6	33	0.35	5.6	
<b>DF</b>	<b>Totals</b>			16	1.8	2,278	2,236	30	6	22	39	33	2	6	9	83	34	9	134	1.02	16.7
RC	D	3S		92	20.4	974	776	10		4	96			4	96	31	18	390	3.30	2.0	
RC	D	4S		8	10.0	66	60	1	56	44				100		27	5	30	0.61	2.0	
<b>RC</b>	<b>Totals</b>			6	19.7	1,041	835	11	4	7	96			11	89	29	12	210	2.03	4.0	
<b>Type Totals</b>					5.0	14,553	13,819	182	22	42	18	18	5	23	14	58	30	7	67	0.56	204.9

<b>T30N R09W S16 T0001</b>										<b>T30N R09W S16 T0001</b>				
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>					
30N	09W	16	BASCULE	0001	24.50	21	117	S	W					

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			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	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
DF	D	2S		26	8.2	8,341	7,653	188		94	6				100	40	14	260	1.56	29.4	
DF	D	3S		38	3.2	11,315	10,949	268		100				0	14	86	37	8	94	0.70	116.3
DF	D	4S		20	2.8	5,814	5,652	138	63	37			16	13	10	61	30	5	36	0.35	155.7
DF	D	PU		8		2,473	2,473	61	59	24	17		21	61		17	22	6	31	0.34	80.0
DF	HQ	2S		3		824	824	20		100						100	36	12	180	1.23	4.6
DF	HQ	3S		5		1,234	1,234	30		100					33	67	36	10	136	0.89	9.1
<b>DF</b>	<b>Totals</b>			80	4.1	30,000	28,785	705	17	52	29	2	5	8	8	79	32	7	73	0.61	395.0
WH	D	2S		29	8.9	1,153	1,050	26		61	39					100	40	17	414	2.29	2.5
WH	D	3S		32	5.0	1,230	1,169	29		100			3			97	39	9	116	0.82	10.1
WH	D	4S		20	6.4	751	703	17	63	37				35	27	38	32	5	36	0.35	19.6
WH	D	PU		19		658	658	16	100				100				15	5	20	0.20	32.9
<b>WH</b>	<b>Totals</b>			10	5.6	3,792	3,581	88	31	40	18	11	19	7	5	68	25	6	55	0.54	65.2
RA	D	3S		15	14.3	543	466	11		100						100	30	9	60	0.67	7.8
RA	D	PU		85		2,540	2,540	62	33	67			5	95			26	6	40	0.45	63.7
<b>RA</b>	<b>Totals</b>			8	2.5	3,083	3,006	74	28	72			4	96			26	7	42	0.47	71.5
RC	D	4S		100		198	198	5	100							100	16	5	20	0.25	9.9
<b>RC</b>	<b>Totals</b>			1		198	198	5	100							100	16	5	20	0.25	9.9
BM	D	PU		100		223	223	5	25	75			25	75			25	7	40	0.52	5.6
<b>BM</b>	<b>Totals</b>			1		223	223	5	25	75			25	75			25	7	40	0.52	5.6
<b>Type Totals</b>					4.0	37,297	35,792	877	20	52	25	2	7	16	7	70	30	7	65	0.58	547.1

<b>T30N R09W S16 T0002</b>										<b>T30N R09W S16 T0002</b>				
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>					
30N	09W	16	BASCULE	0002	91.90	47	248	S	W					

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			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	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
DF	D	2S		21	8.3	4,688	4,298	395			79	21			5	95	39	13	231	1.47	18.6
DF	D	3S		43	5.7	9,009	8,494	781			97	3			15	85	37	8	91	0.69	93.1
DF	D	4S		21		4,127	4,127	379	69	31			19	46	9	26	27	5	31	0.33	133.5
DF	D	PU		12	1.6	2,516	2,476	228	89	5	7		72	23		5	18	5	20	0.24	121.1
DF	HQ	3S		3		444	444	41		100						100	36	9	100	0.76	4.4
<b>DF</b>	<b>Totals</b>			67	4.5	20,784	19,839	1,823	25	51	19	4	13	12	9	65	27	6	54	0.52	370.7
RA	D	2S		28	10.9	1,945	1,733	159			84	16			85	15	29	15	212	1.58	8.2
RA	D	3S		27	11.1	1,795	1,595	147			70	30		6	61	33	30	11	119	0.98	13.4
RA	D	4S		3	16.7	194	161	15		100					100		30	8	50	0.57	3.2
RA	D	PU		42	9.4	2,753	2,494	229	32	45	23		18	40	4	38	26	6	41	0.49	60.1
<b>RA</b>	<b>Totals</b>			20	10.5	6,687	5,983	550	13	40	42	5	9	61	1	29	27	8	70	0.69	84.9
WH	D	2S		16	10.7	446	398	37			51	49			100		40	18	493	2.66	.8
WH	D	3S		29	5.3	745	706	65			75	12	13		25	75	36	8	91	0.72	7.8
WH	D	4S		23		556	556	51	72	28			10	8	82		30	5	34	0.34	16.6
WH	D	PU		23		554	554	51	100				55	45			20	5	21	0.24	26.3
WH	HQ	2S		9		200	200	18			100					100	36	18	480	2.73	.4
<b>WH</b>	<b>Totals</b>			8	3.5	2,501	2,413	222	40	28	12	20	15	12	26	47	26	6	47	0.46	51.9
RC	D	3S		95	7.9	939	864	79			47	53			10	90	32	9	90	0.74	9.6
RC	D	4S		5		45	45	4	100						100		18	5	20	0.24	2.2
<b>RC</b>	<b>Totals</b>			3	7.5	983	909	84	5	44	51		5	10	85		29	8	77	0.68	11.9
BM	D	2S		28	18.5	158	129	12			100				100		30	15	220	1.73	.6
BM	D	PU		72	16.1	394	330	30	10	51	39			80	10	11	30	8	60	0.63	5.5
<b>BM</b>	<b>Totals</b>			2	16.8	552	459	42	7	36	56			85	7	8	30	8	75	0.74	6.1
<b>Type Totals</b>					6.0	31,507	29,604	2,721	23	46	25	6	12	23	11	53	27	7	56	0.55	525.5

TC TSTATS		STATISTICS							PAGE	1	
		PROJECT BASCULE2							DATE	11/6/2015	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
30N	09W	04	BOUNDARY BAS	U3	50.50	32	202	S	W		
				TREES	ESTIMATED		PERCENT				
				PER PLOT	TOTAL		SAMPLE				
		PLOTS	TREES		TREES		TREES				
TOTAL		32	202	6.3							
CRUISE		22	118	5.4	9,714		1.2				
DBH COUNT											
REFOREST											
COUNT		10	51	5.1							
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	70	86.9	21.0	88	45.7	209.3	40,486	39,532	9,179	9,180	
DOUG FIR-D	1	.6	23.0	120	0.4	1.7	448	330	92	92	
WHEMLOCK	11	44.0	13.6	52	12.0	44.2	5,232	4,988	1,385	1,386	
WR CEDAR	16	30.8	13.9	57	8.7	32.5	2,546	2,329	921	920	
R ALDER	15	23.1	13.4	50	6.2	22.5	2,286	2,143	623	622	
BL MAPLE	3	6.0	15.1	46	1.9	7.5	565	355	177	177	
GRAND F	2	.9	25.8	110	0.7	3.4	904	831	180	180	
<b>TOTAL</b>	<b>118</b>	<b>192.4</b>	<b>17.5</b>	<b>69</b>	<b>76.8</b>	<b>321.1</b>	<b>52,467</b>	<b>50,509</b>	<b>12,557</b>	<b>12,558</b>	
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	10	15		
DOUG FIR		73.8	8.8	666	731	795					
DOUG FIR-D											
WHEMLOCK		130.9	41.3	170	290	410					
WR CEDAR		93.3	24.1	117	154	192					
R ALDER		70.2	18.7	123	151	180					
BL MAPLE		125.4	86.8	17	127	237					
GRAND F		92.9	87.0	175	1,340	2,505					
<b>TOTAL</b>		<b>100.3</b>	<b>9.2</b>	<b>482</b>	<b>531</b>	<b>580</b>	<b>402</b>	<b>100</b>	<b>45</b>		
CL:	68.1 %	COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		60.7	7.2	149	161	172					
DOUG FIR-D											
WHEMLOCK		122.2	38.6	47	77	106					
WR CEDAR		96.9	25.0	48	64	80					
R ALDER		64.8	17.3	36	43	51					
BL MAPLE		116.5	80.6	12	60	109					
GRAND F		86.6	81.1	53	281	509					
<b>TOTAL</b>		<b>82.1</b>	<b>7.6</b>	<b>115</b>	<b>124</b>	<b>134</b>	<b>269</b>	<b>67</b>	<b>30</b>		
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
DOUG FIR		74.6	13.2	75	87	98					
DOUG FIR-D		565.7	99.9	0	1	1					
WHEMLOCK		127.2	22.5	34	44	54					
WR CEDAR		129.0	22.8	24	31	38					
R ALDER		331.6	58.6	10	23	37					
BL MAPLE		230.7	40.7	4	6	8					
GRAND F		445.3	78.6	0	1	2					
<b>TOTAL</b>		<b>22.7</b>	<b>4.0</b>	<b>185</b>	<b>192</b>	<b>200</b>	<b>21</b>	<b>5</b>	<b>2</b>		

TC TSTATS				STATISTICS			PAGE	2		
PROJECT				BASCULE2			DATE	11/6/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09W	04	BOUNDARY BAS	U3	50.50	32	202	S	W	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		57.3	10.1	188	209	230				
DOUG FIR-D		565.7	99.9	0	2	3				
WHEMLOCK		114.6	20.2	35	44	53				
WR CEDAR		122.8	21.7	25	33	40				
R ALDER		234.4	41.4	13	23	32				
BL MAPLE		211.5	37.4	5	8	10				
GRAND F		393.5	69.5	1	3	6				
<b>TOTAL</b>		<i>11.7</i>	<i>2.1</i>	<i>315</i>	<i>321</i>	<i>328</i>	<i>5</i>	<i>1</i>	<i>1</i>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		68.6	12.1	34,739	39,532	44,324				
DOUG FIR-D		565.7	99.9	0	330	660				
WHEMLOCK		117.4	20.7	3,954	4,988	6,023				
WR CEDAR		129.1	22.8	1,798	2,329	2,860				
R ALDER		210.6	37.2	1,346	2,143	2,940				
BL MAPLE		217.5	38.4	219	355	492				
GRAND F		403.3	71.2	239	831	1,423				
<b>TOTAL</b>		<i>46.3</i>	<i>8.2</i>	<i>46,382</i>	<i>50,509</i>	<i>54,637</i>	<i>85</i>	<i>21</i>	<i>9</i>	
CL:	68.1 %	COEFF	NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		61.5	10.9	8,183	9,180	10,177				
DOUG FIR-D		565.7	99.9	0	92	184				
WHEMLOCK		116.6	20.6	1,100	1,386	1,671				
WR CEDAR		128.5	22.7	711	920	1,129				
R ALDER		216.8	38.3	384	622	861				
BL MAPLE		213.1	37.6	111	177	244				
GRAND F		397.9	70.3	54	180	307				
<b>TOTAL</b>		<i>31.2</i>	<i>5.5</i>	<i>11,866</i>	<i>12,558</i>	<i>13,250</i>	<i>39</i>	<i>10</i>	<i>4</i>	

TC TSTATS				STATISTICS				PAGE	1	
PROJECT				BASCULE2				DATE	11/6/2015	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09W	09	BASCULE RW	0004	13.20	11	405	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		11	405	36.8						
CRUISE		11	192	17.5	2,025		9.5			
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	
WHEMLOCK	67	73.5	12.7	59	18.2	64.7	8,237	7,798	2,093	1,955
R ALDER	115	68.9	9.5	46	11.0	34.0	2,997	2,949	719	690
DOUG FIR	6	8.3	18.8	74	3.7	16.0	2,278	2,236	579	570
WR CEDAR	4	2.7	24.5	51	1.7	8.7	1,041	835	292	235
<b>TOTAL</b>	<i>192</i>	<i>153.4</i>	<i>12.1</i>	<i>54</i>	<i>35.4</i>	<i>123.4</i>	<i>14,553</i>	<i>13,819</i>	<i>3,684</i>	<i>3,450</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	10	15		
WHEMLOCK	115.5	14.1	91	106	121					
R ALDER	102.3	9.5	39	43	47					
DOUG FIR	100.1	44.6	149	268	388					
WR CEDAR	181.0	103.4		315	641					
<b>TOTAL</b>	<i>166.3</i>	<i>12.0</i>	<i>68</i>	<i>78</i>	<i>87</i>	<i>1,105</i>	<i>276</i>	<i>123</i>		
CL: 68.1 %	COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK	107.3	13.1	23	27	30					
R ALDER	108.6	10.1	9	10	11					
DOUG FIR	84.9	37.8	43	68	94					
WR CEDAR	162.5	92.9	6	89	171					
<b>TOTAL</b>	<i>165.2</i>	<i>11.9</i>	<i>17</i>	<i>19</i>	<i>22</i>	<i>1,089</i>	<i>272</i>	<i>121</i>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			73	73	73					
R ALDER			69	69	69					
DOUG FIR	92.2	29.1	6	8	11					
WR CEDAR	79.3	25.0	2	3	3					
<b>TOTAL</b>			<i>153</i>	<i>153</i>	<i>153</i>					
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			65	65	65					
R ALDER			34	34	34					
DOUG FIR	94.0	29.7	11	16	21					
WR CEDAR	144.0	45.5	5	9	13					
<b>TOTAL</b>			<i>123</i>	<i>123</i>	<i>123</i>					
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15		
WHEMLOCK			7,798	7,798	7,798					
R ALDER			2,949	2,949	2,949					
DOUG FIR	97.5	30.8	1,548	2,236	2,925					
WR CEDAR	174.8	55.2	374	835	1,296					
<b>TOTAL</b>			<i>13,819</i>	<i>13,819</i>	<i>13,819</i>					

TC TSTATS				<b>STATISTICS</b>				PAGE	2	
				PROJECT				DATE	11/6/2015	
				BASCULE2						
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>30N</b>	<b>09W</b>	<b>09</b>	<b>BASCULE RW</b>	<b>0004</b>	13.20	11	405	S	W	
CL:	68.1 %	COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E. %	LOW	AVG	HIGH	5	10	15	
CL:	68.1 %	COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR. %	S.E. %	LOW	AVG	HIGH	5	10	15	
WHEMLOCK				1,955	1,955	1,955				
R ALDER				690	690	690				
DOUG FIR		95.9	30.3	397	570	742				
WR CEDAR		160.8	50.8	115	235	354				
<b>TOTAL</b>				<b>3,450</b>	<b>3,450</b>	<b>3,450</b>				

TC TSTATS		STATISTICS							PAGE	1
		PROJECT		BASCULE2			DATE	11/6/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09W	16	BASCULE	0001	24.50	21	117	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		21	117	5.6						
CRUISE		14	73	5.2	8,310	.9				
DBH COUNT REFOREST COUNT		7	44	6.3						
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	58	236.4	13.8	63	66.4	246.9	30,000	28,785	7,903	7,585
WHEMLOCK	9	54.4	10.8	39	10.5	34.3	3,792	3,581	934	874
R ALDER	4	35.7	13.0	59	9.2	33.2	3,083	3,006	923	893
WR CEDAR	1	9.9	9.0	27	1.5	4.4	198	198	46	40
BL MAPLE	1	2.8	14.0	54	0.8	3.0	223	223	72	70
<b>TOTAL</b>	<b>73</b>	<b>339.2</b>	<b>13.2</b>	<b>58</b>	<b>88.6</b>	<b>321.8</b>	<b>37,297</b>	<b>35,792</b>	<b>9,878</b>	<b>9,463</b>
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	10	15	
DOUG FIR		80.1	10.5	184	205	227				
WHEMLOCK		134.2	47.4	117	222	327				
R ALDER		21.6	12.4	77	88	98				
WR CEDAR										
BL MAPLE										
<b>TOTAL</b>		<b>92.0</b>	<b>10.8</b>	<b>175</b>	<b>197</b>	<b>218</b>	<b>338</b>	<b>84</b>	<b>38</b>	
CL:	68.1 %	COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		71.6	9.4	48	52	57				
WHEMLOCK		123.7	43.7	30	54	77				
R ALDER		24.9	14.2	22	26	30				
WR CEDAR										
BL MAPLE										
<b>TOTAL</b>		<b>81.9</b>	<b>9.6</b>	<b>45</b>	<b>50</b>	<b>55</b>	<b>268</b>	<b>67</b>	<b>30</b>	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		68.1	15.2	200	236	272				
WHEMLOCK		234.4	52.4	26	54	83				
R ALDER		224.4	50.1	18	36	54				
WR CEDAR		458.3	102.4		10	20				
BL MAPLE		458.3	102.4		3	6				
<b>TOTAL</b>		<b>43.9</b>	<b>9.8</b>	<b>306</b>	<b>339</b>	<b>373</b>	<b>81</b>	<b>20</b>	<b>9</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		55.6	12.4	216	247	278				
WHEMLOCK		149.0	33.3	23	34	46				
R ALDER		225.4	50.4	16	33	50				
WR CEDAR		458.3	102.4		4	9				
BL MAPLE		458.3	102.4		3	6				
<b>TOTAL</b>		<b>24.3</b>	<b>5.4</b>	<b>304</b>	<b>322</b>	<b>339</b>	<b>25</b>	<b>6</b>	<b>3</b>	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		59.4	13.3	24,966	28,785	32,605				

TC TSTATS				STATISTICS				PAGE	2	
PROJECT				BASCULE2				DATE	11/6/2015	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
<b>30N</b>	<b>09W</b>	<b>16</b>	<b>BASCULE</b>	<b>0001</b>	24.50	21	117	S	W	
CL:	68.1 %	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15	
WHEMLOCK		140.5	31.4	2,457	3,581	4,705				
R ALDER		225.2	50.3	1,493	3,006	4,518				
WR CEDAR		458.3	102.4		198	401				
BL MAPLE		458.3	102.4		223	451				
<b>TOTAL</b>		<i>34.1</i>	<i>7.6</i>	<i>33,063</i>	<i>35,792</i>	<i>38,521</i>	<i>49</i>	<i>12</i>	<i>5</i>	
CL:	68.1 %	COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		58.5	13.1	6,594	7,585	8,577				
WHEMLOCK		129.8	29.0	621	874	1,128				
R ALDER		225.7	50.5	443	893	1,344				
WR CEDAR		458.3	102.4		40	80				
BL MAPLE		458.3	102.4		70	142				
<b>TOTAL</b>		<i>31.4</i>	<i>7.0</i>	<i>8,799</i>	<i>9,463</i>	<i>10,127</i>	<i>41</i>	<i>10</i>	<i>5</i>	

TC TSTATS		STATISTICS							PAGE	1
		PROJECT		BASCULE2			DATE	11/6/2015		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
30N	09W	16	BASCULE	0002	91.90	47	248	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		47	248	5.3						
CRUISE		25	122	4.9	33,115	.4				
DBH COUNT REFOREST COUNT		22	120	5.5						
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
DOUG FIR	79	260.2	12.1	50	59.8	207.9	20,784	19,839	5,524	5,270
R ALDER	20	48.4	14.9	55	15.2	58.5	6,687	5,983	1,762	1,577
WHEMLOCK	15	41.4	10.5	45	7.7	25.1	2,501	2,413	644	624
WR CEDAR	5	7.3	20.7	67	3.8	17.2	983	909	257	236
BL MAPLE	3	3.1	17.7	63	1.2	5.2	552	459	160	133
<b>TOTAL</b>	<b>122</b>	<b>360.3</b>	<b>12.6</b>	<b>51</b>	<b>88.3</b>	<b>313.9</b>	<b>31,507</b>	<b>29,604</b>	<b>8,347</b>	<b>7,840</b>
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	10	15	
DOUG FIR	99.0	11.1		133	150	167				
R ALDER	60.3	13.8		172	200	227				
WHEMLOCK	171.7	45.9		110	204	298				
WR CEDAR	65.7	32.6		125	186	247				
BL MAPLE	53.9	37.3		117	187	256				
<b>TOTAL</b>	<b>106.9</b>	<b>9.7</b>		<b>151</b>	<b>167</b>	<b>183</b>	<b>456</b>	<b>114</b>	<b>51</b>	
CL:	68.1 %	COEFF	SAMPLE TREES - CF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR	88.6	10.0		35	39	43				
R ALDER	54.3	12.4		45	52	58				
WHEMLOCK	158.1	42.2		28	48	68				
WR CEDAR	65.5	32.6		32	48	64				
BL MAPLE	48.8	33.8		35	53	71				
<b>TOTAL</b>	<b>94.0</b>	<b>8.5</b>		<b>39</b>	<b>43</b>	<b>47</b>	<b>353</b>	<b>88</b>	<b>39</b>	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR	77.9	11.4		231	260	290				
R ALDER	167.0	24.3		37	48	60				
WHEMLOCK	259.5	37.8		26	41	57				
WR CEDAR	357.0	52.0		4	7	11				
BL MAPLE	538.4	78.5		1	3	5				
<b>TOTAL</b>	<b>49.2</b>	<b>7.2</b>		<b>335</b>	<b>360</b>	<b>386</b>	<b>97</b>	<b>24</b>	<b>11</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR	64.7	9.4		188	208	227				
R ALDER	163.9	23.9		45	59	73				
WHEMLOCK	218.3	31.8		17	25	33				
WR CEDAR	355.0	51.7		8	17	26				
BL MAPLE	538.4	78.5		1	5	9				
<b>TOTAL</b>	<b>27.2</b>	<b>4.0</b>		<b>302</b>	<b>314</b>	<b>326</b>	<b>29</b>	<b>7</b>	<b>3</b>	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR	64.0	9.3		17,989	19,839	21,690				

TC TSTATS		STATISTICS							PAGE	2
		PROJECT BASCULE2							DATE	11/6/2015
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
<b>30N</b>	<b>09W</b>	<b>16</b>	<b>BASCULE</b>	<b>0002</b>	91.90	47	248	S	W	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	10	15	
R ALDER	169.9	24.8		4,501	5,983	7,465				
WHEMLOCK	233.3	34.0		1,593	2,413	3,234				
WR CEDAR	357.3	52.1		436	909	1,382				
BL MAPLE	538.4	78.5		99	459	819				
<b>TOTAL</b>	<b>29.0</b>	<b>4.2</b>		<b>28,355</b>	<b>29,604</b>	<b>30,853</b>	<b>33</b>	<b>8</b>	<b>4</b>	
CL:	68.1 %	COEFF	NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR	63.6	9.3		4,782	5,270	5,758				
R ALDER	168.2	24.5		1,190	1,577	1,964				
WHEMLOCK	222.6	32.4		422	624	827				
WR CEDAR	357.9	52.2		113	236	359				
BL MAPLE	538.4	78.5		29	133	237				
<b>TOTAL</b>	<b>27.5</b>	<b>4.0</b>		<b>7,526</b>	<b>7,840</b>	<b>8,154</b>	<b>30</b>	<b>8</b>	<b>3</b>	

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

T30N R09W S04 TyU3	50.5
T30N R09W S09 Ty000	13.2
T30N R09W S16 Ty000	91.9

**Project BASCULE2**  
**Acres 180.10**

**Page No 1**  
**Date: 11/6/2015**  
**Time 9:34:24AM**

Species	Total Trees	Total Logs	Total Tons	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
				Tree	Log		Gross	Net	Gross	Net
DOUG FIR	34,201	54,819	33,414	33.37	20.82	0.75	11,724	11,412	4,720	4,554
R ALDER	7,399	12,715	6,201	28.03	16.31	0.62	2,255	2,074	845	771
WHEMLOCK	8,329	11,034	5,749	20.96	15.82	0.56	1,797	1,746	696	664
WR CEDAR	2,505	3,962	1,765	28.84	18.24	0.72	751	722	237	217
BL MAPLE	654	1,215	674	35.05	18.86	0.71	254	229	85	66
GRAND F	47	153	261	192.69	59.41	1.80	91	91	46	42
DOUG FIR D	30	89	132	155.68	51.89	1.33	46	46	23	17
<b>Totals</b>	53,164	83,988	48,196	30.70	19.43	0.71	16,919	16,321	6,651	6,331

Wood Type Species	Total Trees	Total Logs	Total Tons	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
				Tree	Log		Gross	Net	Gross	Net
C	45,112	70,058	41,321	31.07	20.01	0.72	14,409	14,018	5,721	5,494
H	8,053	13,930	6,875	28.60	16.53	0.63	2,509	2,303	930	836
<b>Totals</b>	53,164	83,988	48,196	30.70	19.43	0.71	16,919	16,321	6,651	6,331



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
 Peter Goldmark - Commissioner of Public Lands

**Forest Practices Application/Notification  
 Notice of Decision**

FPA/N No: 2613707  
 Effective Date: 6/30/2015  
 Expiration Date: 6/30/2018  
 Shut Down Zone: 653S  
 EARR Tax Credit:  Eligible  Non-eligible  
 Reference: Dept. of Natural Resources  
 Boundary Bascule

**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**

Class II  Class III  Class IVG  Class IVS

**Number of Years Granted on Multi-Year Request**

4 years  5 years

**Conditions on Approval / Reasons for Disapproval**

Issued By: Erik Dukes Region: Olympic

Title: Forest Practice Forester Date: 6/30/2015

Copies to:  Landowner, Timber Owner and Operator.

Issued in person:  Landowner  Timber Owner  Operator By: Kathy Potter 

**Appeal Information**

You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:

**Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501**

**Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903**

Information regarding the Pollution Control Hearings Board can be found at: <http://www.eho.wa.gov/>

At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:

Office of the Attorney General  
Natural Resources Division  
1125 Washington Street SE  
PO Box 40100  
Olympia, WA 98504-0100

And

Department Of Natural Resources  
Olympic Region  
411 Tillicum Lane  
Forks, WA 98331

**Other Applicable Laws**

Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.

**Transfer of Forest Practices Application/Notification (WAC 222-20-010)**

Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices website: <http://www.dnr.wa.gov/businesspermits/forestpractices>. Notify DNR of new Operators within 48 hours.

**Continuing Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)**

Obligations include reforestation, road maintenance and abandonment plans, conversions of forest land to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.

Before the sale or transfer of land or perpetual timber rights subject to continuing forest land obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.

If the seller fails to notify the buyer about the continuing forest land obligation, the seller must pay the buyer's costs related to continuing forest land obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forest land obligation against the seller.

Failure by the seller to send the required notice to the DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forest land obligation prior to sale.

**DNR affidavit of mailing:**

On this day _____, I placed in the United States mail at _____, WA,	
(date)	(post office location)
postage paid, a true and accurate copy of this document. Notice of Decision FPA # _____	
_____	_____
(Printed name)	(Signature)

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

BOUNDARY BASCULE TIMBER SALE ROAD PLAN  
CLALLAM COUNTY  
STRAITS DISTRICT

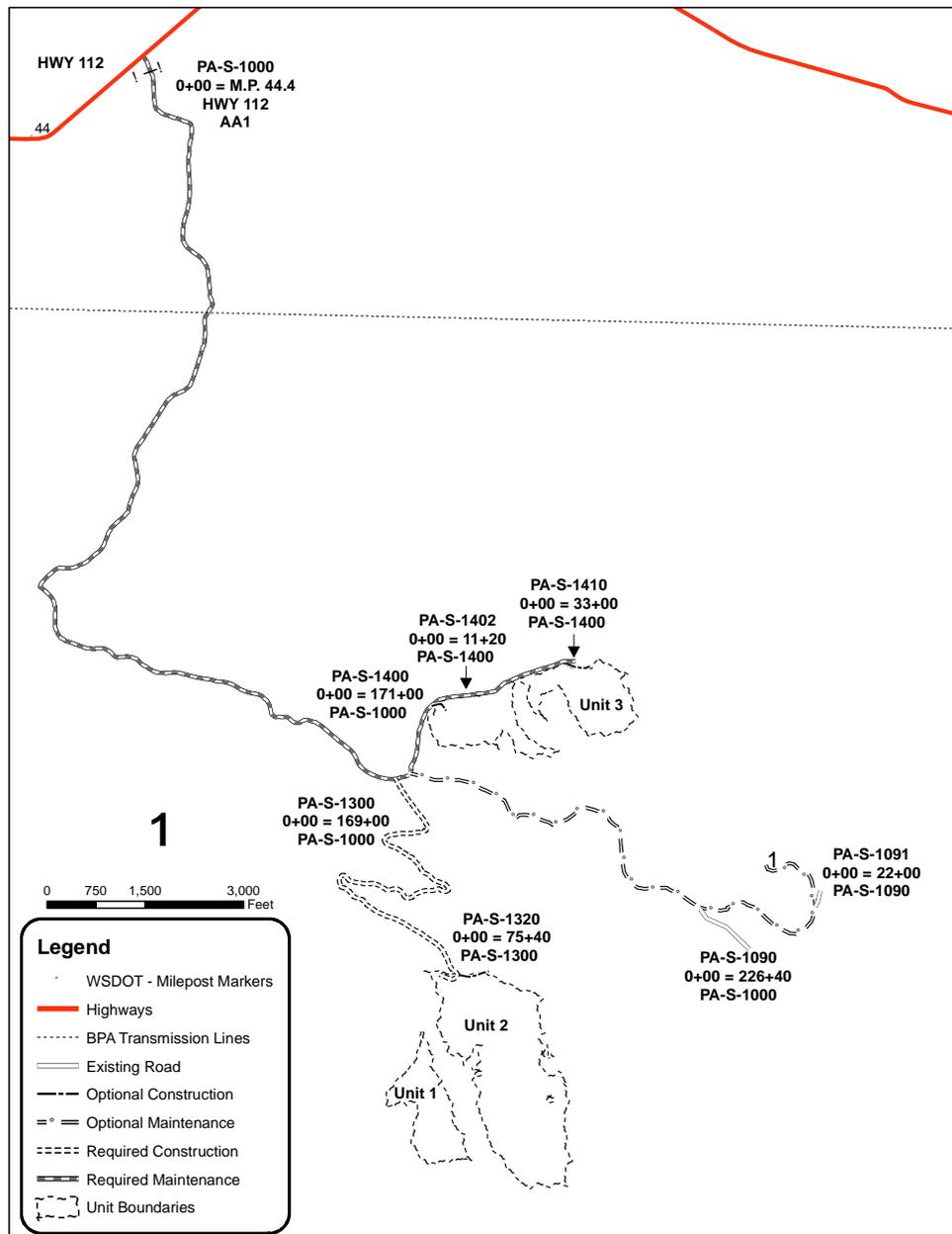
AGREEMENT NO.: 30-090289

STAFF ENGINEER: TOM BARNES

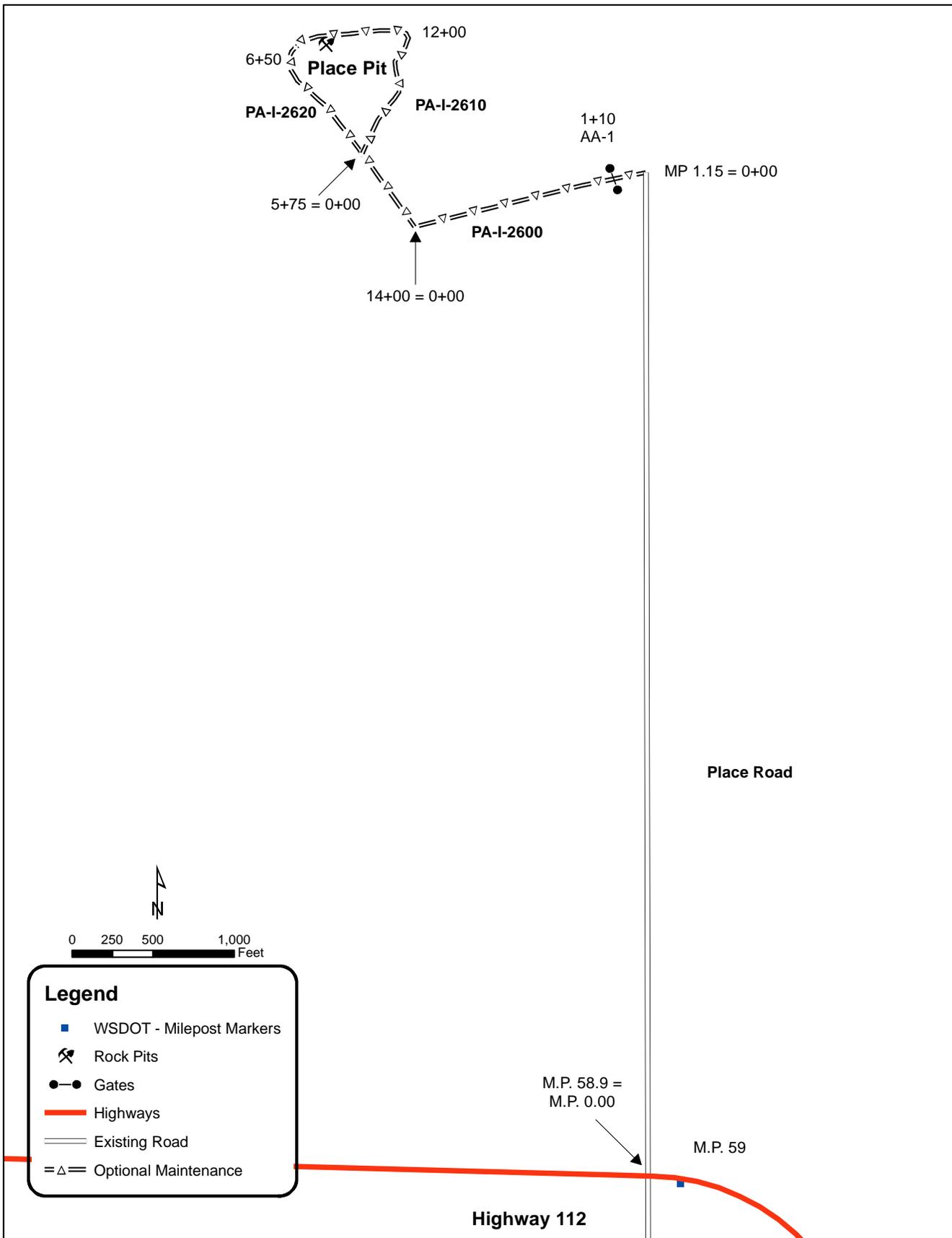
DATE: 09/04/14

DRAWN & COMPILED BY: JUSTIN LONG

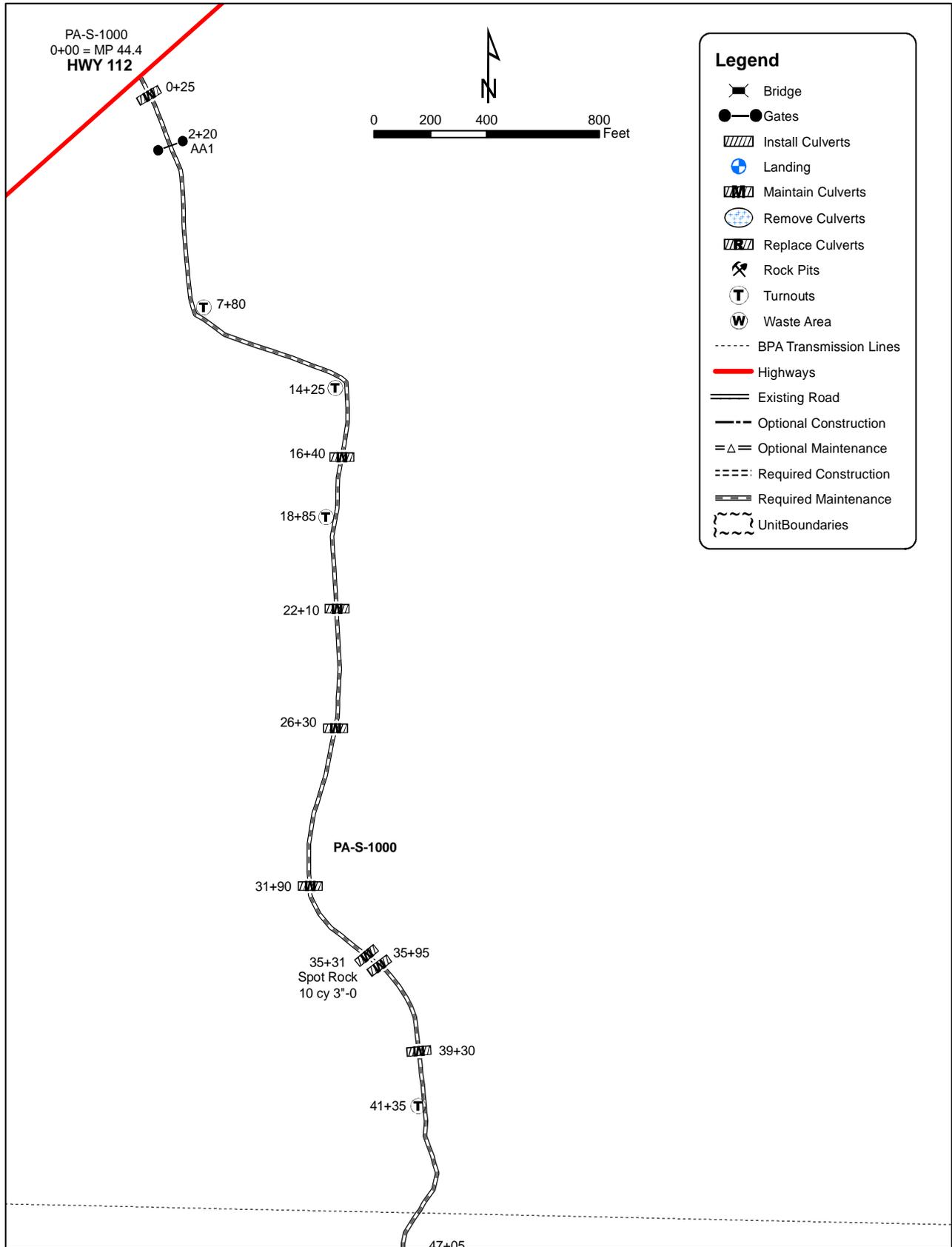
MAP 1 OF 9  
BOUNDARY BASCULE Vicinity Map  
Sec 4, 9, 16, T.30N., R.09W, W.M.



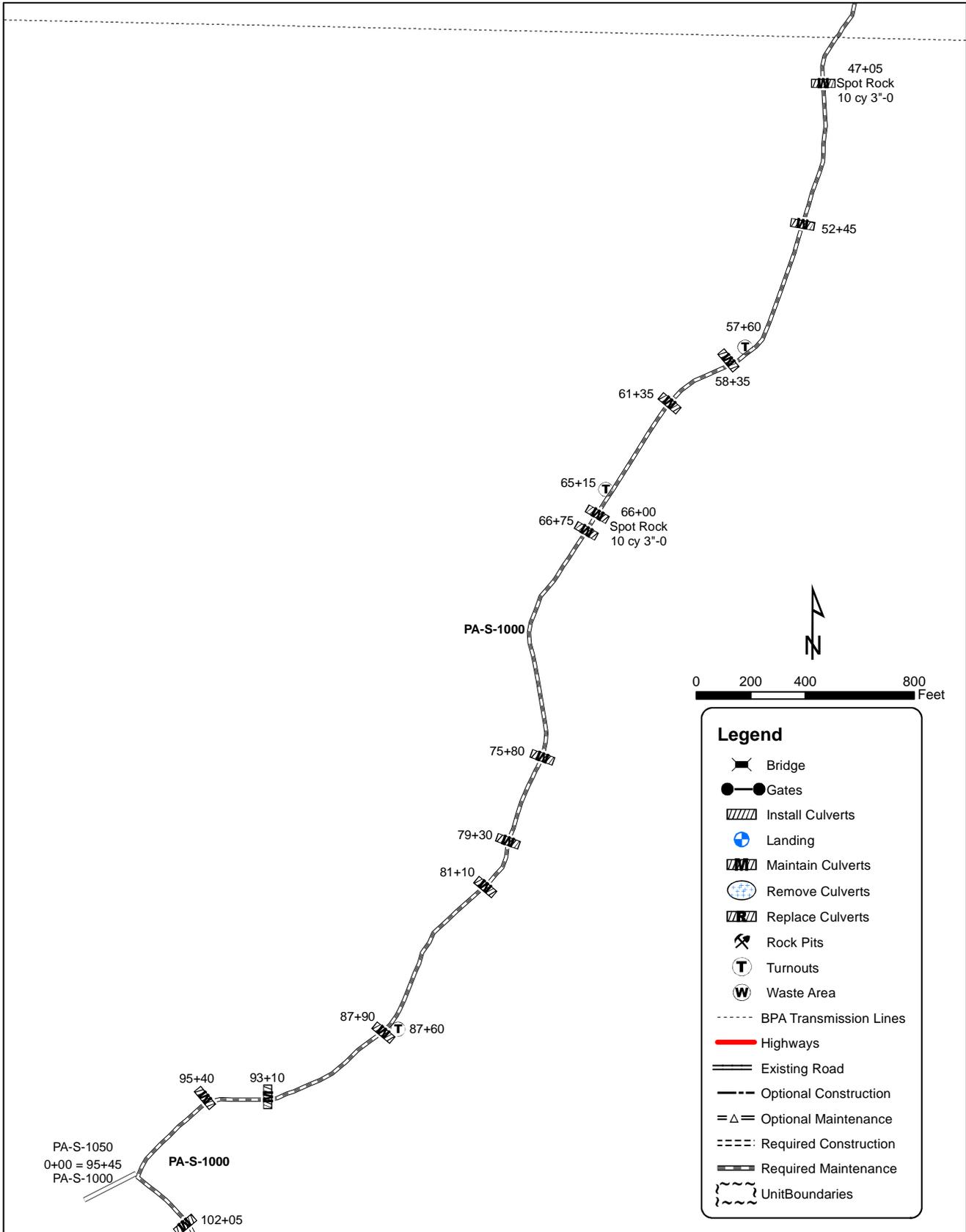
**Map 2 of 9**  
**PLACE PIT Vicinity Map**  
**SE ¼ Sec. 33, T.31N., R.07W., W.M.**



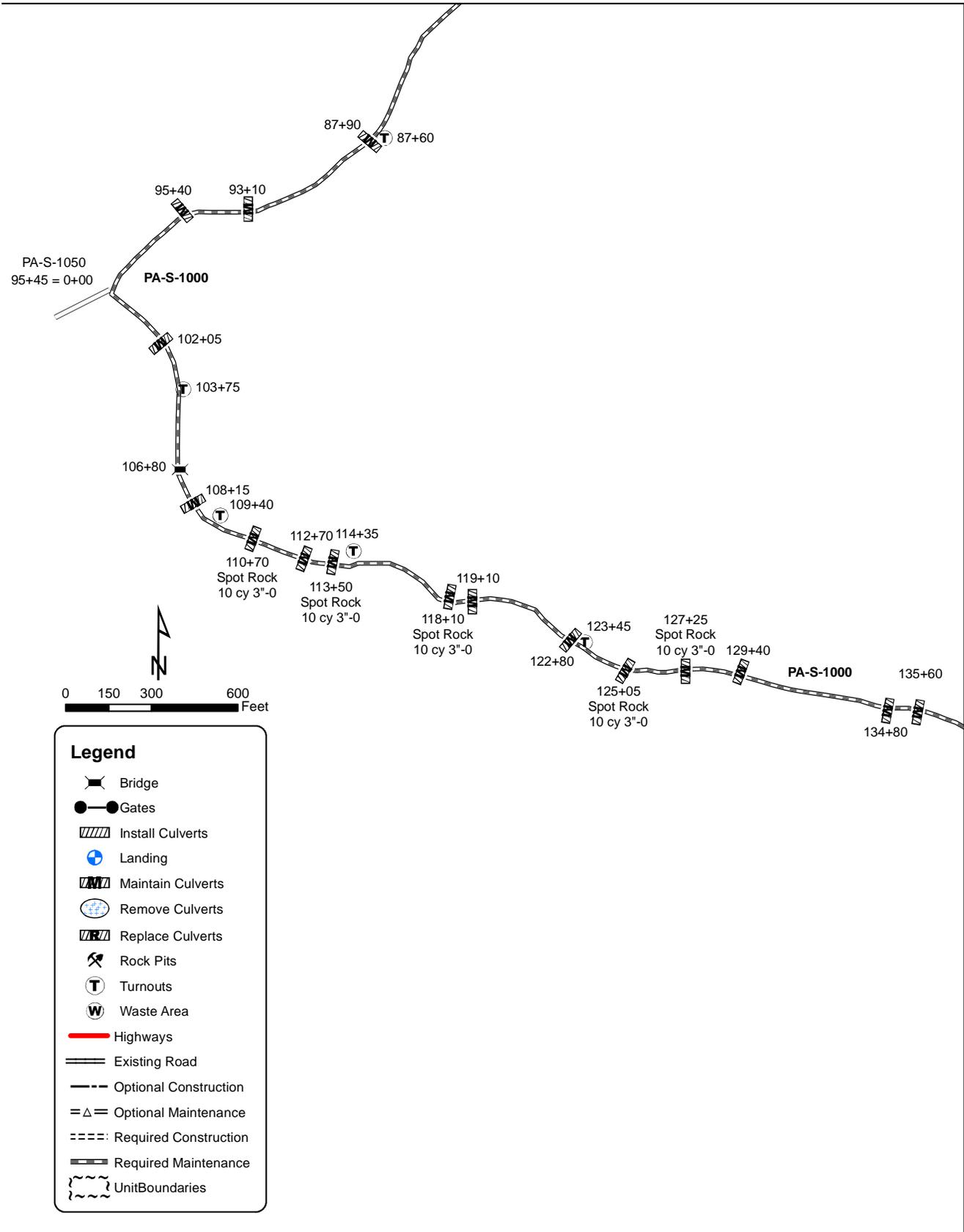
Map 3 of 9



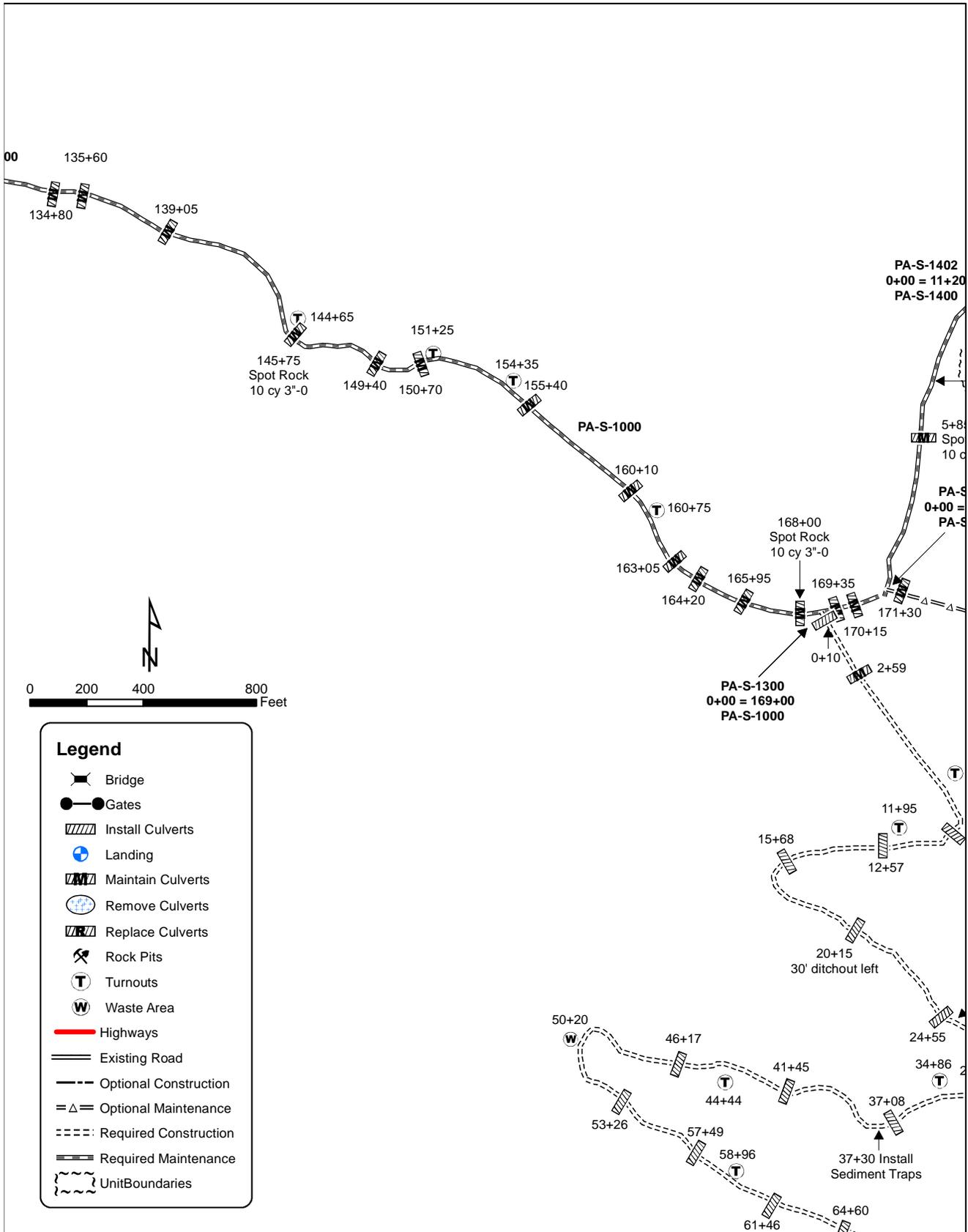
# Map 4 of 9



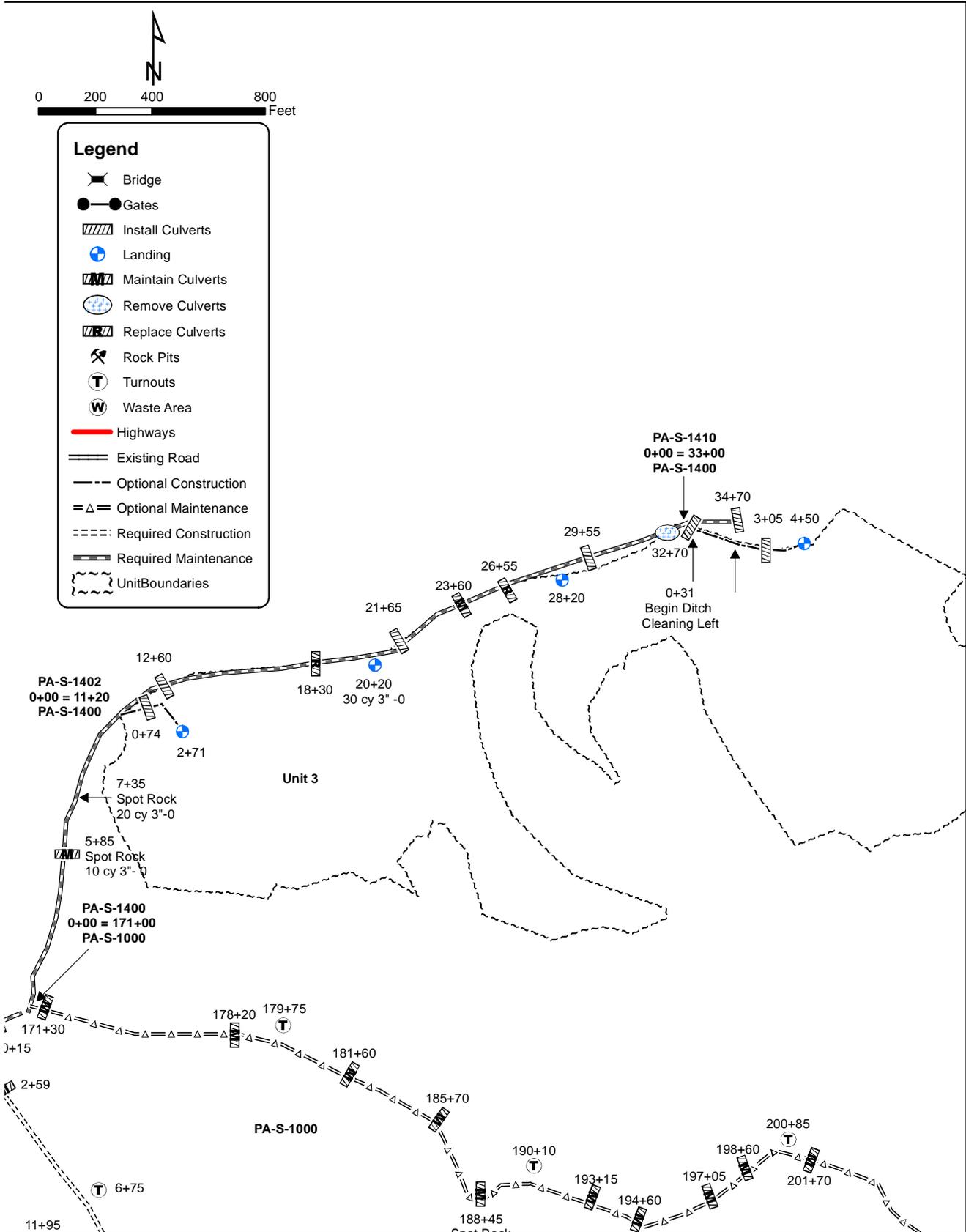
# Map 5 of 9



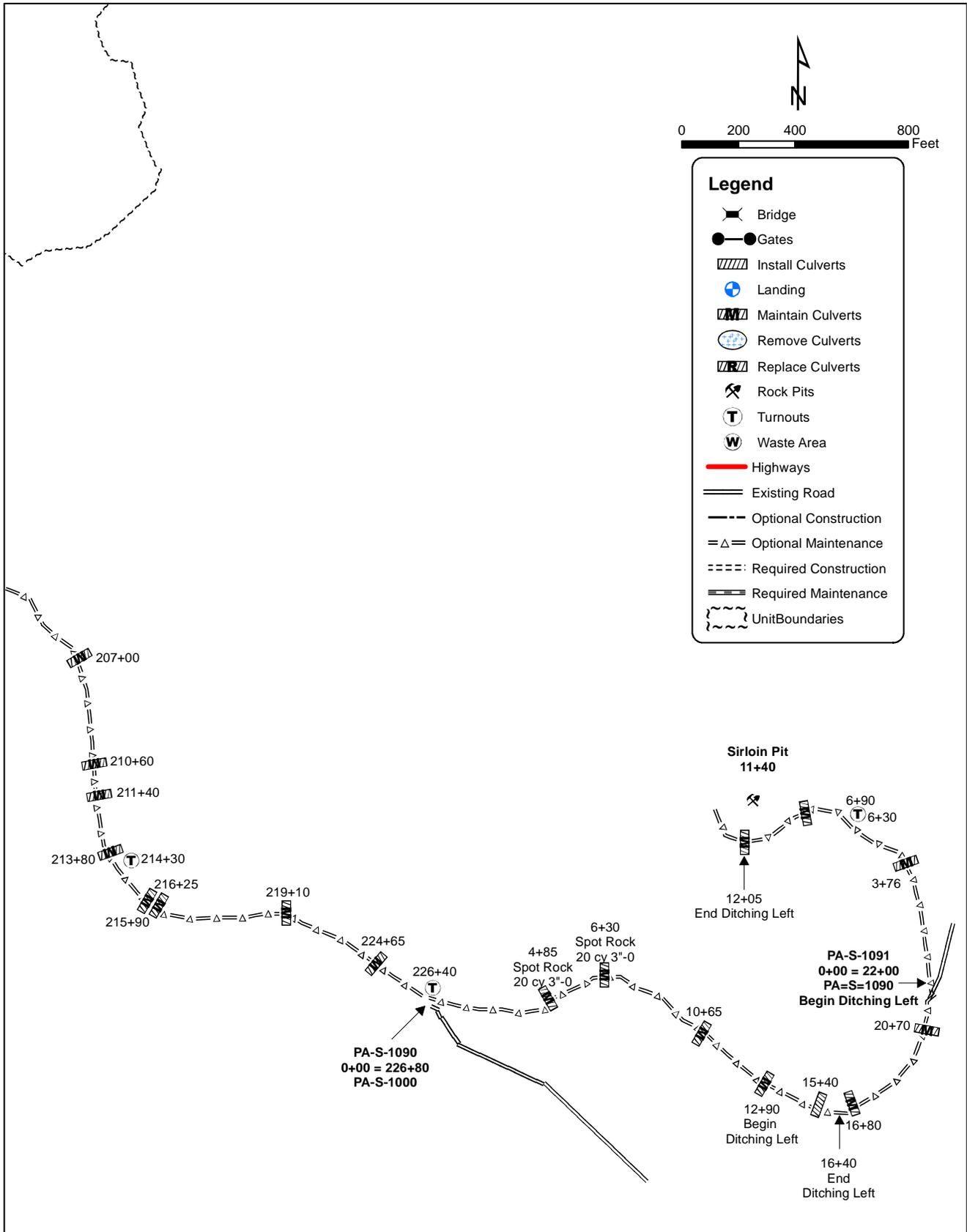
# Map 6 of 9



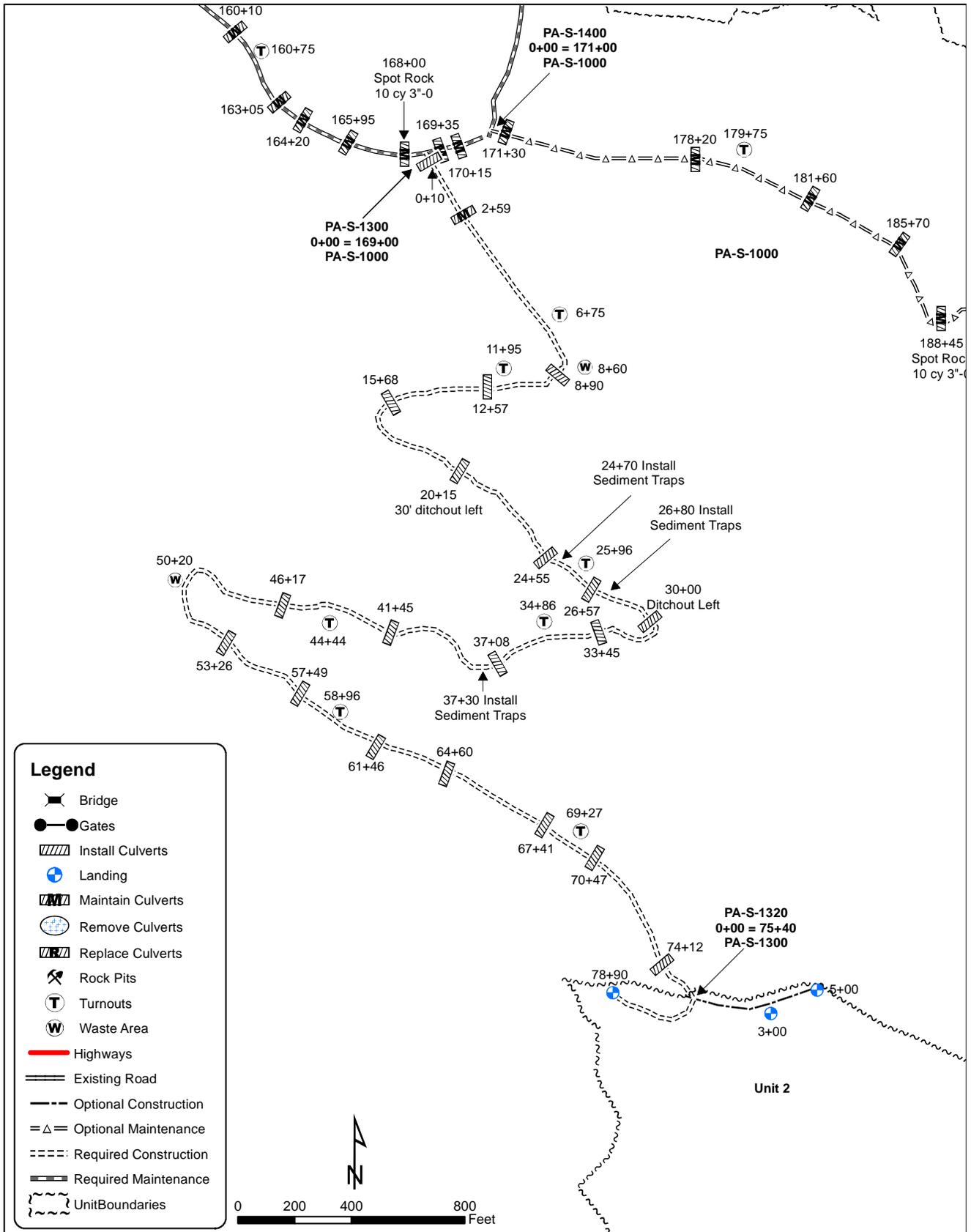
# Map 7 of 9



Map 8 of 9



# Map 9 of 9



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>
PA-S-1000	171.00	Pre and Post Haul Maintenance
PA-S-1300	78.90	Construction
PA-S-1400	34.70	Pre and Post Haul Maintenance

**0-3 OPTIONAL ROADS**

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-S-1000	55.80	Pre and Post Haul Maintenance
PA-S-1090	22.00	Pre and Post Haul Maintenance
PA-S-1091	13.80	Pre and Post Haul Maintenance
PA-S-1320	5.00	Construction
PA-S-1402	2.71	Construction
PA-S-1410	4.50	Construction
PA-I-2600	14.00	Pre and Post Haul Maintenance
PA-I-2610	12.00	Pre and Post Haul Maintenance
PA-I-2620	6.10	Pre and Post Haul Maintenance

**0-4 CONSTRUCTION**

Construction includes, but is not limited to:

- Clearing.
- Grubbing.
- Right of way debris disposal.
- Excavation and/or embankment to subgrade.
- Landing construction.
- Acquisition and installation of drainage structures.
- Acquisition and application of rock.
- Acquisition and application of grass seed.
- Installing erosion control materials.

**0-6 MAINTENANCE**

This project includes, but is not limited to the following pre-haul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-S-1000	226.8 (0+00-226.8)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; construct sediment traps; culvert maintenance. Remove all loose rock at stream crossing locations listed in CLAUSE 8-1 SEDIMENT CONTROL and replace with 3"-0.
PA-S-1090	22.0 (0+00-22.0)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; construct sediment traps; culvert maintenance
PA-S-1091	13.8 (0+00-13.8)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; construct sediment traps; culvert maintenance
PA-S-1400	34.7 (0.00-34.7)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; construct sediment traps; culvert maintenance
PA-I-2600	14.00 (0+00-14.00)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; culvert maintenance
PA-I-2610	12.00 (0+00-12.00)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; culvert maintenance
PA-I-2620	6.10 (0+00-6+10)	Pre-haul and post haul grading, shaping, compaction; pre- and post-haul spot rock; culvert maintenance

**0-7 POST-HAUL MAINTENANCE**

This project includes, but is not limited to post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE9-5 .

**0-12 DEVELOP ROCK SOURCE**

The Purchaser may develop existing rock sources. Development will involve as a minimum, following the requirements in the ROCK SOURCE DEVELOPMENT PLAN. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

## 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 shall be submitted, in writing, to the Contract Administrator for consideration. Before road work begins, the State must approve 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 shall 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**

Unless controlled by construction stakes or design data (plan, profile, and cross-sections), road work shall be performed in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan.

**1-4 ROAD TOLERANCES**

Road work shall be performed within the tolerance 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

**1-5 DESIGN DATA**

Road and culvert design data is available at the Department of Natural Resources Port Angeles Work Center in Port Angeles, WA upon request.

**1-6 ORDER OF PRECEDENCE**

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

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

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

**1-7 TEMPORARY ROAD CLOSURE**

The Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before the closure of any road. Construction shall not close any road for more than 7 consecutive calendar days. Construction shall not close the following roads for more than the specified number of days.

<u>Road</u>	<u>Number of Allowable Closed Days</u>
PA-S-1000	0.5

**1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS**

The Purchaser is responsible for the repair or replacement of all materials, roadway infrastructure, and road components damaged during road work or operation activities. Repairs and replacements shall be directed by the Contract Administrator. Repairs to structural materials will be made according to the manufacturer’s recommendation, and shall not begin without written approval from the Contract Administrator.

**1-9 DAMAGED METALLIC COATING**

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

**1-10 WSDOT STANDARD SPECIFICATION REFERENCE**

References in this road plan to “WSDOT Standard Specifications” means the Washington State Department of Transportation’s Standard Specifications for Road, Bridge, and Municipal Construction 2012 (M41-10).

**ROAD MARKING**

**1-15 ROAD MARKING**

Road work must be in accordance with the state’s marked location. All road work is marked as follows:

- Centerline stakes, florescent orange flagging and florescent orange paint for new road construction.
- Florescent orange flagging, florescent blue flagging, and florescent orange paint for prehaul maintenance.

**1-16 CONSTRUCTION STAKES SET BY STATE**

The Purchaser shall construct the following road(s) in accordance with the reference points set in the field for grade and alignment.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-S-1300	0+00 – 78+90	Centerline stakes, RP tags

**1-18 REFERENCE POINT DAMAGE**

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

## TIMING

### 1-20 COMPLETE BY DATE

Purchaser shall complete required construction road work by the specified date.

<u>Road</u>	<u>Stations</u>	<u>Date</u>
PA-S-1300	0+00 – 78+90	10/31/2017

### 1-21 HAUL APPROVAL

Purchaser shall not use roads constructed nor maintained under this road plan for timber hauling, rock hauling or right-of-way hauling, without written approval from the Contract Administrator.

### 1-22 WORK NOTIFICATIONS

Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before work begins.

### 1-23 ROAD WORK PHASE APPROVAL

Written approval by Contract Administrator must be received upon completion of the following phases of road work:

- Subgrade approval
- Drainage installation
- Subgrade compaction and crowning
- Ballast application and compaction
- Surfacing application and compaction
- Final haul approval

## RESTRICTIONS

### 1-25 ACTIVITY TIMING RESTRICTION

No operation of road construction or maintenance will be allowed between 8:00 P.M, and 6:00 A.M. On the following roads, no operation of road construction or maintenance equipment will be allowed on weekends or state recognized holidays, and within the closure periods listed in the table below, unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Closure Period</u>
ALL	ALL	<b>Nov. 1<sup>st</sup> to April 30<sup>th</sup></b>

### 1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION or Contract Clause H-130 HAULING SCHEDULE, the Purchaser shall provide a maintenance plan to include further protection of state resources. The Contract Administrator must approve the maintenance plan in writing, and preventative measures shall be put in place, before operation in the closure period. The Purchaser shall be 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

designated maintainer roads, a joint operating plan shall be developed. All parties shall follow this plan.

**1-27 TIMING RESTRICTION FOR MARBLED MURRELET**

On the following roads, any road work, right-of-way timber falling and yarding, rock pit operations, or operation of heavy equipment is not permitted from one hour before official sunrise to two hours after official sunrise, and from one hour before official sunset to one hour after official sunset from April 1 through September 23. Shooting of Sirlion Pit shall not take place from April 1 through September 23. This restriction does not apply to the hauling of timber, rock, or equipment.

<u>Road</u>	<u>Stations</u>
PA-S-1090	16+40 to 22+00
PA-S-1091	0+00 to 13+80
Place Pit	Entire Pit Area
PA-I-2600	0+00 to 14+00
PA-I-2610	0+00 to 12+00
PA-I-2620	0+00 to 6+10

**1-29 SEDIMENT RESTRICTION**

Silt-bearing runoff shall not be permitted to go into streams.

**1-30 CLOSURE TO PREVENT DAMAGE**

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

- Wheel track rutting exceeds 6 inches on ballast only roads.
- 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.
- 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, the Purchaser will be required to cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan.

**1-32 BRIDGE SURFACE RESTRICTION**

Metal tracked equipment shall not be used on bridge surfaces at any time. If equipment must be run on bridge surfaces, then rubber tired equipment or other methods, as approved in writing by Contract Administrator, shall be used.

Any dirt, rock, or other material tracked or spilled on bridge surface shall be removed immediately. Any damage to the surface shall be repaired at the Purchaser's expense as directed by the Contract Administrator.

**1-33 SNOW PLOWING RESTRICTION**

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

**OTHER INFRASTRUCTURE**

**1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS**

At existing road approaches to county roads and state highways; any mud, dirt, rock or other material tracked or spilled on the asphalt chip seal surface shall be removed immediately by the Purchaser.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage shall be repaired, at the Purchaser’s expense, as directed by the Contract Administrator when authorized by the county or WSDOT.

The following county road and state highway are affected by this sale:

<u>Road Name</u>	<u>Locations</u>
WA Highway 112	M.P. 44.4
Place Road	M.P. 1.15

**1-42 UTILITY ACCESS ROAD**

Construction of the following road intersects existing utility access roads. The Purchaser shall construct intersecting roads so that the utility access roads are accessible at all times.

<u>Road</u>	<u>Stations</u>
PA-S-1000	45+00

**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” (811), and liabilities associated with the utilities and their rights-of-way. Road work shall not begin without a minimum of 14 days of prior notification to the BPA.

<u>Road</u>	<u>Stations/Activity</u>	<u>Utility</u>	<u>Utility Contact</u>
PA-S-1000	0+00/Maintenance (buried utilities) 45+00/Maintenance (Elevated Utilities)	Elevated Utilities (BPA), Buried Power/phone lines	BPA- Paul Woolson: 360-570-4332, Wendy Jansen: 360-570-4333, Lee Webb: 360-791-3838, Other Utilities: 811

## SECTION 2 – MAINTENANCE

### 2-1 GENERAL ROAD MAINTENANCE

All roads used under this contract shall be maintained 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.

### 2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

Purchaser may be required to perform maintenance on roads listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER as directed by the Contract Administrator. Maintenance work shall be in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

### 2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), a grader shall be used to shape the existing surface before the application of rock and shall be subject to the written approval of the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-S-1000	0+00 to 226+80	Grading, shaping and compaction
PA-S-1090	0+00 to 22+00	Grading, shaping and compaction
PA-S-1091	0+00 to 13+80	Grading, shaping and compaction
PA-S-1400	0+00 to 34+70	Grading, shaping and compaction
PA-S-2600	0+00 to 14+00	Grading, shaping and compaction
PA-S-2610	0+00 to 12+00	Grading, shaping and compaction
PA-S-2620	0+00 to 5+75	Grading, shaping and compaction

### 2-6 CLEANING CULVERTS

On the following roads, all inlets and outlets of culverts shall be cleaned before the start of timber haul and shall be subject to the written approval of the Contract Administrator.

<u>Road</u>	<u>Stations</u>
PA-S-1000	0+00 to 226+80
PA-S-1090	0+00 to 22+00
PA-S-1091	0+00 to 13+80
PA-S-1300	0+00 to 7+00
PA-S-1400	0+00 to 34+70

**2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS**

On the following road(s), Purchaser shall clean the ditchlines, culvert headwalls, catch basins and sediment traps. Work shall be completed before timber haul and shall be done in accordance with the TYPICAL SECTION SHEET and the SEDIMENT TRAP DETAIL. Pulling ditch material across the road or mixing in with the road surface will not be allowed.

<u>Road</u>	<u>Stations</u>
PA-S-1000	0+00 to 226+80
PA-S-1090	0+00 to 22+00
PA-S-1091	0+00 to 13+80
PA-S-1300	0+00 to 7+00
PA-S-1400	0+00 to 34+70

**SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL**

**BRUSHING**

**3-1 BRUSHING**

On the following roads, vegetative material up to 6 inches in diameter, including limbs, shall be cut as shown on the BRUSHING DETAIL. Brushing shall be achieved by manual or mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation shall not be disturbed unless directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
PA-S-1090	0+00 to 22+00
PA-S-1091	0+00 to 13+80
PA-S-1300	0+00 to 7+00
PA-S-1400	0+00 to 34+70

**3-2 BRUSHING RESTRICTION**

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal shall not be used for brushing. Excavator buckets, log loaders and similar equipment shall not be used for brushing unless otherwise approved in writing by the Contract Administrator.

**3-3 BRUSH REMOVAL**

Remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

**CLEARING**

**3-5 CLEARING**

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

**3-7 RIGHT-OF-WAY DECKING**

Purchaser shall deck all right-of-way timber. Decks shall be parallel to the road centerline and placed within the cleared right-of-way. Decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment from the roadbed.

**3-8 PROHIBITED DECKING AREAS**

Right-of-way timber shall not be decked 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.
- In locations where logs may shift or roll.
- On slopes greater than 40%.
- Against standing trees unless approved by the Contract Administrator.

**GRUBBING**

**3-10 GRUBBING**

Remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Those stumps outside the grubbing limits but with undercut roots shall also be removed. Stump removal shall be accomplished using a hydraulic mounted excavator unless authorized, in writing, by the Contract Administrator. Grubbing shall be completed before starting excavation and embankment.

**3-12 STUMP PLACEMENT**

On all new construction, grubbed stumps shall be placed outside of the clearing limits. Stumps shall be positioned upright, with root wads in contact with the forest floor on stable locations.

**ORGANIC DEBRIS**

**3-20 ORGANIC DEBRIS DEFINITION**

Organic debris is defined as all vegetative material not eligible for removal by Contract Clauses 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 grubbing, clearing, or brushing area limits as shown on the TYPICAL SECTION SHEET or on the BRUSHING DETAIL.

**3-21 DISPOSAL COMPLETION**

All disposal of organic debris, shall be completed before the application of rock.

**3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS**

Waste areas for organic debris are located as listed below, or at areas approved in writing by the Contract Administrator.

<u>Road</u>	<u>Disposal Location</u>
PA-S-1300	8+60, 50+20

**3-23 PROHIBITED DISPOSAL AREAS**

Organic debris shall not be deposited in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, wetland, or riparian management zone.
- On road subgrade and road prism excavation and embankment slopes as shown on the TYPICAL SECTION SHEET.
- On slopes greater than 55%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush will fall into the ditch or onto the road surface.
- Against standing timber.

**3-24 BURYING ORGANIC DEBRIS RESTRICTED**

Organic debris shall not be buried unless otherwise stated in this plan.

**3-25 SCATTERING ORGANIC DEBRIS**

On the following roads, organic debris shall be scattered outside of the clearing limits and/or in natural openings unless otherwise detailed in this road plan or as directed by the Contract Administrator. Where natural openings are unavailable or restrictive, alternative debris disposal methods shall be subject to the written approval of the Contract Administrator.

<u>Road</u>	<u>Stations</u>
ALL	ALL

PILE

**3-30 EXCLUSION OF DOZER BLADES**

Dozer blades are not permitted for the piling of organic debris.

**3-32 END HAULING ORGANIC DEBRIS**

On the following road on slopes greater than 55%, organic debris shall be end hauled or pushed to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS or to a waste area located by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
PA-S-1300	12+50 to 75+40

SECTION 4 – EXCAVATION

**4-1 EXCAVATOR CONSTRUCTION**

On the following roads, the Purchaser shall use a track mounted hydraulic excavator for construction work.

<u>Road</u>	<u>Stations</u>
PA-S-1300	8+60 to 78+90

#### 4-2 PIONEERING

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions shall be taken as pioneering progresses:

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

#### 4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Road grade and alignment shall conform to the State's marked location and/or specifications in this Road Plan, or as directed by the Contract Administrator.

The following road grade and alignment standards shall be followed:

- Grade and alignment shall have smooth continuity, without abrupt changes in direction.
- Maximum grade shall not exceed 18 percent favorable and 12 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Sag vertical curves shall not have a grade change greater than 6% in 50 feet.
- Crest vertical curves shall not have a grade change greater than 4% in 50 feet.

#### 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. The following standards for switchbacks shall be followed:

- Adverse grades on switchbacks shall not exceed 10% of the curve radius.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

#### 4-5 CUT SLOPE RATIO

Unless construction staked or designed excavation slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<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

Unless construction staked or designed embankment slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<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

Excavation and embankment slopes shall be constructed 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.

#### 4-12 FULL BENCH CONSTRUCTION

On the following roads, and where side slopes exceed 45% full bench construction shall be utilized for the entire subgrade width except as construction staked or designed. Waste material shall be end hauled to the location specified in Clause 4-37 WASTE AREA LOCATION.

<u>Road</u>	<u>Full Bench Location</u>	<u>Comments</u>
PA-S-1300	8+60 – 78+90	Approx. 5,000 cubic yards

### INTERSECTIONS, TURNOUTS AND TURNAROUNDS

#### 4-21 TURNOUTS

Turnouts shall be constructed as designated on the ROCK LIST. Turnouts shall be inter-visible with maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Locations shall be adjusted to fit the final subgrade alignment and sight distances. Turnout locations shall be subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

#### 4-22 TURNAROUNDS

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Turnarounds shall be constructed as designated on the ROCK LIST. Locations shall be subject to written approval by the Contract Administrator.

## DITCH CONSTRUCTION

### 4-25 DITCH CONSTRUCTION

The Purchaser shall construct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Excavated slopes shall be consistent with Clause 4-5 CUT SLOPE RATIO. Ditches shall be constructed concurrently with construction of the subgrade.

### 4-27 DITCH WORK – MATERIAL USE PROHIBITED

Pulling ditch material across the road or mixing in with the road surface will not be allowed. Excavated material shall be disposed of as outlined in Clauses 4-35 to 4-38.

### 4-28 DITCH DRAINAGE

Ditches shall drain to cross-drain culverts and ditchouts.

### 4-29 DITCHOUTS

Purchaser shall construct ditchouts. Ditchouts shall be constructed at locations shown on the CULVERT AND DRAINAGE LIST. Ditchouts shall be constructed in a manner that diverts ditch water onto the forest floor and shall have excavation backslopes no steeper than a 1:1 ratio.

## WASTE MATERIAL (DIRT)

### 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

Waste material may be deposited adjacent to the road prism on side slopes up to 45% if the waste material is compacted and free of debris. On side slopes greater than 45%, all excavation shall be end hauled to designated waste areas. All waste embankments shall be compacted in accordance with Clause 4-60 FILL COMPACTION.

### 4-37 WASTE AREA LOCATION

Waste material shall be deposited in the listed designated areas. Additional waste areas may also be identified or approved by the Contract Administrator. The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

<u>Road</u>	<u>Waste Area Location</u>
PA-S-1300	8+60, 50+20

### 4-38 PROHIBITED WASTE DISPOSAL AREAS

Waste material shall not be deposited in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian management zone.
- On side slopes steeper than 55%.
- In locations that interfere with the construction of the road prism.

- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

## BORROW

### 4-48 BORROW MATERIAL

Borrow material shall contain no more than 5% clay, organic debris, or trash by volume.

### 4-49 BORROW SOURCE

Borrow may be obtained from sources identified or approved by the Contract Administrator.

## SHAPING

### 4-55 ROAD SHAPING

The road subgrade and surface shall be shaped as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape shall ensure surface runoff in an even, un-concentrated manner and shall be uniform, firm, and rut-free. All shaping shall be accomplished using a motor grader weighing at least 26,000 pounds with a minimum 10' blade.

### 4-56 DRY WEATHER SHAPING

At any time of year, the Contract Administrator may require the application of water to facilitate shaping activities. The method of water application is subject to written approval by the Contract Administrator.

## COMPACTION

### 4-60 FILL COMPACTION

All embankment and waste material shall be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width of each lift. A plate compactor shall be used for areas specifically requiring keyed embankment construction and for embankment and waste area segments too narrow to accommodate equipment. Compaction with a plate compactor shall be made by three complete passes; each lift shall not exceed 8 inches in depth. Waste material may be placed by end-dumping or sidecasting until sufficiently wide enough to support the equipment.

### 4-61 SUBGRADE COMPACTION

Constructed and reconstructed subgrades shall be compacted full width in accordance with the COMPACTION LIST. Subgrade compaction shall be approved, in writing, by the Contract Administrator before rock application.

### 4-62 DRY WEATHER COMPACTION

At any time of year, the Contract Administrator may require the application of water to facilitate compaction activities. The method of water application is subject to written approval, by the Contract Administrator.

### 4-63 EXISTING SURFACE COMPACTION

Pre-haul Maintenance and Post-haul Maintenance road surfaces shall be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width.

## SECTION 5 – DRAINAGE

### 5-1 REMOVAL OF SHOULDER BERMS

Berms shall be removed from road shoulders to permit the escape of runoff. The construction of ditchouts will be required where ponding will result from the effects of sidecast debris.

## CULVERTS

### 5-5 CULVERTS

Culverts shall be installed as part of this contract. Culverts shall be installed concurrently with subgrade work and shall be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT AND DRAINAGE LIST. Culvert, downspout, and flume lengths shall be adjusted to fit as-built conditions and shall not terminate directly on unprotected soil. Culverts shall be new steel, aluminum, or polyethylene, and meet the material specifications in Clauses 10-15 through 10-22. The quality of used culverts must be approved by the Contract Administrator before installation.

### 5-11 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the CULVERT AND DRAINAGE LIST that are not installed shall become the property of the state. Purchaser shall stockpile materials at the Port Angeles Work Center.

## CULVERT INSTALLATION

### 5-15 CULVERT INSTALLATION

Installation shall be in accordance with the design plans in this Road Plan, 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". Corrugated Polyethylene pipe shall be installed in a manner consistent with the manufacturer's recommendations.

### 5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

Installations of culverts 24 inches in diameter and over shall be subject to written approval by the Contract Administrator before making backfill.

### 5-17 CROSS DRAIN SKEW AND SLOPE

Cross drains, on road grades in excess of 3%, shall 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 shall not be skewed. Cross drain culverts shall 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 shall 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 shall be installed with a depth of cover specified in the crossing design, or to the minimum depth recommended by the culvert manufacturer for the type of cover material over the pipe, whichever is greater.

#### ENERGY DISSIPATERS

##### 5-20 ENERGY DISSIPATERS

Energy dissipators shall be installed to prevent erosion and are subject to the approval of the Contract Administrator. Rock shall extend a minimum of 1 foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet. The type and amount of energy dissipator shall be consistent with the specifications listed on the CULVERT AND DRAINAGE LIST.

##### 5-21 DOWNSPOUTS AND FLUMES

Downspouts and flumes shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts, and fastened securely to the posts with 1/2-inch bolts in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL.

#### CATCH BASINS, HEADWALLS, AND ARMORING

##### 5-25 CATCH BASINS

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL.

##### 5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts. 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 two culvert diameters above the top of the culvert.

##### 5-27 ARMORING FOR CULVERTS

At the following culverts, light loose rip rap shall be set in place in conjunction with construction of the embankment. Rip rap shall be placed on shoulders, slopes, around culvert inlets and outlets as designated on the CULVERT AND DRAINAGE LIST and attached culvert designs or as directed by the Contract Administrator. Rip rap shall not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rip rap shall be allowed. Light loose rip rap shall meet the specifications in Clause 6-47 LIGHT LOOSE RIP RAP.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
PA-S-1400	21+65, 26+55	Light loose rip rap

SECTION 6 – ROCK AND SURFACING

ROCK SOURCE

**6-2 ROCK SOURCE ON STATE LAND**

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following sources on state land at no charge to the Purchaser. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using, or desire to use the rock sources, a joint operating plan shall be developed. All parties shall follow this plan. The Purchaser shall notify the Contract Administrator a minimum of 7 calendar days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Place Pit	Place Road, M.P. 1.15 SE ¼ Sec. 33, T.31N., R.07W., W.M.	PIT RUN BALLAST 3"-0 CRUSHED ROCK
Sirloin Pit	PA-S-1091, STA 10+00 NW ¼, NW ¼ Sec. 10 T.30N., R.09W., W.M.	LIGHT LOOSE RIP RAP PIT RUN BALLAST

**6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE**

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove more than 1140 cubic yards 3"-0 CRUSHED ROCK. Other stockpiles may not be used without prior written approval from the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>	<u>Quantity</u>
Place Pit	Place Road, M.P. 1.15 SE ¼ Sec. 33, T.31N., R.07W., W.M.	3"-0 CRUSHED ROCK	1140 Cubic Yards

**6-5 ROCK FROM COMMERCIAL SOURCE**

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

ROCK SOURCE DEVELOPMENT

**6-10 ROCK SOURCE DEVELOPMENT PLAN**

All rock source development and use shall be in accordance with a written ROCK SOURCE DEVELOPMENT PLAN prepared for each pit location and found in this Road Plan. Proposed changes by the Purchaser are subject to written approval by the Contract Administrator prior to any pit development or use. Rock source operations shall be conducted as directed by the Contract Administrator and in accordance with the approved plan. Upon completion of operations, the rock source shall be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. The Purchaser

shall notify the Contract Administrator a minimum of 7 calendar days before starting any operations in any rock source.

## ROCK MANUFACTURE

### 6-21 FRACTURE REQUIREMENT FOR ROCK

A minimum of 75% by weight of coarse aggregate shall have at least one fractured face. Coarse aggregate is the material retained on each specification sieve sized 1/4-inch and above, if that sieve retains more than 5% of the total sample.

### 6-23 ROCK GRADATION TYPES

Purchaser shall supply or manufacture rock in accordance with the types and amounts listed in the ROCK LIST. Rock shall meet the following specifications for gradation and quality when placed in hauling vehicles or during manufacture and placement into a stockpile.

## ROCK GRADATIONS

### 6-32 3-INCH MINUS CRUSHED ROCK

3-inch minus (3"-0) "CRUSHED" ROCK shall be uniform in quality and gradation and meet the following specifications. The Contract Administrator will determine the exact point of evaluation for conformance to specifications.

% Passing 3" square sieve	100%
% Passing 2" square sieve	65 - 95%
% Passing ¾" square sieve	28 - 70%
% Passing U.S. #4 sieve	10 - 35%
% Passing U.S. #200 sieve	0 - 10%

All percentages are by weight.

Minimum fracture requirements are specified in **Clause 6-21**.

The portion of aggregate retained on the No. 4 sieve shall not contain more than 0.1 percent organic debris and/or trash. All percentages are by weight.

### 6-39 PIT RUN BALLAST

PIT RUN BALLAST shall contain no more than 5 percent by weight of organic debris, dirt, or trash. PIT RUN BALLAST will meet the following specifications for rock gradation when placed on the subgrade:

No more than 10% of the rock shall be larger than 8 inches in any dimension and no rock shall be larger than 12 inches in any dimension. Rock may require processing to meet this specification.

**6-47 LIGHT LOOSE RIP RAP**

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

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
20% / 90%	300 lbs. to 1 ton	20"- 36"
80% / --	50 lbs. to ½ ton	12"- 30"
10% / 20%	50 lbs. max	3"- 8"

**ROCK MEASUREMENT**

**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 ROCK LIST are loose (truck) 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.

**6-67 ROCK STOCKPILE SPECIFICATIONS**

Rock stockpiles listed in **Clause 6-65 ROCK STOCKPILE LOCATION** must meet the following specifications:

Before placing aggregates upon the stockpile site, the site must be cleared of vegetation, trees, stumps, brush, rocks, or other debris and the ground leveled to a smooth, firm, uniform surface.

When completed, the stockpile must be neat and regular in shape. The stockpile height is limited to a maximum of 30 feet. Stockpiles in excess of 200 cubic yards must be built up in layers of not more than 4 feet deep. Stockpile layers must be constructed by trucks, clamshells, or other methods approved in writing by the Contract Administrator. Each layer must be completed over the entire area of the pile before depositing aggregates in the next layer. The aggregates may not be dumped so that they run down and over the lower layers in the stockpile.

**ROCK APPLICATION**

**6-70 APPROVAL BEFORE ROCK APPLICATION**

Subgrade and drainage installation shall be completed and approved in writing by the Contract Administrator, before rock application.

**6-71 ROCK APPLICATION**

Rock shall be applied in accordance with quantities shown on the ROCK LIST. Rock shall be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator shall direct locations for rock that is to be applied as spot patching.

Road surfaces shall be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width.

**6-72 ROCK APPLICATION AFTER HAULING**

On the following roads, upon completion of all hauling operations, Purchaser shall apply rock in accordance with the quantities shown on the ROCK LIST.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
PA-S-1000	0+00 to 226+40	3"-0
PA-S-1090	0+00 to 22+00	3"-0
PA-S-1091	0+00 to 13+80	3"-0
PA-S-1300	0+00 to 78+90	1 ¼"-0
PA-S-1400	0+00 to 34+00	3"-0

**6-73 ROCK FOR WIDENED PORTIONS**

Turnarounds, turnouts, and areas with curve widening shall have rock applied to the same depth and specifications as the traveled way, unless otherwise specified in the ROCK LIST.

SECTION 7 – STRUCTURES

GATE CLOSURE

**7-70 GATE CLOSURE**

On the following roads, Purchaser shall keep gates closed and locked except during periods of haul. All gates that remain open during haul shall be locked or securely fastened in the open position. All gates shall be closed at termination of use.

<u>Road</u>	<u>Station</u>
PA-S-1000	2+20
PA-I-2600	1+10

SECTION 8 – EROSION CONTROL

**8-1 SEDIMENT CONTROL**

On the following roads, sediment control shall be accomplished using sediment traps, silt fences, settling ponds or other methods as approved, in writing, by the Contract Administrator. Sediment traps shall be constructed in accordance with the SEDIMENT TRAP DETAIL and shall have seed and mulch applied to all exposed soil.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
PA-S-1000	35+31, 47+05, 66+00, 106+80, 110+70, 113+50, 118+10, 125+05, 127+25, 134+80, 145+75, 149+40, 163+05, 164+20, 168+00	Maintain/Construct sediment traps; install silt fencing during haul, when needed as determined by the Contract Administrator.

**8-2 PROTECTION FOR EXPOSED SOIL**

Purchaser shall furnish and evenly spread a 6-inch layer of straw to all exposed soils within 100 feet of a stream or wetland. Soils shall be covered before the first anticipated storm event.

REVEGETATION

**8-15 REVEGETATION**

On all new construction and within 100' of any stream crossing, Purchaser shall spread seed and mulch or hydroseed on all exposed soils within the grubbing limits. Covering of all exposed soils shall be accomplished by either manual dispersal of grass seed and mulch or by hydroseeding. Other methods of covering must be approved in writing by the Contract Administrator.

**8-16 REVEGETATION SUPPLY**

Seed, mulch and/or hydroseed will be provided by the Purchaser.

**8-17 REVEGETATION TIMING**

The Purchaser shall perform revegetation during the first available opportunity after construction is completed. Soils shall 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 on all revegetation locations. The protective cover shall consist of, but not be limited to dispersed straw, jute matting or clear plastic sheets as approved by the Contract Administrator. The protective cover requirement may be waived by the Contract Administrator, in writing, if the Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop of 3-inch tall grass by October 31.

**8-19 ASSURANCE FOR SEEDED AREA**

The Purchaser shall be responsible to ensure a uniform and dense crop of grass. The Purchaser shall reapply the seed and mulch in areas that have been damaged through any cause or failed to revegetate, before approval from the Contract Administrator. The Purchaser shall restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed, fertilizer and mulch at no addition cost to the state.

SEED, FERTILIZER, AND MULCH

**8-25 GRASS SEED**

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 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 the 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 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>	<u>Minimum % pure seed</u>	<u>Minimum % germination</u>
Perennial Rye	40	39.2	90
Red Fescue	35	34.3	90
Highland Bent	10	9.8	85
White Clover	15	14.7	90
Weed Seed		0.5 max	
Inert and Other Crop		1.5 max	
		100 total	

**8-28 HYDROSEED MULCH**

Purchaser shall evenly spread the hydroseed mulch mixture on all exposed soil inside the grubbing limits at a rate of **6334** pounds per acre of exposed soil. The hydroseed mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust shall not be used as mulch. The hydroseed slurry shall be a homogeneous mix in the following proportions and according to the manufacture’s specifications.

<u>Mixture by Weight/Acre</u>
4000 lbs of water
1800 lbs of wood fiber mulch
400 lbs of fertilizer (16-16-16)
80 lbs of seed (50% Red Fescue, 25% Perennial Ryegrass, 15% Bentgrass, 10% Clover)*
54 lbs of silvafiber tachifier, or equal
*Mixture of seed is by percent weight of the total quantity of the seed.

**SECTION 9 – POST-HAUL ROAD WORK  
STRUCTURES**

**9-3 REMOVAL OF CULVERT MATERIAL FROM STATE LAND**

Culvert material removed from roads becomes the property of the Purchaser and must be removed from state land.

POST-HAUL MAINTENANCE

**9-5 POST-HAUL MAINTENANCE**

Post haul maintenance shall be performed in accordance with the FOREST ACCESS ROAD SPECIFICATIONS and as specified below.

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
ALL	ALL	Compaction of graded running surface, spot patching

POST-HAUL LANDING MAINTENANCE

**9-10 LANDING DRAINAGE**

Purchaser shall provide for drainage of the landing surface as approved, in writing, by the Contract Administrator.

SECTION 10 MATERIALS

EROSION CONTROL AND REVEGETATION

**10-10 JUTE EROSION CONTROL MATTING**

Jute mesh shall have a uniform open plain weave made from jute yarn that does not vary by more than half its nominal diameter. Erosion control matting shall conform to the specifications listed below, and shall 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/yd<sup>2</sup> ±5%.

CULVERTS

**10-15 CORRUGATED STEEL CULVERT**

Metallic coated steel culverts shall meet AASHTO M-36 (ASTM A-760) specifications. Culverts shall be galvanized (zinc coated meeting AASHTO M-218) except culverts over 24 inches shall be aluminized (aluminum type 2 coated AASHTO M-274 aluminized (aluminum type 2 coated meeting AASHTO M-274).

**10-17 CORRUGATED PLASTIC CULVERT**

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

**10-20 FLUME AND DOWNSPOUT**

Downspouts and flumes shall meet the AASHTO specification designated for the culvert.

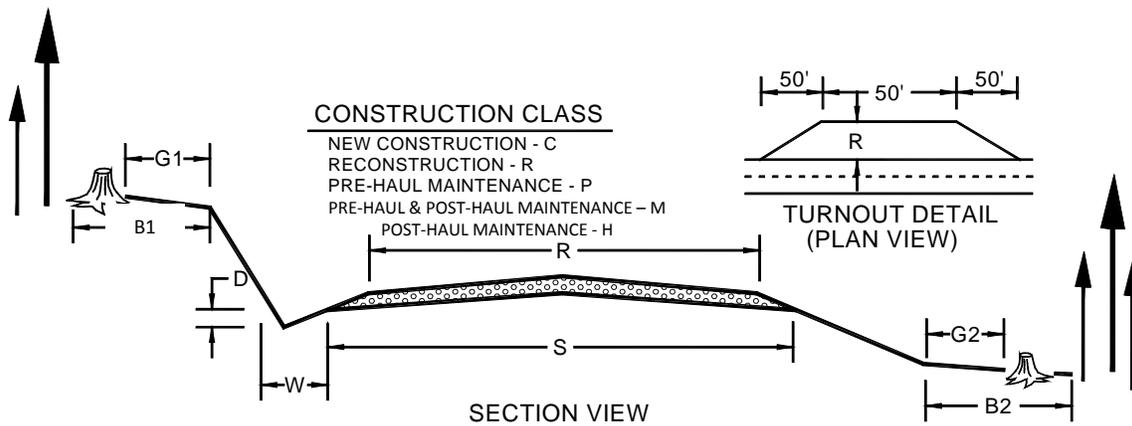
**10-21 METAL BAND**

Metal coupling and end bands shall meet the AASHTO specification designated for the culvert and shall have matching corrugations. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches. On culverts over 24 inches, bands shall have a minimum width of 24 inches.

**10-22 PLASTIC BAND**

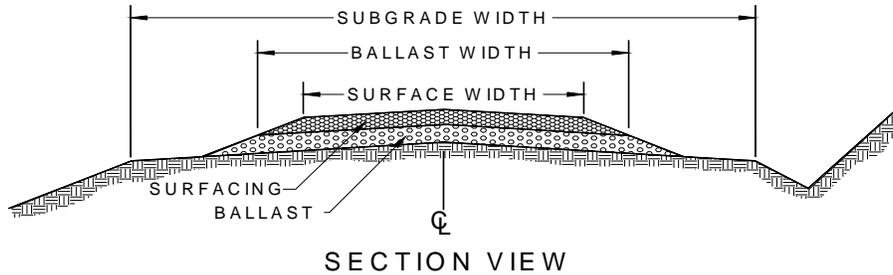
Plastic coupling and end bands shall meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer shall be used. Couplings shall be connector, or split coupling band. Split coupling bands shall have a minimum of four corrugations, two on each side of the pipe joint.

## TYPICAL SECTION SHEET



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	TOLERANCE CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (INCHES)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (B1)	ROAD FILL CLEARING (B2)
PA-S-1000	0+00	226+80	M,H	C	16	12	3	3	1				
PA-S-1090	0+00	22+00	M,H	C	16	12	3	3	1				
PA-S-1091	0+00	13+80	M,H	C	16	12	3	3	1				
PA-S-1300	0+00	78+90	C,H	C	16	12	3	3	1	5	5	10	10
PA-S-1320	0+00	5+00	C,H	C	16	12	3	3	1	5	5	10	10
PA-S-1400	0+00	34+70	M,H	C	16	12	3	3	1				
PA-S-1402	0+00	2+71	C,H	C	16	12	3	3	1	5	5	10	10
PA-S-1410	0+00	4+50	C,H	C	16	12	3	3	1	5	5	10	10
PA-I-2600	0+00	14+00	M,H	C	16	12	3	3	1	5	5	10	10
PA-I-2610	0+00	12+00	M,H	C	16	12	3	3	1	5	5	10	10
PA-I-2620	0+00	6+10	M,H	C	16	12	3	3	1	5	5	10	10
*Subgrade width varies for curves and/or fill widening: see Clause 4-8.													
**Surfaced width varies and shall be at most only 3 feet less in width than the finished subgrade width													
H = Post-Haul Maintenance													
M = Pre-Haul Maintenance													
C = New Construction													
R = Reconstruction													

## ROCK LIST



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depth listed. All depths are compacted depths.
  2. Rock slopes shall be 1 ½ (H): 1 (V).
  3. All rock sources are subject to written approval by the contract Administrator
- A = Place Pit (Pit Run Ballast, 3"-0)  
 B = Sirloin Pit (Shot Rock Ballast, 3"-0)  
 C = Approved commercial source for (3"-0, 1 ¼"-0, Shot Rock Ballast, Riprap)

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	BALLAST SOURCE	BALLAST TYPE	BALLAST WIDTH (ft)	BALLAST DEPTH (in)	BALLAST QUANTITY (cu.yd./sta)	BALLAST SUBTOTAL (cu.yd)	SURFACE SOURCE	SURFACE WIDTH (ft)	SURFACE DEPTH (in)	ROCK SIZE	SURFACE QUANTITY (cu.yd./sta)	SURFACE SUBTOTAL (cu.yd)
<b>PA-S-1000</b>	0+00	226+80			Pre and Post Haul Spot Rock					A,C			3"-0		60
Spot Rock	35+31									A,C			3"-0		10
Spot Rock	47+05									A,C			3"-0		10
Spot Rock	66+00									A,C			3"-0		10
Spot Rock	110+70									A,C			3"-0		10
Spot Rock	113+50									A,C			3"-0		10
Spot Rock	118+10									A,C			3"-0		10
Spot Rock	125+05									A,C			3"-0		10
Spot Rock	127+25									A,C			3"-0		10
Spot Rock	145+75									A,C			3"-0		10
Spot Rock	168+00									A,C			3"-0		10
Spot Rock	188+45									A,C			3"-0		10
<b>PA-S-1090</b>	0+00	22+00			Pre and Post Haul Spot Rock					A,C			3"-0		30
Spot Rock	4+85									A,C			3"-0		20
Spot Rock	6+30									A,C			3"-0		20
Pipe Backfill	15+40									A,C			3"-0		10
<b>PA-S-1091</b>	0+00	13+80			Pre and Post Haul Spot Rock					A,C			3"-0		30

**ROCK LIST (continued)**

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	BALLAST SOURCE	BALLAST TYPE	BALLAST WIDTH (ft)	BALLAST DEPTH (in)	BALLAST QUANTITY (cu.yd./sta)	BALLAST SUBTOTAL (cu.yd)	SURFACE SOURCE	SURFACE WIDTH (ft)	SURFACE DEPTH (in)	ROCK SIZE	SURFACE QUANTITY (cu.yd./sta)	SURFACE SUBTOTAL (cu.yd)	
<b>PA-S-1300</b>	0+00	78+90		A,B,C	Pit Run	12	12	69	5444							
Surfacing	0+00	15+00								A,C	12	6	3"-0	33	495	
Surfacing	15+00	78+90								A,C	12	6	1 1/4"-0	33	2109	
Spot Rock	0+00	78+90			Post Haul Spot Rock						A,C			1 1/4"-0		100
Spot Rock	0+19			A,B,C	Pit Run				5							
Spot Rock	0+95			A,B,C	Pit Run				5							
Spot Rock	1+40			A,B,C	Pit Run				5							
Spot Rock	2+15			A,B,C	Pit Run				5							
Spot Rock	3+20			A,B,C	Pit Run				5							
Spot Rock	3+80			A,B,C	Pit Run				5							
Spot Rock	4+30			A,B,C	Pit Run				5							
Spot Rock	4+90			A,B,C	Pit Run				5							
Spot Rock	5+60			A,B,C	Pit Run				5							
Construct Turnout Left	6+75			A,B,C	Pit Run				70							
Pipe Armoring	8+90			B,C	Rip Rap				5							
Construct Turnout Right	11+95			A,B,C	Pit Run				70							
Pipe Armoring	12+57			B,C	Rip Rap				5							
Pipe Armoring	15+68			B,C	Rip Rap				5							
Pipe Armoring	20+15			B,C	Rip Rap				5							
Pipe Armoring	24+55			B,C	Rip Rap				5							
Construct Turnout Left	25+96			A,B,C	Pit Run				70							
Pipe Armoring	26+57			B,C	Rip Rap				5							
Pipe Armoring	30+00			B,C	Rip Rap				5							
Pipe Armoring	33+45			B,C	Rip Rap				5							
Construct Turnout Right	34+86			A,B,C	Pit Run				70							
Pipe Armoring	37+08			B,C	Rip Rap				5							
Pipe Armoring	41+45			B,C	Rip Rap				5							
Construct Turnout Left	44+44			A,B,C	Pit Run				70							
Pipe Armoring	46+17			B,C	Rip Rap				5							
Pipe Armoring	53+26			B,C	Rip Rap				1							
Pipe Armoring	57+49			B,C	Rip Rap				1							
Construct Turnout	58+96			A,B,C	Pit Run				70							
Pipe Armoring	61+46			B,C	Rip Rap				1							
Pipe Armoring	64+60			B,C	Rip Rap				1							
Pipe Armoring	67+41			B,C	Rip Rap				1							
Construct Turnout	69+27			A,B,C	Pit Run				70							
Pipe Armoring	70+47			B,C	Rip Rap				1							
Pipe Armoring	74+12			B,C	Rip Rap				1							
Construct Landing	78+90			A,B,C	Pit Run				100							
<b>PA-S-1320</b>	0+00	5+00		A,B,C	Pit Run	12	12	69	345							
Construct Landing		3+00		A,B,C	Pit Run				100							
Construct Landing		5+00		A,B,C	Pit Run				100							



**CULVERT and DRAINAGE LIST**

**PAGE 1 OF 3**

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES	Type
<b>PA-S-1000</b>	0+25							Clean Inlet/Outlet	Cross Drain
	16+40							Clean Inlet/Outlet	T5 Crossing
	22+10							Clean Inlet/Outlet	Cross Drain
	26+30							Clean Inlet/Outlet	T5 Crossing
	31+90							Clean Inlet/Outlet	Cross Drain
	35+30							Clean Inlet/Outlet	T4 Crossing
	35+95							Clean Inlet/Outlet	Cross Drain
	39+30							Clean Inlet/Outlet	Cross Drain
	47+05							Clean Inlet/Outlet	T4 Crossing
	52+45							Clean Inlet/Outlet	Cross Drain
	58+35							Clean Inlet/Outlet	Cross Drain
	61+35							Clean Inlet/Outlet	Cross Drain
	66+75							Clean Inlet/Outlet	T4 Crossing
	75+80							Clean Inlet/Outlet	Cross Drain
	79+30							Clean Inlet/Outlet	Cross Drain
	81+10							Clean Inlet/Outlet	Cross Drain
	87+90							Clean Inlet/Outlet	Cross Drain
	93+10							Clean Inlet/Outlet	Cross Drain
	95+40							Clean Inlet/Outlet	Cross Drain
	102+05							Clean Inlet/Outlet	Cross Drain
	108+15							Clean Inlet/Outlet	Cross Drain
	110+70							Clean Inlet/Outlet	T3 Crossing
	112+70							Clean Inlet/Outlet	Cross Drain
	113+50							Clean Inlet/Outlet	T4 Crossing
	118+10							Clean Inlet/Outlet	T3 Crossing
	119+10							Clean Inlet/Outlet	Cross Drain
	122+80							Clean Inlet/Outlet	Cross Drain
	125+05							Clean Inlet/Outlet	T4 Crossing
	127+25							Clean Inlet/Outlet	T4 Crossing
	129+40							Clean Inlet/Outlet	Cross Drain
	134+80							Clean Inlet/Outlet	T3 Crossing
	135+60							Clean Inlet/Outlet	Cross Drain
	139+05							Clean Inlet/Outlet	Cross Drain
	145+75							Clean Inlet/Outlet	Cross Drain
149+40							Clean Inlet/Outlet	Cross Drain	
150+70							Clean Inlet/Outlet	Cross Drain	
155+40							Clean Inlet/Outlet	Cross Drain	
160+10							Clean Inlet/Outlet	Cross Drain	
163+05							Clean Inlet/Outlet	T5 Crossing	
164+20							Clean Inlet/Outlet	T5 Crossing	
165+95							Clean Inlet/Outlet	Cross Drain	
168+00							Clean Inlet/Outlet	T4 Crossing	
169+35							Clean Inlet/Outlet	Cross Drain	
170+15							Clean Inlet/Outlet	Cross Drain	
171+30							Clean Inlet/Outlet	Cross Drain	
178+20							Clean Inlet/Outlet	Cross Drain	
181+60							Clean Inlet/Outlet	Cross Drain	

**CULVERT and DRAINAGE LIST**

**PAGE 2 OF 3**

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES	Type
<b>PA-S-1090</b>	4+85							Clean Inlet/Outlet	Cross Drain
	6+30							Clean Inlet/Outlet	Cross Drain
	10+65							Clean Inlet/Outlet	Cross Drain
	12+90							Clean Inlet/Outlet	Cross Drain
	15+40	18	30				10 cy 3"-0	Install	Cross Drain
	16+80							Clean Inlet/Outlet	Cross Drain
	20+70							Clean Inlet/Outlet	Cross Drain
<b>PA-S-1091</b>	3+76							Clean Inlet/Outlet	Cross Drain
	9+64							Clean Inlet/Outlet	Cross Drain
	12+05							Clean Inlet/Outlet	Cross Drain
<b>PA-S-1300</b>	0+10	18	40				10 cy Native Material	Install	Cross Drain
	2+59							Clean Inlet/Outlet	Cross Drain
	8+90	18	30			5	10 cy Native Material	Install	Cross Drain
	8+90							30' ditchout left	
	12+57	18	30			5	10 cy Native Material	Install	Cross Drain
	12+57							30' ditchout right	
	15+68	24	68			5	10 cy Native Material	Install	Cross Drain
	20+15	18	30			5	10 cy Native Material	Install	Cross Drain
	20+15							30' ditchout left	
	24+55	24	40			5	10 cy Native Material	Install	Cross Drain
	24+70							Install Sediment Traps	
	26+57	24	30			5	10 cy Native Material	Install	Cross Drain
	26+80							Install Sediment Traps	
	30+00	18	36			5	10 cy Native Material	Install	Cross Drain
	30+00							30' ditchout left	
	33+45	18	30			5	10 cy Native Material	Install	Cross Drain
	37+08	24	44			5	10 cy Native Material	Install	Cross Drain
	37+30							Install Sediment Traps	
	41+45	18	30			5	10 cy Native Material	Install	Cross Drain
	46+17	18	30			5	10 cy Native Material	Install	Cross Drain
	49+90							30' ditchout right	
	53+26	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain
	57+49	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain
61+46	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain	
64+60	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain	
67+41	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain	
70+47	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain	
74+12	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain	

**CULVERT and DRAINAGE LIST**  
**PAGE 3 OF 3**

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)	RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES	Type
<b>PA-S-1400</b>	5+85							Clean Inlet/Outlet	T3 Crossing
	12+60	18	30		0.5	0.5	20 cy Native Material	Install	Cross Drain
	18+30	24	30		0.5	0.5	20 cy Native Material	Replace	Cross Drain
	21+65	18	28	15		5	20 cy Native Material	Install	Cross Drain
	23+60			15				Clean Inlet/Outlet	Cross Drain
	26+55	18	30	15		5	20 cy Native Material	Replace	Cross Drain
	29+55	18	30	15	0.5	0.5	10 cy Native Material	Install	Cross Drain
	32+70							Remove	Cross Drain
	34+70	18	30	20	0.5	0.5	10 cy Native Material	Install	Cross Drain
<b>PA-S-1402</b>	0+74	18	40		0.5	0.5	10 cy Native Material	Install	Cross Drain
<b>PA-S-1410</b>	0+31	18	30				10 cy Native Material	Install	Cross Drain
	3+05	18	24	15	0.5	0.5	10 cy Native Material	Install	Cross Drain
							Light riprap (cy)	78	
							3"-0	10	
* These quantities are inclusive in the Rock List									

**COMPACTION LIST**

Page 1 of 1

ROAD NAME	FROM STATION	TO STATION	TYPE*	MAX DEPTH PER LIFT (in)	EQUIPMENT TYPE**	MIN. EQUIPMENT WEIGHT (lbs)	MIN. NUMBER OF PASSES	MAX. OPERATING SPEED (mph)
PA-S-1000	0+00	226+80	M,P	12	VSD	12,000	3	3
PA-S-1090	0+00	22+00	M,P	12	VSD	12,000	3	3
PA-S-1091	0+00	13+80	M,P	12	VSD	12,000	3	3
PA-S-1300	0+00	78+90	F,S,R,P	12	VSD	12,000	3	3
PA-S-1320	0+00	5+00	F,S,R,P	12	VSD	12,000	3	3
PA-S-1400	0+00	34+70	M,P	12	VSD	12,000	3	3
PA-S-1402	0+00	2+70	F,S,R,P	12	VSD	12,000	3	3
PA-S-1410	0+00	4+60	F,S,R,P	12	VSD	12,000	3	3
PA-I-2600	0+00	14+00	M,P	12	VSD	12,000	3	3
PA-I-2610	0+00	12+00	M,P	12	VSD	12,000	3	3
PA-I-2620	0+00	6+10	M,P	12	VSD	12,000	3	3
<b>Waste Areas</b>				24	EX	12,000	11	1
<b>Type</b>	<b>Equipment</b>							
S = Subgrade	VSD = Vibratory Smooth Drum							
F = Fill	SD = Smooth Drum							
W = Waste Area	EX = Excavator/Cat							
M = Pre-haul Surface	VG = Vibratory Grid							
P = Post Haul Surface	G = Grid							
R = Rock								
E = Embankment								

## FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

### Cuts and Fills

- Maintain slope lines as constructed. 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 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 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 dissipators at culvert outlets with non-erodible material or rock.
- Keep ditches and culverts 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.

### Structures

- Repair culverts, bridges, gates, fences, signs, and other road structures as required because of purchaser use.

### Preventative Maintenance

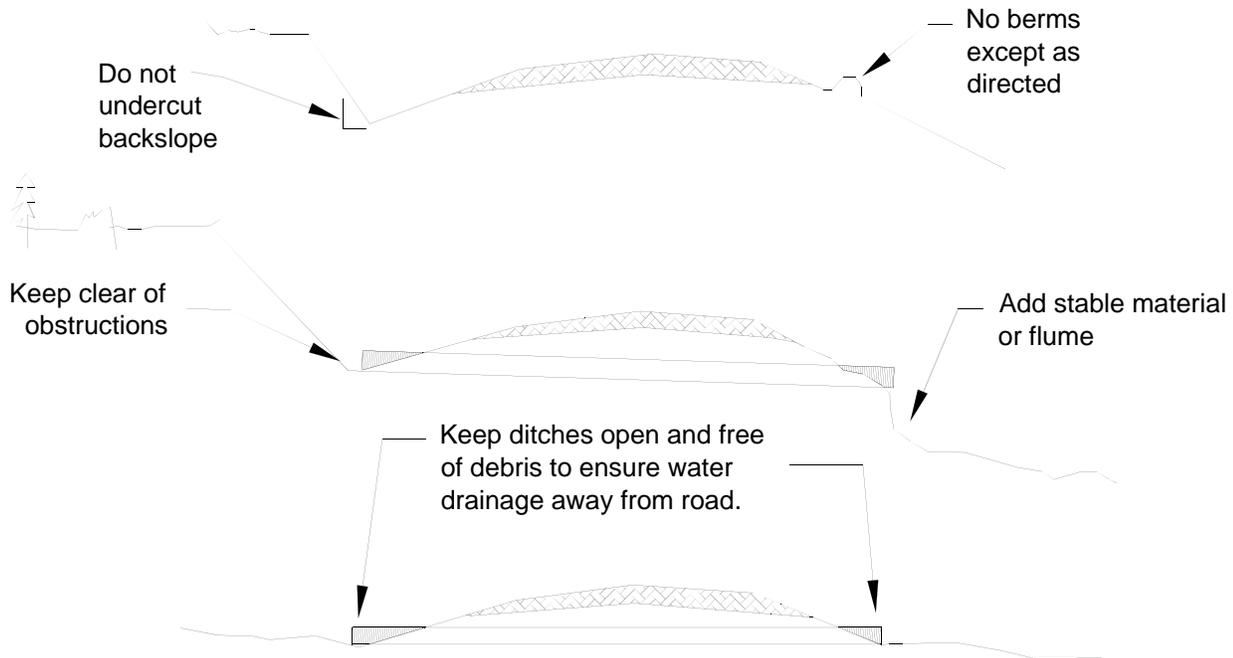
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

### 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.

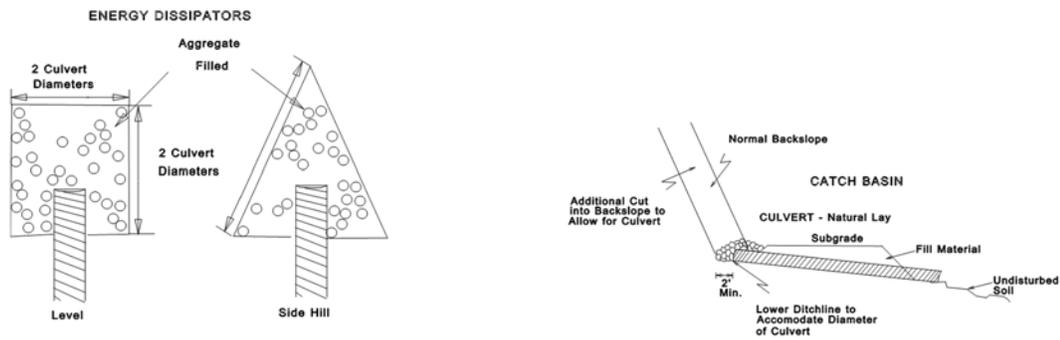
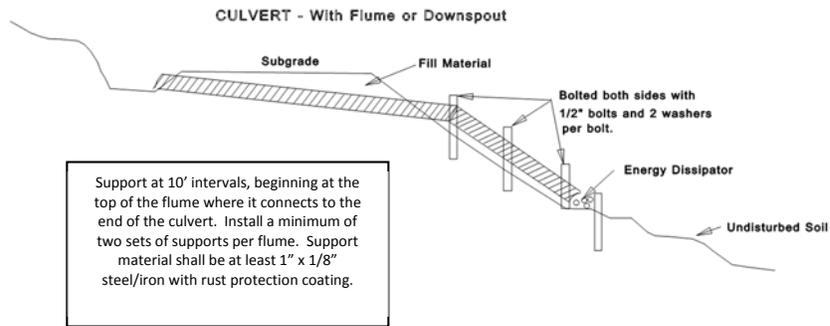


# CULVERT AND DRAINAGE SPECIFICATION DETAIL

Page 1 of 2

## INSTALLATION REQUIREMENTS:

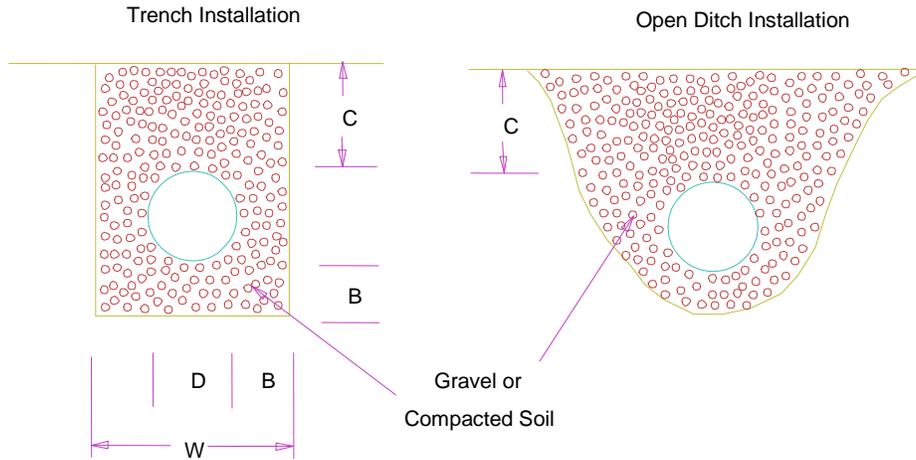
1. Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipes. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.
2. All bedding material of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill. Crushed stone, gravel or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4", whichever is smaller. All material shall be compacted in six-inch layers under the haunches, around the sides and above the pipe to the minimum height of cover.
3. Crushed stone and gravel backfill materials shall be compacted to a level of 90-95% AASHTO standard density. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



## DISSIPATOR SPECIFICATIONS:

Depth: 1 culvert diameter; Aggregate: Light riprap - 6" plus

# CULVERT AND DRAINAGE SPECIFICATION DETAIL



## MINIMUM DIMENSIONS Trench or Open Ditch Installation

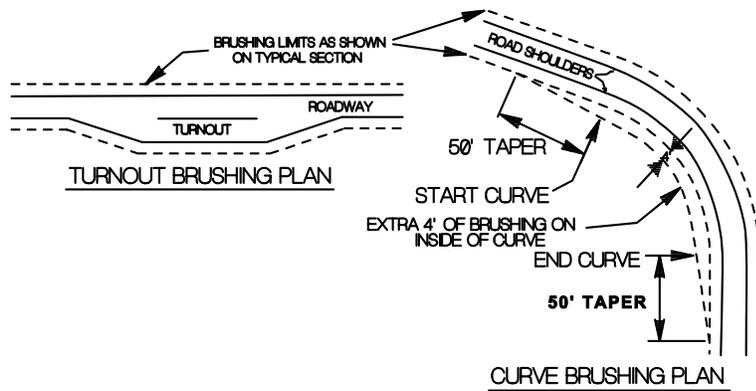
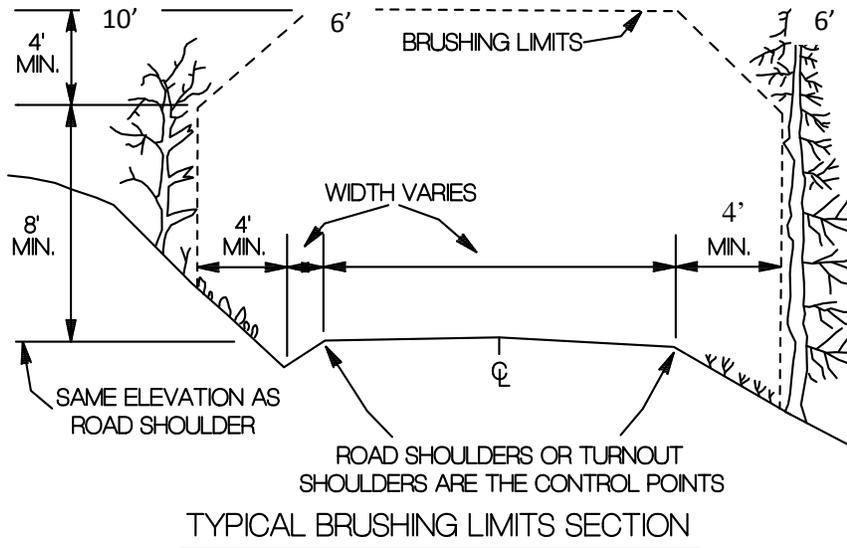
Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

**All cross-drain riprap shall be 8" – 12" light riprap unless specified otherwise.  
All backfill shall be native material unless specified otherwise.**

### Required Minimum Gauge for Metal Pipe (Unless otherwise specified by design)

<u>Diameter</u>	<u>Gauge</u>
18"	16
24" - 42"	14
48" - 54"	12
60" - 96"	10

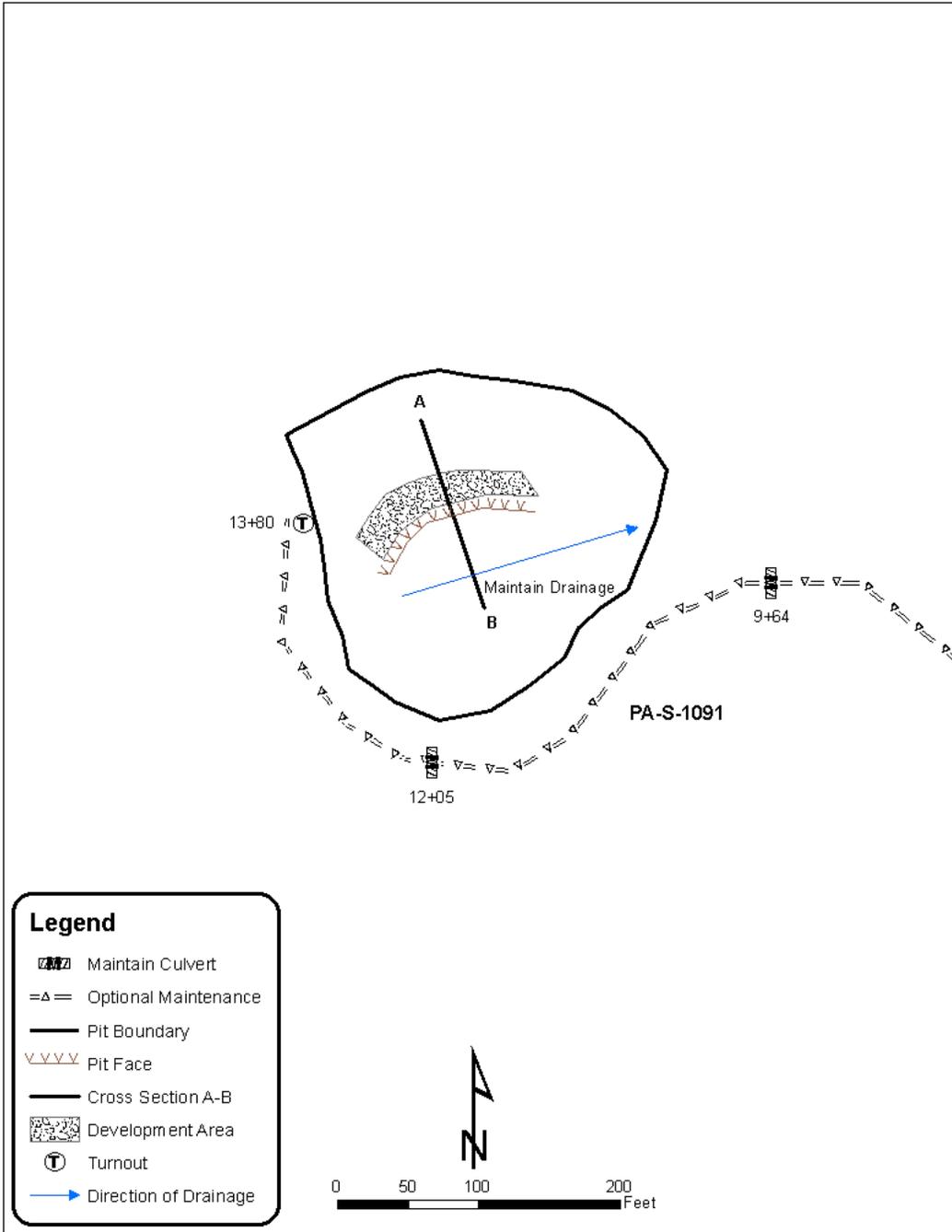
## BRUSHING DETAIL



1. All vegetation within the brushing limits shall be cut to within 3 inches of the ground, unless otherwise directed by the Contract Administrator
2. All brush, trees, limbs, etc. shall be removed from the road surface, cut banks, culvert inlets/outlets, and ditch lines
3. All debris that may roll or move into the ditch line shall be removed and placed in a stable location

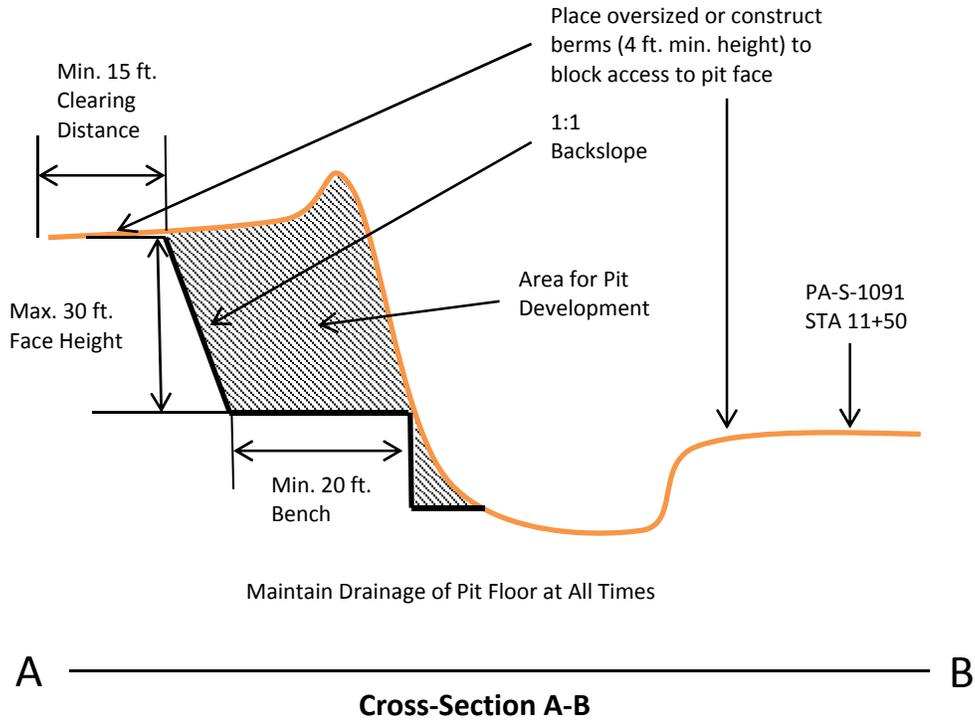


**Sirloin Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
 NW ¼, NW ¼ Sec. 10 T.30N., R.09W., W.M.  
 Page 1 of 3  
 PLAN VIEW



NOTE: Quantity and quality of SHOT BALLAST in the pit is not guaranteed by the State. All rock shall meet the specifications in the Road Plan.

**Sirloin Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**NW ¼, NW ¼ Sec. 10 T.30N., R.09W., W.M.**  
**Page 2 of 3**  
**PROFILE VIEW**  
**(Not to Scale)**

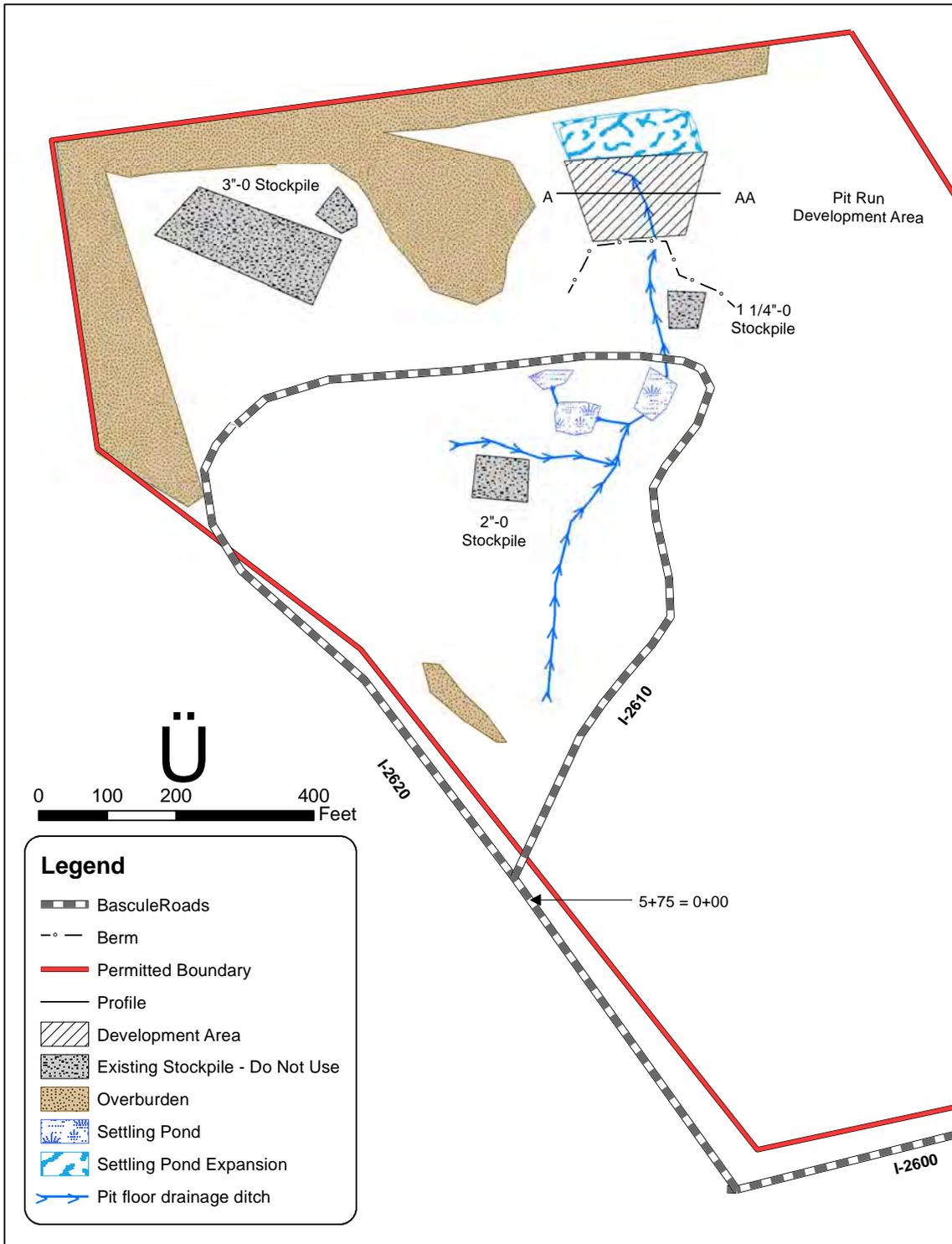


**Sirloin Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**NW ¼, NW ¼ Sec. 10 T.30N., R.09W., W.M.**  
**Page 3 of 3**  
**PIT DEVELOPMENT REQUIREMENTS**

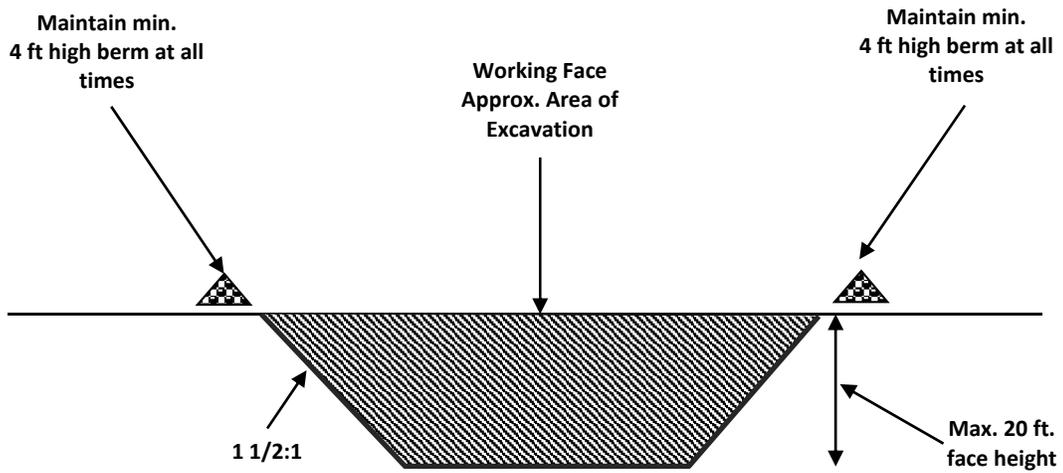
PIT DEVELOPMENT REQUIREMENTS include but are not limited to the following:

1. Activity and Marbled Murrelet timing restrictions per **Clause 1-25 and Clause 1-27**
2. If Purchaser elects to develop the rock source, development shall proceed with ripping, and/or drilling and shooting, and/or other approved methods to reduce material size to produce ballast.
3. Purchaser shall give the Contract Administrator a minimum of 7 days notice prior to commencing any operations, and prepare an approved ROCK SOURCE DEVELOPMENT PLAN as per **Clause 6-10**.
4. All work shall be kept within the designated pit boundaries and completed as directed by the Contract Administrator.
5. Pit development shall occur in a northerly direction and in accordance with the PLAN VIEW and PROFILE VIEW of the pit unless otherwise approved in writing by the Contract Administrator.
6. Pit face heights shall not exceed 30 feet; upon completion of rock removal, all pit faces shall be sloped to a 1:1 backslope.
7. Block vehicle/ORV access to top of pit faces with minimum 4 ft. high berms, riprap, etc. to prevent vehicles from driving over edges or onto pit faces.
8. Pit floor drainage shall be maintained at all times.
9. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms and/or placement of riprap or oversized to block pit face, unless otherwise approved in writing by the Contract Administrator.
10. During and after operations, the PA-S-1091 shall meet road standards set forth in this road plan, ditch lines shall be maintained and restored to a minimum 1 foot depth and 3 foot width.
11. Seed waste and overburden stockpile areas, according to the Road Plan specifications and the Contract Administrator.
12. All manufactured material is subject to approval by Contract Administrator prior to application on roads.
13. All material shall remain the property of the State.
14. At the conclusion of operations, Purchaser shall as Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.
15. All operations shall be carried out in compliance with the regulation of
  - a. Regulations and Standards Applicable to "Metal and Nonmetal Mining and Milling Operations" (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
16. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.
17. The quality and quantity of materials are not guaranteed.
18. Stockpile locations shall be determined on the ground during pit development and must be approved, in writing, by the Contract Administrator. All Stockpiling shall be done in accordance with **Clause 6-67 ROCK STOCKPILE LOCATION**.

**Place Pit  
ROCK SOURCE DEVELOPMENT PLAN  
SE ¼ Sec. 33, T.31N., R.07W., W.M.  
Page 1 of 3  
PLAN VIEW**



Place Pit  
ROCK SOURCE DEVELOPMENT PLAN  
SE ¼ Sec. 33, T.31N., R.07W., W.M.  
Page 2 of 3  
PROFILE VIEW  
(Not to Scale)



**Place Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**SE ¼ Sec. 33, T.31N., R.07W., W.M.**  
**Page 3 of 3**  
**PIT USE REQUIREMENTS**

PIT USE REQUIREMENTS include but are not limited to the following:

1. Activity and Marbled Murrelet restrictions per **Clause 1-25** and **Clause 1-27**
2. Only the quantities and sorts specified in this road plan for this sale may be used or manufactured, unless otherwise approved by the Contract Administrator in writing.
3. If Purchaser elects to use rock from a stockpile or from a pit face, Purchaser shall remove no more than the following volume of material (cubic yards truck measure) from the existing stockpile or pit face as shown on the PLAN VIEW and PROFILE VIEW, unless otherwise approved by the Contract Administrator in writing:
  - a. 7271 cubic yards of PIT RUN BALLAST
  - b. 1140 cubic yards of 3"-0 CRUSHED ROCK
4. Stockpiles shall be maintained according to **Clause 6-67**.
5. Maintain drainage of the pit floor and all drainage structures within the pit boundaries at all times to the designated settling ponds.
6. Excavated face height shall not exceed 20 feet.
7. All excavated slopes shall have a 1 1/2:1 backslope or less at the completion of operations.
8. A minimum 4 foot high berm shall be constructed and constantly maintained along the upper edge of excavated pit faces. No pit faces shall be left unblocked at any time.
9. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms, unless otherwise approved in writing by the Contract Administrator.
10. The quality and quantity of rock and materials are not guaranteed.
11. All material shall remain the property of the State.
12. At the conclusion of operations, Purchaser shall ask the Contract Administrator for written approval of the final rock source condition and compliance with the terms of this plan.
13. Prior to completion of operations, Purchaser shall reestablish the settling pond in the Northeast corner of the pit to the north of the development area sloping to a depth of **4** feet below the pit floor.
14. All operations shall be carried out in compliance with the regulation of:
  - a. Regulations and Standards Applicable to "Metal and Nonmetal Mining and Milling Operations" (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration
15. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.

## SUMMARY - Road Development Costs

REGION: OLYMPIC

DISTRICT: STRAITS

SALE/PROJECT NAME: Boundary Bascule

CONTRACT #: 30-090289

---

ROAD NUMBERS:	-	-	-
ROAD STANDARD:	Construction		Maintenance
NUMBER OF STATIONS:	\$ 91.11		329.40
CLEARING & GRUBBING:	\$ 16,339.86		
EXCAVATION AND FILL:	\$ 97,972.78		-
MISC. MAINTENANCE:			\$12,849
ROAD ROCK:	\$ 136,332.87		\$13,880
ROCK STOCKPILE PROD:	-		-
CULVERTS AND FLUMES:	\$ 15,552.60		\$3,657
STRUCTURES:	-		-
MOBILIZATION:	\$ 2,146.68		\$3,220
OVERHEAD:	\$31,944		\$3,257
TOTAL COSTS:	\$ 300,288.57		\$36,863
COST PER STATION:	\$ 3,295.89		\$112

ROAD DEACTIVATION & ABANDONMENT COSTS:

**TOTAL (All Roads) = \$337,152**  
**SALE VOLUME MBF = 6331**  
**TOTAL \$/MBF = \$53.25**

Compiled by: Justin Long

Date: 10.24.2014

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

**File Name:** [BoundaryBascule\\_costs.xlsx](#)  
**Sale/Project Name:** Boundary Bascule  
**Contract # :** 30-090289  
**Legal Desc. :** SEC 4, 5, 6,7, 8, 9, 10 T30N R09W, W.M.; SEC 36 T31N R10W, W.M.  
**District :** Straits District  
**Road Standard 1** Optional Construction  
**Road Standard 2** Required Construction  
**Road Standard 3** Optional Reconstruction  
**Road Standard 4** Required Reconstruction  
**Road Standard 5** Required Maintenance  
**Road Standard 6** Optional Maintenance

MBF =	6331
\$/MBF =	\$53.25

7.96 miles

Feet	Subtotal	Less Deactivation
1,221		
7,890	9,111	0
		0
20,570		
12,370.0	32,940	

Roads	Standard	Stations	Cost/ Station	Cost Subtotal
PA-S-1000	Required Maintenance	171.00	\$51	\$8,693
PA-S-1000	Optional Maintenance	55.80	\$52	\$2,904
PA-S-1090	Optional Maintenance	22.00	\$153	\$3,377
PA-S-1091	Optional Maintenance	13.80	\$117	\$1,614
PA-S-1300	Required Construction	78.90	\$3,494	\$275,640
PA-S-1320	Optional Construction	5.00	\$1,760	\$8,802
PA-S-1400	Required Maintenance	34.70	\$510	\$17,701
PA-S-1402	Optional Construction	2.71	\$1,958	\$5,305
PA-S-1410	Optional Contstrcuton	4.50	\$2,343	\$10,542
PA-I-2600	Optional Maintenance	14.00	\$71	\$999
PA-I-2610	Optional Maintenance	12.00	\$76	\$914
PA-I-2620	Optional Maintenance	6.10	\$109	\$663

<b>Total</b>	<b>\$337,152</b>
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**Structures**

**Contract Date:**  
**Compiled by:** J.Long  
**Date Compiled:** 11/12/14

**NOTE: Costs are based on the 10/7/11 AARF rates**

Green colored cells are filled out by estimator.  
 Yellow colored cells are factors that can be changed to fit the conditions of your project.  
 White colored cells should generally not be changed.

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1000  
STANDARD: Required Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 171.00

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39		\$0
Medium grading w/ ditch =	11.84	171.00	\$2,025
grading =			\$0
culvert cleanout/waterbar =	82.50	44.00	\$3,630
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50		\$0
Sediment Trap Maintenance =	41.25	10.00	\$413
Misc TOTAL =			\$6,067

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast	0	0
3"-0	160	160
Riprap	0	0
3" clean	0	0

\* Haul Formula: (R.T.Miles/MPH+Delay)(\$/hr / Cy/load)

R.T. Miles = see:  
Ave. Speed = RockHauling  
Delay (Hrs.)= Sheet  
Cost / Hour =

Ballast	0 Cu. yds @	\$8.76 /cu. yd =	\$0
3"-0	160 Cu. yds @	\$8.76 /cu. yd =	\$1,401
Riprap	0 Cu. yds @	\$30.58 /cu. yd =	\$0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	\$0.00
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$5.22	\$5.22	\$7.36
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.68	\$0.68	\$2.37
<b>TOTAL (\$/cy)</b>	<b>\$8.76</b>	<b>\$8.76</b>	<b>\$30.58</b>

Rock total = \$1,401

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	36	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$7,469

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 11% \$822

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-S-1000  
Standard: Required Maintenance  
Stations: 171.00

SHEET TOTAL = \$8,693

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1000  
STANDARD: Required Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 55.80

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39		\$0
Medium grading w/ ditch =	11.84	55.80	\$661
grading =			\$0
culvert cleanout/waterbar =	82.50	18.00	\$1,485
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50		\$0
Sediment Trap Maintenance =	41.25	0.00	\$0
Misc TOTAL =			\$2,146

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast	0	0
3"-0	10	10
Riprap	0	0
3" clean	0	0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	\$0.00
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$5.22	\$5.22	\$7.36
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.68	\$0.68	\$2.37
TOTAL (\$/cy)	\$8.76	\$8.76	\$30.58

\* Haul Formula: (R.T.Miles/MPH+Delay)(\$/hr / Cy/load)

R.T. Miles =	<span style="background-color: #e0ffe0;">see:</span>				
Ave. Speed =	<span style="background-color: #e0ffe0;">RockHauling</span>	Ballast	0 Cu. yds @	\$8.76 /cu. yd =	\$0
Delay (Hrs.)=	<span style="background-color: #e0ffe0;">Sheet</span>	3"-0	10 Cu. yds @	\$8.76 /cu. yd =	\$88
Cost / Hour =		Riprap	0 Cu. yds @	\$30.58 /cu. yd =	\$0

Rock total = \$88

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	36	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$2,233

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$268

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610 Mobilization sub-total\* = \$402.50

Road No. PA-S-1000  
Standard: Required Maintenance  
Stations: 55.80

SHEET TOTAL = \$2,904

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1090  
STANDARD: Optional Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 22

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	22.00	\$317
Heavy grading w/ ditch =	23.67	22.00	\$521
grading =			\$0
culvert cleanout/waterbar =	82.50	6.00	\$495
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50	0.0	\$0
Maintain Sediment traps =	41.25	\$0	\$0
Misc TOTAL =			\$1,332

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : Commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast		0
3"-0		80
Riprap		0
3" clean		0

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = see:  
Ave. Speed = RockHauling  
Delay (Hrs.)= Sheet  
Cost / Hour =

Ballast	0 Cu. yds @	\$10.30 /cu. yd =	\$0
3"-0	80 Cu. yds @	\$10.30 /cu. yd =	\$824
Riprap	0 Cu. yds @	\$32.12 /cu. yd =	\$0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.64	\$6.64	\$8.78
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.30</b>	<b>\$10.30</b>	<b>\$32.12</b>

Rock total = \$824

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	1	ADS	18	30	\$16.65	\$500
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$500

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$2,656

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$319

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-S-1090  
Standard: Optional Maintenance  
Stations: 22.00

SHEET TOTAL = \$3,377

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
 ROAD: PA-S-1091  
 STANDARD: Optional Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 13.8

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	13.80	\$199
Heavy Grading w/ Ditch grading =	23.67	13.80	\$327
culvert cleanout/waterbar =	82.50	3.00	\$248
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50	0.0	\$0
Maintain sediment traps =	41.25	\$0	\$0
Misc TOTAL =			\$773

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
 Surface source: Commercial/Place Pit/Sirloin Pit  
 Riprap source : Commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast		0
3"-0		30
Riprap		0
3" clean		0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.64	\$6.64	\$8.78
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
TOTAL (\$/cy)	\$10.30	\$10.30	\$32.12

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = see:  
 Ave. Speed = RockHauling  
 Delay (Hrs.)= Sheet  
 Cost / Hour =

Ballast	0 Cu. yds @	\$10.30 /cu. yd =	\$0
3"-0	30 Cu. yds @	\$10.30 /cu. yd =	\$309
Riprap	0 Cu. yds @	\$32.12 /cu. yd =	\$0

Rock total = \$309

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	36	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$1,082

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$130

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-S-1091  
 Standard: Optional Maintenance  
 Stations: 13.80

SHEET TOTAL = \$1,614

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1300  
STANDARD: Required Construction

CONTRACT NUMBER: 30-090289

Total stations = 78.90 Required Construction

**I. CLEARING AND GRUBBING:**

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	10	20	1.00	2.00	\$40	1.00	7.01	\$561
	25	20	1.00	2.00	\$41	1.00	4.84	\$397
	45	25	1.00	4.11	\$42	1.00	32.56	\$5,621
	80	25	1.00	6.10	\$43	1.00	30.69	\$8,050
	30	25	1.00	4.11	\$44	1.00	3.80	\$687
							78.90	

Clear and Grub TOTAL = \$15,315

**II. EXCAVATION:**

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	10	1.0	1.50	\$88	1.00	7.01	\$925
	25	1.2	2.25	\$88	1.00	4.84	\$1,150
	45	1.2	5.50	\$88	1.00	53.25	\$30,928
	80	4.5	13.00	\$88	1.00	10.00	\$51,480
	30	1.2	2.50	\$88	1.00	3.80	\$1,003
						78.90	

	Estimated Quantity	No. of Equip. Days	Cost per	Sub Total
Subgrade compaction	78.90	#sta X \$/sta	\$10.80	\$852
Grading (Medium with ditch)	78.90	#sta X \$/sta	11.84	\$934
Seed and mulch	78.90	#sta X \$/sta	\$68.87	\$5,434

Excavation TOTAL = \$92,706

**III. BALLAST AND SURFACING :**

Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : Commercial  
Pit Run Ballast Source: Commercial/Place Pit/Sirloin Pit

Description	cu.yds/sta x stations =	cubic yards
1 1/4"-0	33	63.90
3"-0	33	15.00
Riprap		62
Pit Run Ballast	69	78.90

UNIT COSTS	1 1/4" -0	3"-0	Pit Run Ballast	Riprap
Drill/shoot				
Dig and load	\$0.00	\$1.04	\$1.04	
Crushing				
Purchase/value	\$13.55	\$0.00	\$0.00	\$15.35
Haul *	\$7.59	\$6.55	\$6.55	\$8.79
Spread	\$0.99	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	\$0.83	
Move-In				
Reclamation				
Tax	\$1.93	\$0.79	\$0.79	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$24.89</b>	<b>\$10.20</b>	<b>\$10.20</b>	<b>\$32.13</b>

R.T. Miles = see:	1 1/4" -0	2209	Cu. yds @	\$24.89	/cu. yd =	\$54,972
Ave. Speed = RockHauling	3"-0	495	Cu. yds @	\$10.20	/cu. yd =	\$5,049
Delay (Hrs.)= Sheet	Riprap	62	Cu. yds @	\$32.13	/cu. yd =	\$1,992
Cost / Hour =	Pit Run Ballast	6079	Cu. yds @	\$10.20	/cu. yd =	\$62,009
CY / Load =						

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

Rock total = \$124,022

**IV. CULVERTS AND FLUMES:**

Description	Qty.	Gauge	Diameter	Length	Installed Cost/ft	Sub-total
Install	16	ADS	18	30	\$16.65	\$7,992
	7	ADS	24	30	\$16.65	\$3,497
Bands & Gaskets	3	ADS	18	2	\$16.65	\$100
	3	ADS	24	2	\$17.65	\$106
Flume	7	ADS	18	15	\$16.65	\$1,890

Culvert total = \$13,584

**V. STRUCTURES**

Description	Type	Width	Length	Cost/ft.	Sub-total

Structure total = \$0

Sub-TOTAL = \$245,628

**VI. GENERAL EXPENSES:**

Overhead & General Exp. Add 12% \$29,475

**VII. MOBILIZATION:**

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$536.67

Road No. PA-S-1300  
Standard: Required Construction  
Stations: Required Construction  
By: J.Long

SHEET TOTAL = \$275,640

Date: 11/12/2014

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
 ROAD: PA-S-1320  
 STANDARD: Required Construction

CONTRACT NUMBER: 30-090289

Total stations = 5 Required Construction

**I. CLEARING AND GRUBBING:**

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	20	20	1.00	2.00	\$40	1.00	5.00	\$400
Clear and Grub TOTAL =								\$400

**II. EXCAVATION:**

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	20	1.0	2.00	\$88	1.00	5.00	\$880
Subgrade compaction				Estimated Quantity	No. of Equip. Days	Cost per	Sub Total
Grading (Medium with ditch)				5.00	#sta X \$/sta	\$10.80	\$54
Seed and mulch				5.00	#sta X \$/sta	\$11.84	\$59
						\$68.87	\$344
Excavation TOTAL =							\$1,338

**III. BALLAST AND SURFACING :**

Surface source: Commercial/Place Pit/Sirloin Pit  
 Riprap source : Commercial  
 Pit Run Ballast Source: Commercial/Place Pit/Sirloin Pit

Description	cu.yds/sta x stations =	cubic yards
Shot Ballast 3"-0		0
Riprap		0
Pit Run Ballast	69 x 5.00	545

UNIT COSTS	3"-0	Pit Run Ballast	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing			
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.69	\$6.69	\$8.79
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.35</b>	<b>\$10.35</b>	<b>\$32.13</b>

R.T. Miles = see:	3"-0	0 Cu. yds @	\$10.35 /cu. yd =	\$0
Ave. Speed = RockHauling		0 Cu. yds @	\$32.13 /cu. yd =	\$0
Delay (Hrs.)= Sheet	Pit Run Ballast	545 Cu. yds @	\$10.35 /cu. yd =	\$5,642
Cost / Hour =				
CY / Load =				

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

Rock total = \$5,642

**IV. CULVERTS AND FLUMES:**

Description	Qty.	Gauge	Diameter	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	30	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0
Flume	0	ADS	18	10	\$16.65	\$0
Culvert total =						\$0

**V. STRUCTURES**

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0
Structure total =					\$0

Sub-TOTAL = \$7,379

**VI. GENERAL EXPENSES:**

Overhead & General Exp. Add 12% \$886

**VII. MOBILIZATION:**

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0
Total Mobilization =			\$1,610

Mobilization sub-total\* = \$536.67

Road No. PA-S-1320  
 Standard: Required Construction  
 Stations: Required Construction  
 By: J.Long

SHEET TOTAL = \$8,802

Date: 11/12/2014

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1400  
STANDARD: Required Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 34.70

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	34.00	\$489
Medium grading w/ ditch =	11.84	34.00	\$403
grading =			\$0
culvert cleanout/waterbar =	82.50	2.00	\$165
culvert removal =	170.00	1.00	\$170
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50		\$0
Sediment Trap Maintenance =	41.25	2.00	\$83
Misc TOTAL =			<u>\$1,309</u>

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast		200
3"-0		860
Riprap		14
3" clean		0

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = see:  
Ave. Speed = RockHauling  
Delay (Hrs.)= Sheet  
Cost / Hour =

Ballast	200 Cu. yds @	\$10.20 /cu. yd =	\$2,040
3"-0	860 Cu. yds @	\$10.20 /cu. yd =	\$8,772
Riprap	14 Cu. yds @	\$31.87 /cu. yd =	\$446

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing			
Purchase/value			\$15.35
Haul *	\$6.55	\$6.55	\$8.55
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.79	\$0.79	\$2.47
<b>TOTAL (\$/cy)</b>	<b>\$10.20</b>	<b>\$10.20</b>	<b>\$31.87</b>

Rock total = \$11,259

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	5	ADS	18	30	\$16.65	\$2,498
	1	ADS	24	30	\$22.00	\$660
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0
Flume	4	ADS	18	15	\$16.65	\$999
	1	ADS	18	20	\$16.65	\$333

Culvert total = \$3,158

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$15,725

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 10% \$1,573

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-S-1400  
Standard: Required Maintenance  
Stations: 34.70

SHEET TOTAL = \$17,701

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1402  
STANDARD: Optional Construction

CONTRACT NUMBER: 30-090289

Total stations = 100 2.71

**I. CLEARING AND GRUBBING:**

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	30	30	1.00	2.44	\$40	1.00	2.71	\$264
Clear and Grub TOTAL =								\$264

**II. EXCAVATION:**

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total	
	30	1.0	2.50	\$88	1.00	2.71	\$596	
Subgrade compaction				Estimated Quantity	No. of Equip. Days	Cost per	Sub Total	
Grading (Medium with ditch)				2.71	#sta X \$/sta	\$10.80	\$29	
Seed and mulch				2.71	#sta X \$/sta	\$11.84	\$32	
				2.71	#sta X \$/sta	\$68.87	\$187	
Excavation TOTAL =								\$844

**III. BALLAST AND SURFACING :**

Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : Commercial  
Pit Run Ballast Source: Commercial/Place Pit/Sirloin Pit

Description	cu.yds/sta x stations =	cubic yards
Shot Ballast 3"-0		
Riprap		1
Pit Run Ballast	69	2.71
		237

UNIT COSTS	3"-0	Pit Run Ballast	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing			
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.55	\$6.55	\$8.79
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.79	\$0.79	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.20</b>	<b>\$10.20</b>	<b>\$32.13</b>

R.T. Miles = see: 3"-0 0 Cu. yds @ \$10.20 /cu. yd = \$0  
Ave. Speed = RockHauling Riprap 1 Cu. yds @ \$32.13 /cu. yd = \$32  
Delay (Hrs.)= Sheet Pit Run Ballast 237 Cu. yds @ \$10.20 /cu. yd = \$2,417  
Cost / Hour =  
CY / Load =

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

Rock total = \$2,450

**IV. CULVERTS AND FLUMES:**

Description	Qty.	Gauge	Diameter	Length	Installed Cost/ft	Sub-total
Install	1	ADS	18	40	\$16.65	\$666
Bands & Gaskets	1	ADS	18	2	\$16.65	\$33
Flume	0	ADS	18	10	\$16.65	\$0
Culvert total =						\$699

**V. STRUCTURES**

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0
Structure total =					\$0

Sub-TOTAL = \$4,258

**VI. GENERAL EXPENSES:**

Overhead & General Exp. Add 12% \$511

**VII. MOBILIZATION:**

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0
Total Mobilization =			\$1,610

Mobilization sub-total\* = \$536.67

Road No. PA-S-1402  
Standard: Optional Construction  
Stations: 2.71  
By: J.Long

SHEET TOTAL = \$5,305

Date: 11/12/2014

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-S-1410  
STANDARD: Optional Conststruction

CONTRACT NUMBER: 30-090289

Total stations = 100 4.50

**I. CLEARING AND GRUBBING:**

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
	30	35	1.00	2.00	\$40	1.00	4.50	\$360
Clear and Grub TOTAL =								\$360

**II. EXCAVATION:**

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total	
	50	1.0	6.75	\$88	1.00	4.50	\$2,673	
Subgrade compaction				Estimated Quantity	No. of Equip. Days	Cost per	Sub Total	
				4.50	#sta X \$/sta	\$10.80	\$49	
Grading (Medium with ditch)				4.50	#sta X \$/sta	11.84	\$53	
Seed and mulch				4.50	#sta X \$/sta	\$68.87	\$310	
Excavation TOTAL =								\$3,085

**III. BALLAST AND SURFACING :**

Shot Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial  
Riprap source : Commercial/Place Pit/Sirloin Pit  
Pit Run Ballast Source: Commercial/Place Pit/Sirloin Pit

Description	cu.yds/sta x stations =	cubic yards
Shot Ballast 3"-0		0
Riprap		1
Pit Run Ballast	69 4.50	411

UNIT COSTS	3"-0	Pit Run Ballast	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing			
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.69	\$6.55	\$8.79
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.79	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.35</b>	<b>\$10.20</b>	<b>\$32.13</b>

R.T. Miles = see 3"-0 0 Cu. yds @ \$10.35 /cu. yd = \$0  
Ave. Speed = RockHauling Riprap 1 Cu. yds @ \$32.13 /cu. yd = \$32  
Delay (Hrs.)= Sheet Pit Run Ballast 411 Cu. yds @ \$10.20 /cu. yd = \$4,187  
Cost / Hour =    
CY / Load =  

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

Rock total = \$4,219

**IV. CULVERTS AND FLUMES:**

Description	Qty.	Gauge	Diameter	Length	Installed Cost/ft	Sub-total
Install	2	ADS	18	30	\$16.65	\$999
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0
Flume	1	ADS	18	15	\$16.65	\$270
Culvert total =						\$1,269

**V. STRUCTURES**

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0
Structure total =					\$0

Sub-TOTAL = \$8,933

**VI. GENERAL EXPENSES:**

Overhead & General Exp. Add 12% \$1,072

**VII. MOBILIZATION:**

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$536.67

Road No. PA-S-1410  
Standard: Optional Conststruction  
Stations: 4.50  
By: J.Long

SHEET TOTAL = \$10,542

Date: 11/12/2014

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-I-2600  
STANDARD: Optional Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 14

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	14.00	\$201
Heavy grading w/ ditch =	23.67	14.00	\$331
grading =			\$0
culvert cleanout/waterbar =	82.50	0.00	\$0
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50	0.0	\$0
Maintain Sediment traps =	41.25	\$0	\$0
Misc TOTAL =			\$533

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : Commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast		0
3"-0		0
Riprap		0
3" clean		0

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = see:  
Ave. Speed = RockHauling  
Delay (Hrs.)= Sheet  
Cost / Hour =

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.64	\$6.64	\$8.78
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.30</b>	<b>\$10.30</b>	<b>\$32.12</b>

Ballast	0 Cu. yds @	\$10.30 /cu. yd =	
3"-0	0 Cu. yds @	\$10.30 /cu. yd =	\$0
Riprap	0 Cu. yds @	\$32.12 /cu. yd =	\$0

Rock total = \$0

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	30	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$533

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$64

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610      Mobilization sub-total\* = \$402.50

Road No. PA-I-2600  
Standard: Optional Maintenance  
Stations: 14.00

SHEET TOTAL = \$999

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
ROAD: PA-I-2610  
STANDARD: Optional Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 12

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	12.00	\$173
Heavy grading w/ ditch =	23.67	12.00	\$284
grading =			\$0
culvert cleanout/waterbar =	82.50	0.00	\$0
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50	0.0	\$0
Maintain Sediment traps =	41.25	\$0	\$0
Misc TOTAL =			\$457

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
Surface source: Commercial/Place Pit/Sirloin Pit  
Riprap source : Commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast	0	0
3"-0	0	0
Riprap	0	0
3" clean	0	0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.64	\$6.64	\$8.78
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.30</b>	<b>\$10.30</b>	<b>\$32.12</b>

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = <span style="background-color: #90EE90;">see:</span>				
Ave. Speed = <span style="background-color: #90EE90;">RockHauling</span>	Ballast	0 Cu. yds @	\$10.30 /cu. yd =	\$0
Delay (Hrs.)= <span style="background-color: #90EE90;">Sheet</span>	3"-0	0 Cu. yds @	\$10.30 /cu. yd =	\$0
Cost / Hour = <span style="background-color: #90EE90;"></span>	Riprap	0 Cu. yds @	\$32.12 /cu. yd =	\$0

Rock total = \$0

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	30	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$457

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$55

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-I-2610  
Standard: Optional Maintenance  
Stations: 12.00

SHEET TOTAL = \$914

By: J.Long

Date: 11/12/14

**Road Cost Estimate**  
**PRICES AND QUANTITIES ARE NOT GUARANTEED**

OLYMPIC REGION - ROAD COST ESTIMATE - MAINTENANCE

SALE NAME: Boundary Bascule  
 ROAD: PA-I-2620  
 STANDARD: Optional Maintenance

CONTRACT NUMBER: 30-090289

Total stations = 0 6.1

I. MISC. MAINTENANCE ITEMS:

	Cost/ XX	Total XX	Sub Total
Medium mechanical brushing =	19.19		\$0
Light mechanical brushing =	14.39	6.10	\$88
Heavy grading w/ ditch =	23.67	6.10	\$144
grading =			\$0
culvert cleanout/waterbar =	82.50	0.00	\$0
culvert removal =	170.00		\$0
grass seeding and mulch =	68.87		\$0
ditch cleaning =	225.00		\$0
construct sediment traps =	82.50	0.0	\$0
Maintain Sediment traps =	41.25	\$0	\$0
Misc TOTAL =			\$232

III. BALLAST AND SURFACING :

Ballast source: Commercial/Place Pit/Sirloin Pit  
 Surface source: Commercial/Place Pit/Sirloin Pit  
 Riprap source : Commercial

Description	cu.yds/sta x stations =	cubic yards
Ballast		0
3"-0		0
Riprap		0
3" clean		0

UNIT COSTS	Ballast	3"-0	Riprap
Drill/shoot			
Dig and load	\$1.04	\$1.04	
Crushing		\$0.00	
Purchase/value	\$0.00	\$0.00	\$15.35
Haul *	\$6.64	\$6.64	\$8.78
Spread	\$0.99	\$0.99	\$5.50
Compact	\$0.83	\$0.83	
Move-In			
Reclamation			
Tax	\$0.80	\$0.80	\$2.49
<b>TOTAL (\$/cy)</b>	<b>\$10.30</b>	<b>\$10.30</b>	<b>\$32.12</b>

\* Haul Formula: (R.T.Miles/MPH+Delay)/(\$/hr / Cy/load)

R.T. Miles = <span style="background-color: #90EE90;">see:</span>				
Ave. Speed = <span style="background-color: #90EE90;">RockHauling</span>	Ballast	0 Cu. yds @	\$10.30 /cu. yd =	\$0
Delay (Hrs.)= <span style="background-color: #90EE90;">Sheet</span>	3"-0	0 Cu. yds @	\$10.30 /cu. yd =	\$0
Cost / Hour = <span style="background-color: #90EE90;"></span>	Riprap	0 Cu. yds @	\$32.12 /cu. yd =	\$0

Rock total = \$0

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	Length	Installed Cost/ft	Sub-total
Install	0	ADS	18	30	\$16.65	\$0
Bands & Gaskets	0	ADS	18	2	\$16.65	\$0

Culvert total = \$0

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					\$0

Structure total = \$0

Sub-TOTAL = \$232

VI. GENERAL EXPENSES:

Overhead & General Exp. Add 12% \$28

VII. MOBILIZATION:

Description	\$ per Move	# of Moves	Sub-total
Dump Trucks	100	2	\$200
Grader	160	1	\$160
Compactor	400	1	\$400
Excavator	450	1	\$450
Dozer (D7)	400	0	\$0
Brushcutter	400	1	\$400
Rock Drill	160	0	\$0
Dozer (D5)	240	0	\$0
Front End Loader	\$400	0	\$0

Total Mobilization = \$1,610

Mobilization sub-total\* = \$402.50

Road No. PA-I-2620  
 Standard: Optional Maintenance  
 Stations: 6.10

SHEET TOTAL = \$663

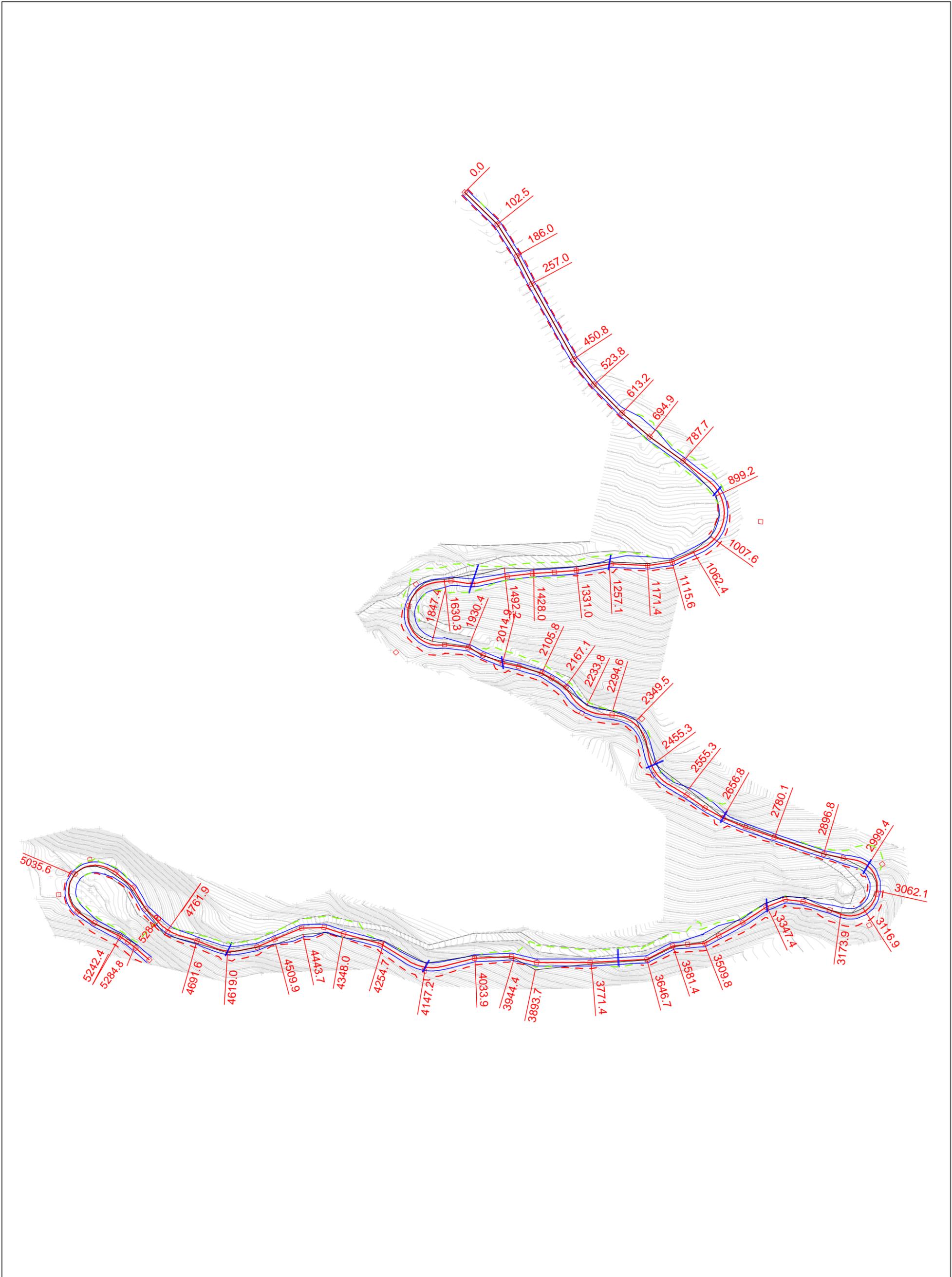
By: J.Long

Date: 11/12/14

# PA-S-1300 Design Specifications

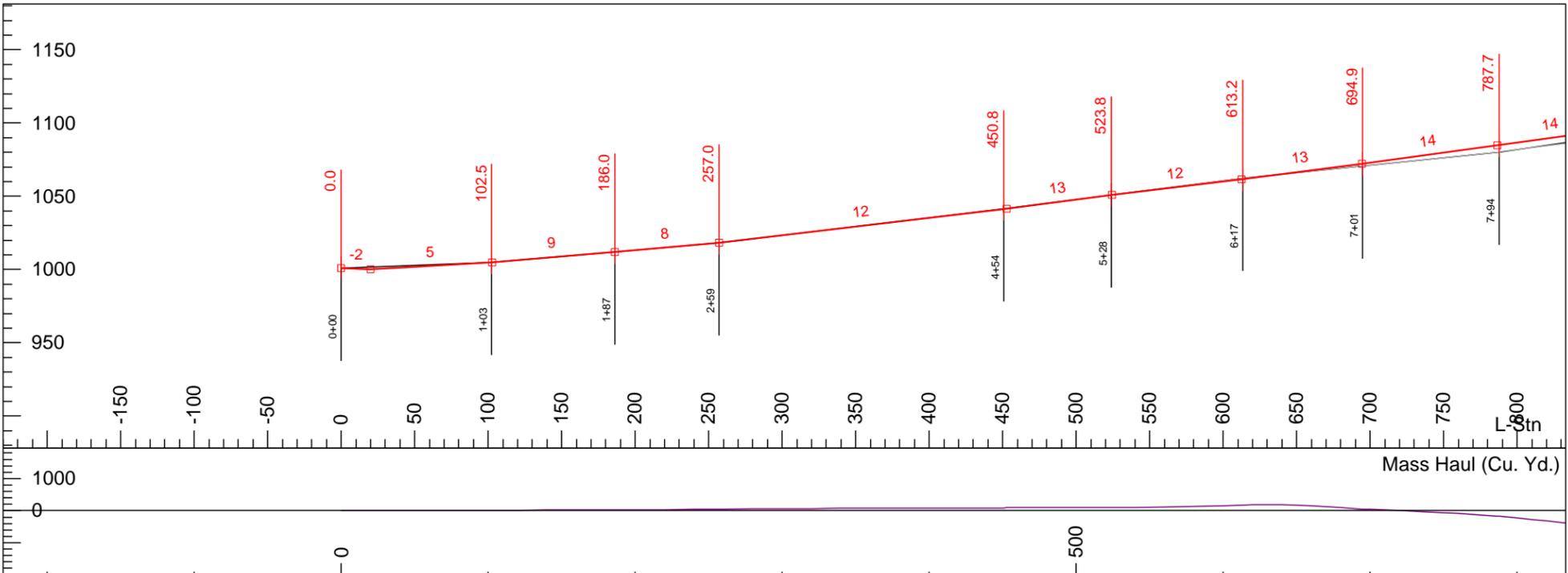
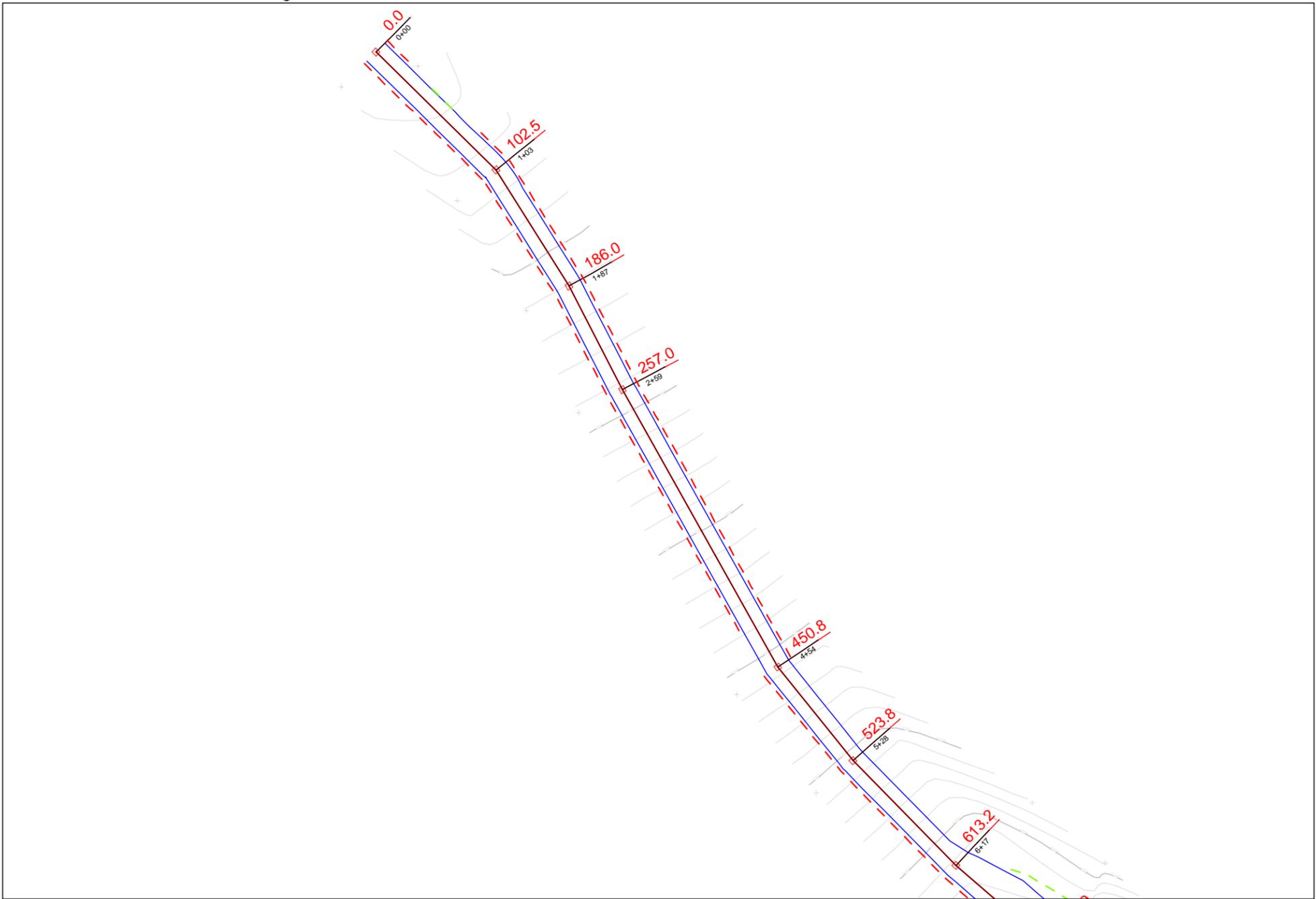


Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		



# PA-S-1300 Design Specifications

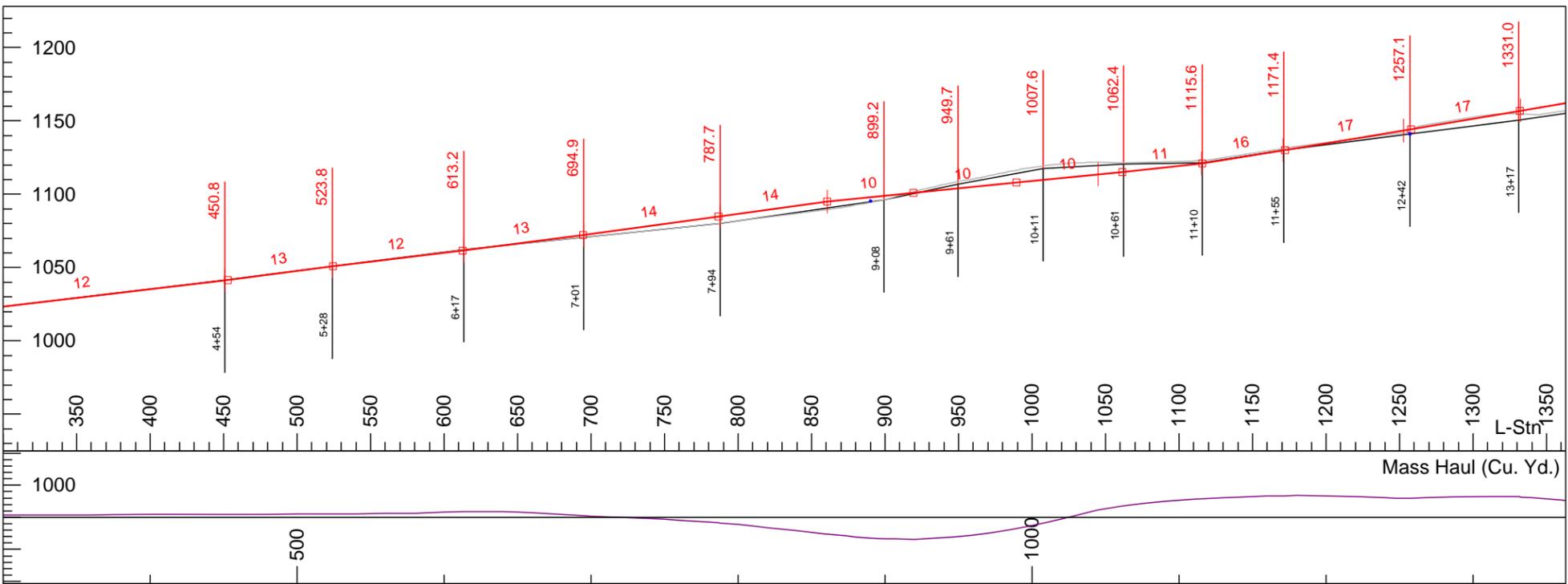
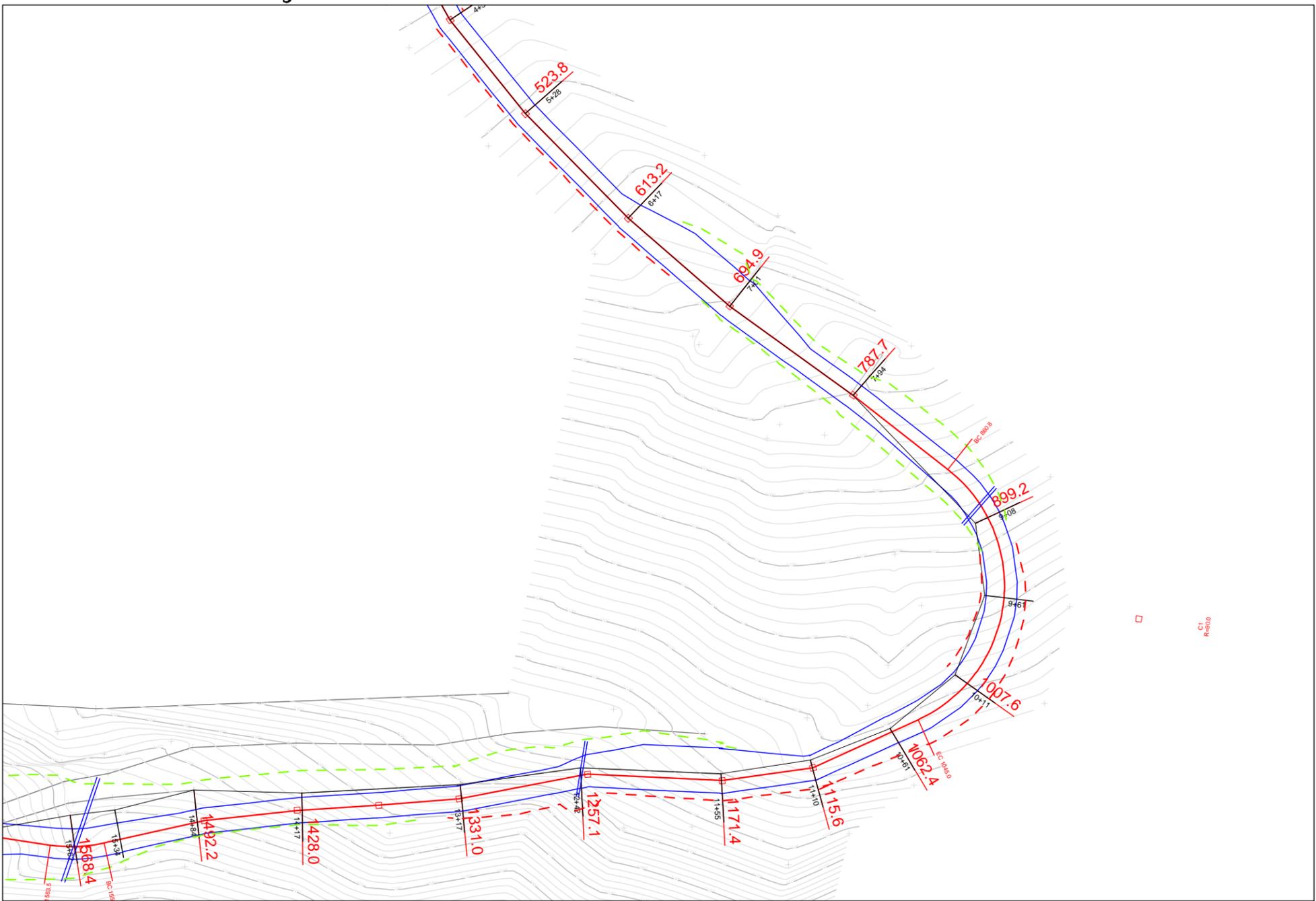
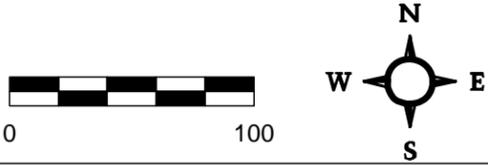
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
0.0	0.0	0.0	0.0	0.0	-9.9	0.0	9.9	0.0	0+00	7.8	7.8	200	67
102.5	102.5	0.0	-0.1	0.1	-9.9	0.1	9.9	0.1	1+03	7.8	7.8	200	67
186.0	186.0	0.0	0.0	0.0	-9.9	0.0	9.9	0.0	1+87	7.8	7.8	200	67
257.0	257.0	0.0	-0.3	0.3	-10.0	0.3	10.0	0.3	2+59	7.8	7.8	200	67
450.8	450.8	0.0	0.0	0.0	-9.9	0.0	9.9	0.0	4+54	7.8	7.8	200	67
523.8	523.8	0.0	0.1	-0.1	-30.7	-0.2	9.8	-0.1	5+28	7.8	7.8	200	67

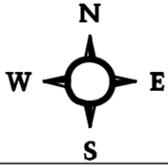
# PA-S-1300 Design Specifications

Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume

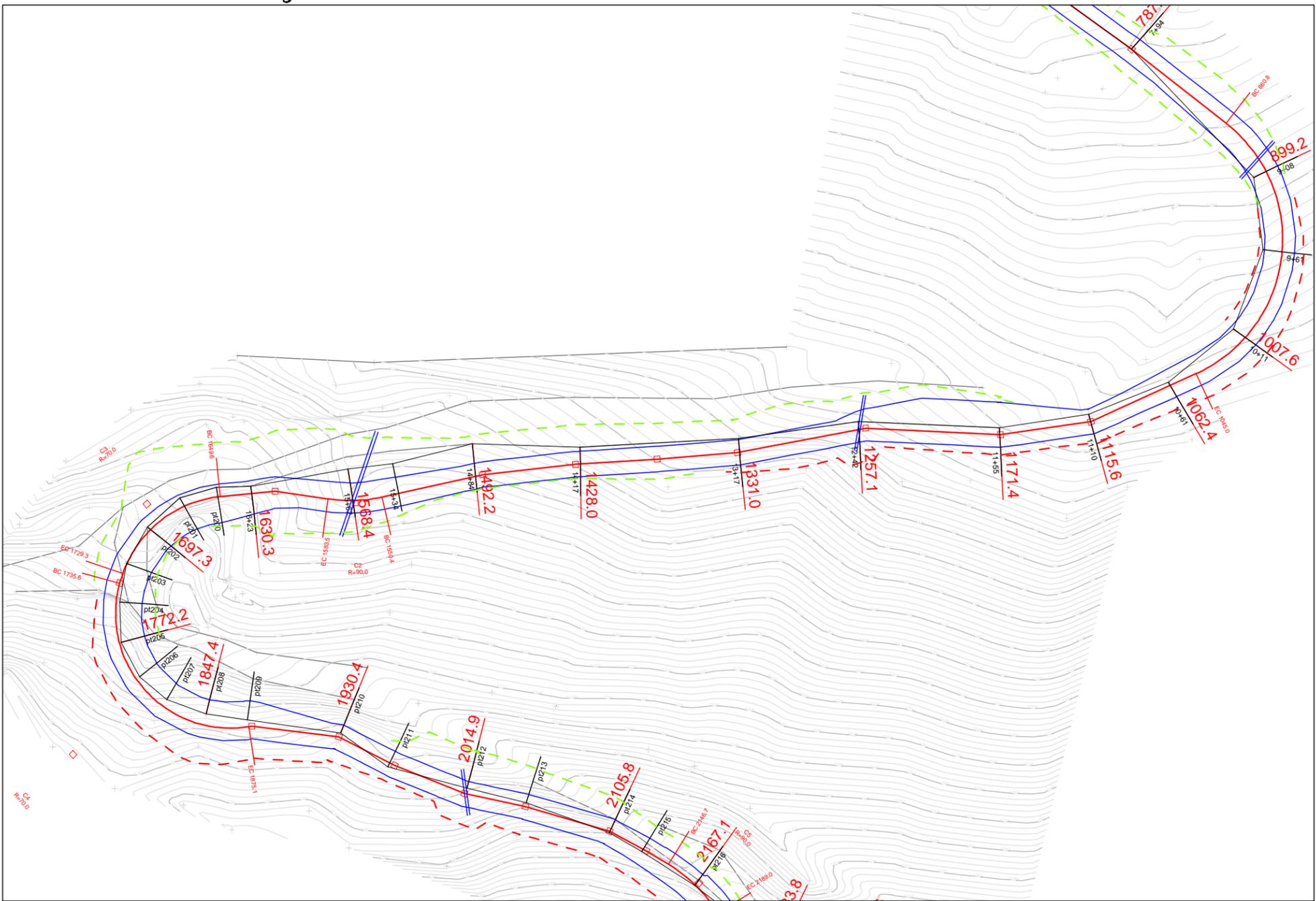


P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
613.3	613.2	0.0	-0.7	0.7	-33.5	-0.3	10.2	0.7	6+17	10.9	7.8	200	67
694.9	694.9	0.0	1.7	-1.8	-21.5	-1.8	10.1	-1.8	7+01	19.8	7.8	200	67
787.7	787.7	0.0	4.7	-4.7	-14.7	-4.9	14.5	-4.7	7+94	7.8	7.8	200	67
895.5	899.2	-8.2	2.9	-2.7	-11.2	-2.5	13.7	-2.3	9+08	7.8	10.8	200	67
939.9	949.7	-11.6	-2.6	4.6	-13.3	6.8	14.2	2.6	9+61	7.8	10.8	200	67
991.6	1007.6	-8.9	-7.8	9.5	-16.3	12.9	16.0	6.1	10+11	7.8	10.8	200	67
1042.8	1062.4	-2.3	-5.6	6.2	-15.1	10.5	21.7	-0.3	10+61	7.8	9.7	200	67
1095.1	1115.6	-4.7	-0.4	2.2	-13.6	7.5	27.1	-0.2	11+10	7.8	7.8	200	67

# PA-S-1300 Design Specifications

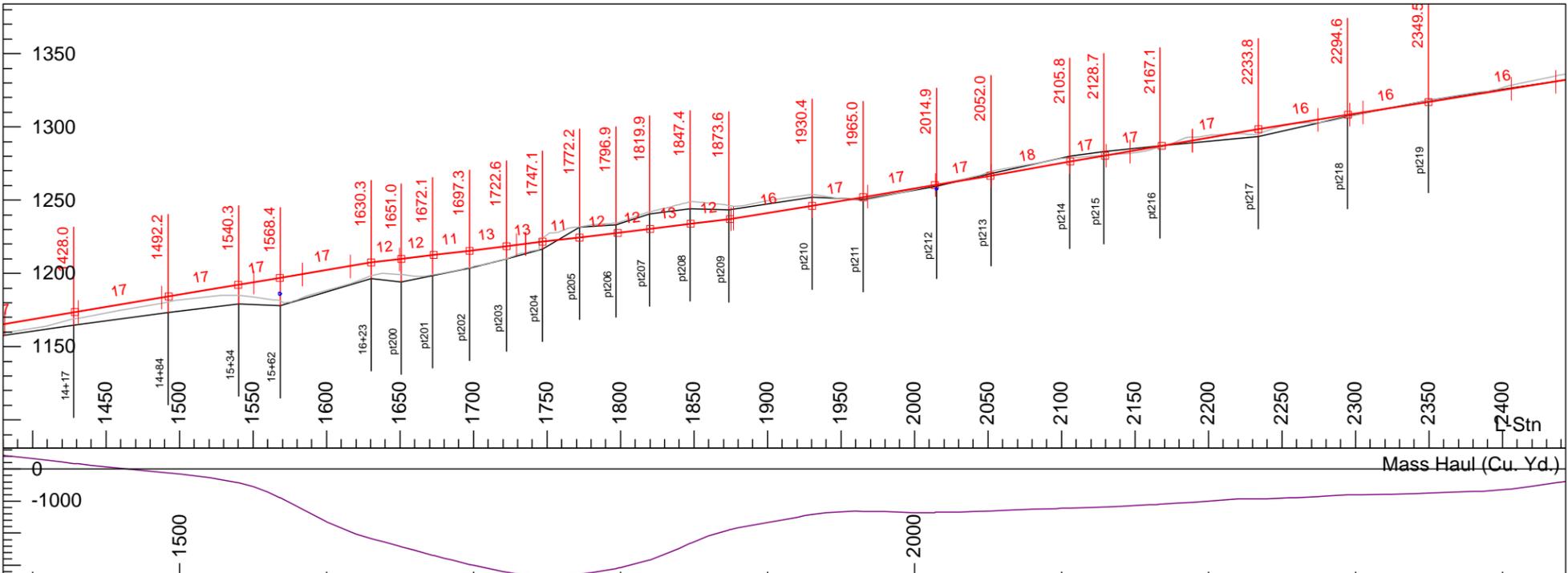
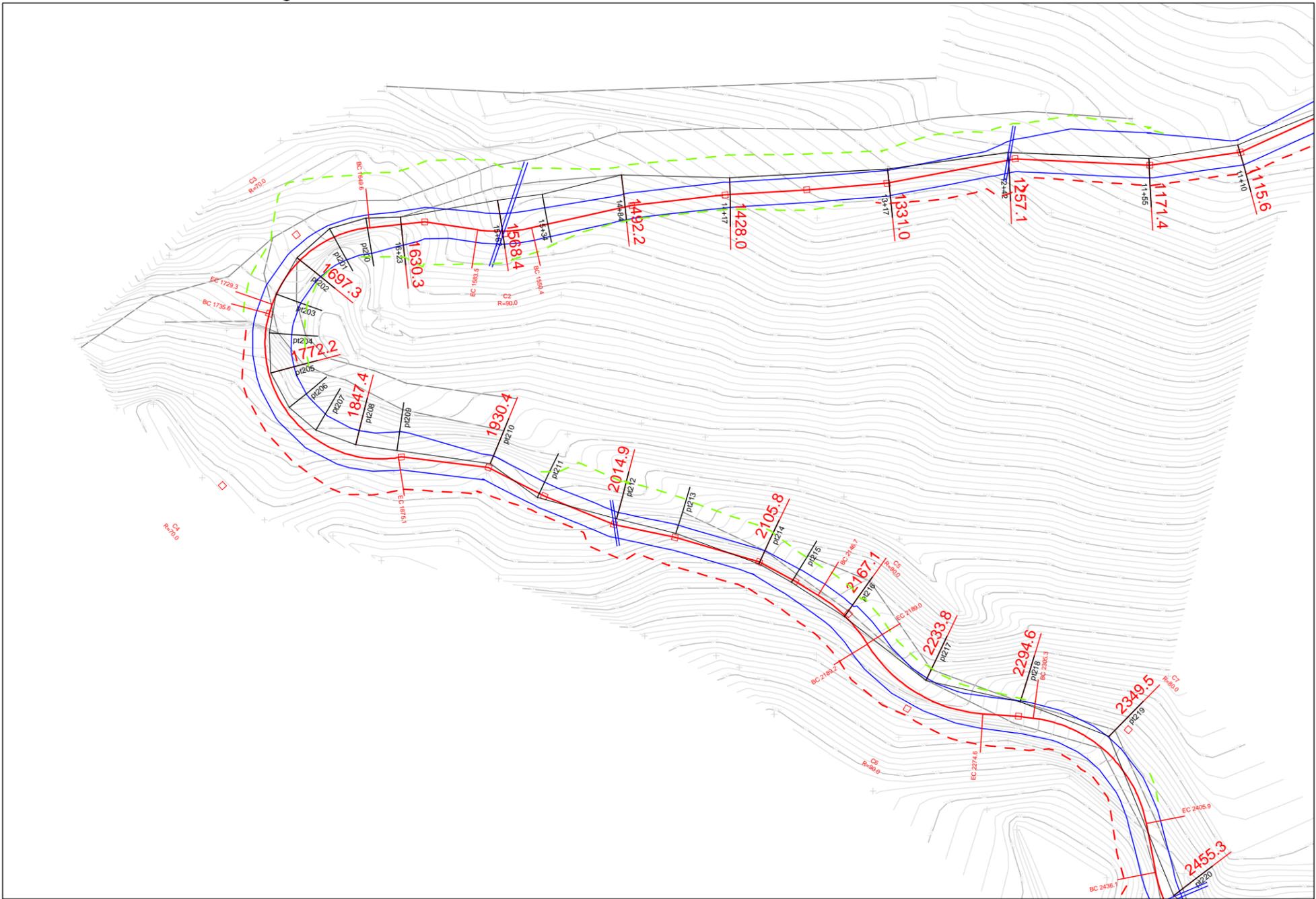
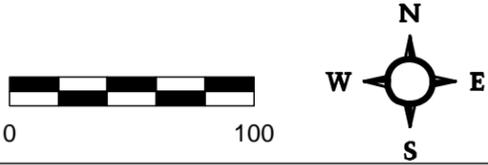


Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



# PA-S-1300 Design Specifications

Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume

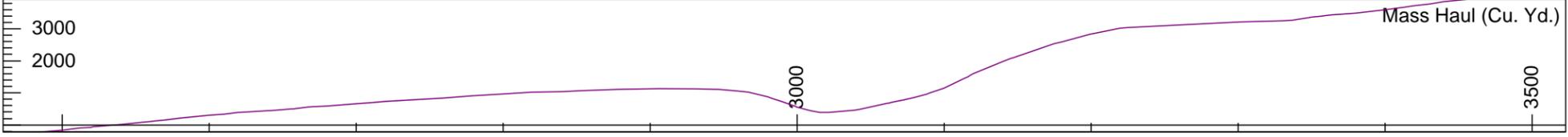
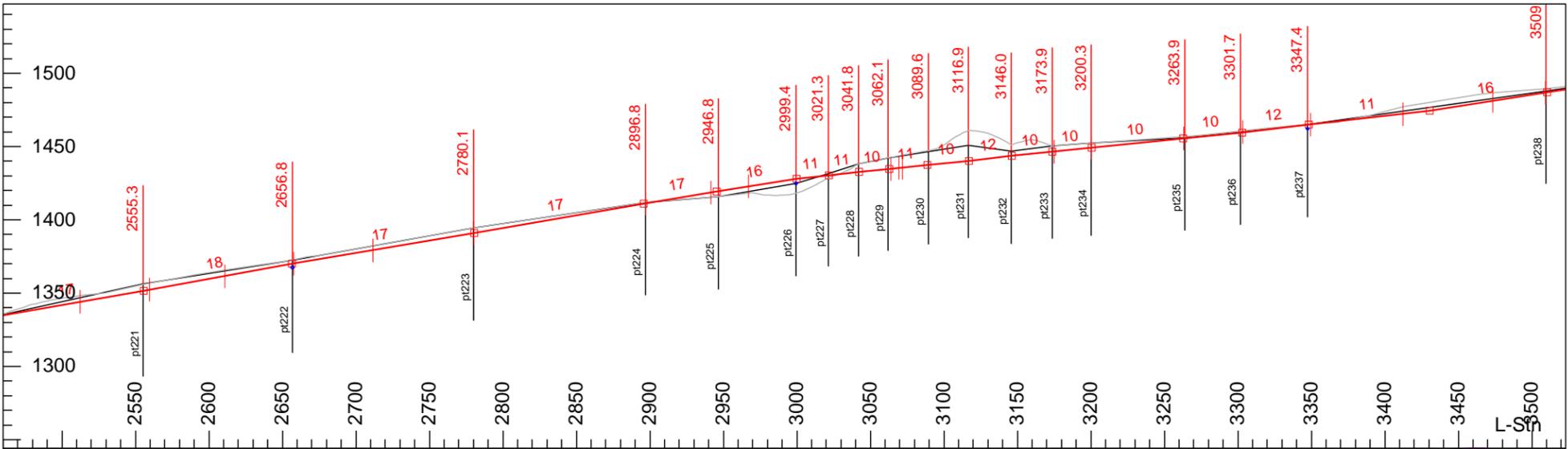
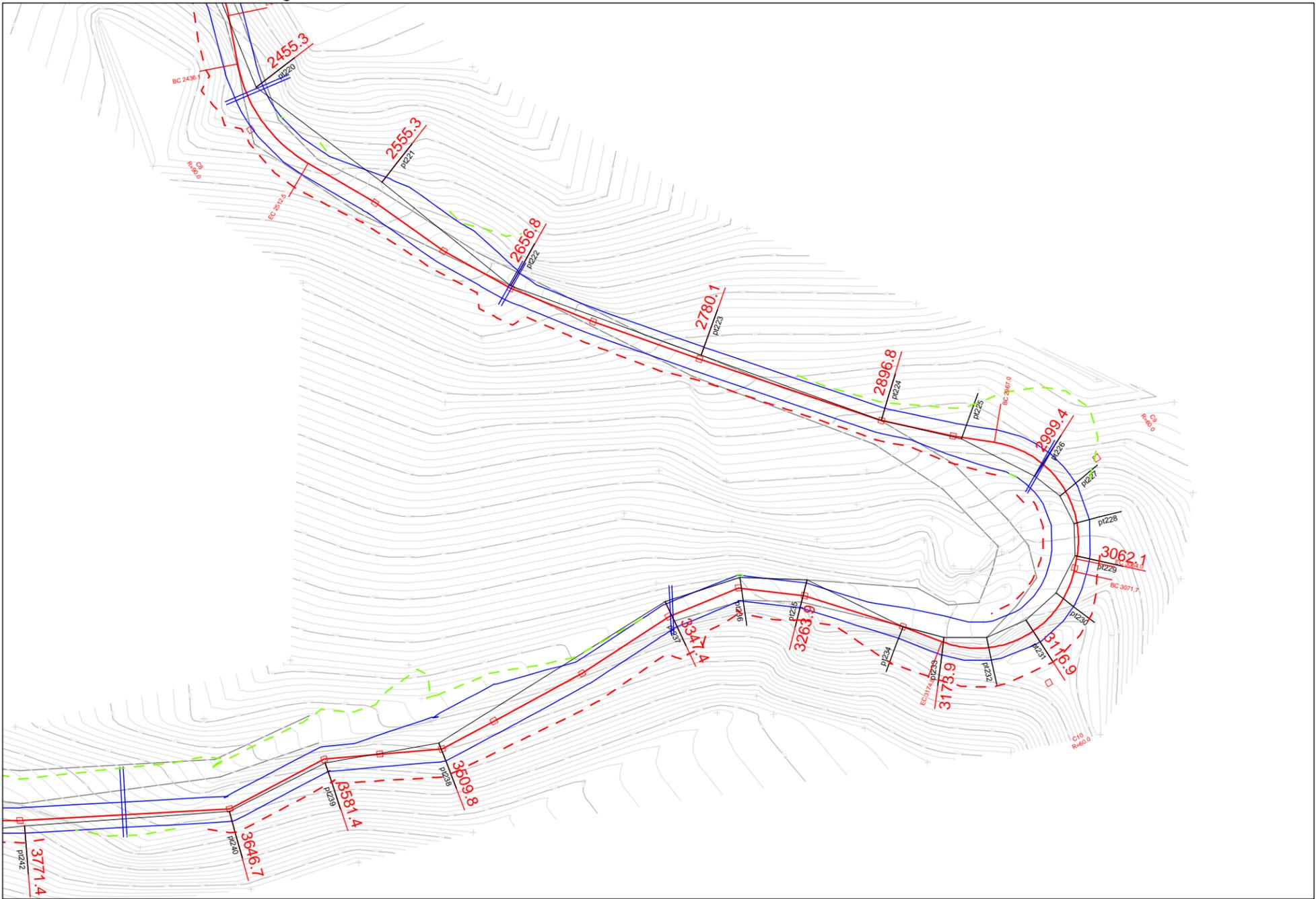
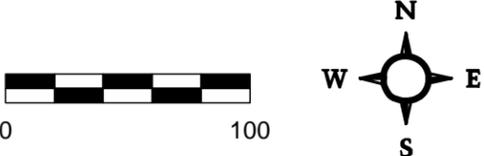


P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
1608.4	1630.3	-4.5	10.8	-8.9	-20.1	-5.3	32.1	-16.3	16+23	12.7	7.9	200	67
1629.4	1651.0	-5.9	15.7	-10.5	-17.8	-1.9	32.5	-16.7	pt200	15.8	7.8	200	67
1652.4	1672.1	-5.8	13.8	-13.2	-43.0	-0.5	38.8	-20.9	pt201	15.8	7.8	200	67
1679.0	1697.3	-2.4	11.6	-11.1	-16.8	-1.1	24.5	-11.4	pt202	15.8	7.8	200	67
1704.5	1722.6	-0.3	8.4	-8.3	-20.1	-3.4	18.7	-7.5	pt203	15.8	7.8	200	67
1728.6	1747.1	2.2	4.8	2.8	-23.8	-5.8	11.9	4.1	pt204	15.8	7.8	200	67
1753.1	1772.2	1.1	-7.2	7.6	-25.0	-6.6	16.9	14.1	pt205	15.8	7.8	200	67
1776.9	1796.9	2.4	-5.8	7.0	-20.6	-0.5	17.4	15.1	pt206	15.8	7.8	200	67
1798.4	1819.9	4.6	-10.3	12.0	-32.1	-0.5	19.3	18.9	pt207	15.8	7.8	200	67
1824.1	1847.4	6.9	-10.6	15.1	-30.2	-0.5	24.1	28.4	pt208	15.8	7.8	200	67
1849.3	1873.6	4.6	-6.8	9.4	-20.3	-0.5	19.9	20.1	pt209	15.8	7.8	200	67
1906.7	1930.4	2.8	-6.2	8.0	-13.8	-0.2	16.0	12.2	pt210	7.8	7.8	200	67
1942.0	1965.0	-2.7	1.5	-2.0	-15.0	-5.1	11.0	2.3	pt211	7.8	7.8	200	67
1991.9	2014.9	3.7	0.9	0.0	-27.1	-13.2	18.5	7.2	pt212	7.8	7.8	200	67
2029.1	2052.0	2.4	-1.8	3.4	-24.4	-11.3	17.3	14.9	pt213	7.8	7.8	200	67
2082.8	2105.8	-1.0	-3.9	2.6	-19.2	-7.9	17.0	13.2	pt214	7.8	8.3	200	67
2105.6	2128.7	-1.7	-3.0	0.5	-16.1	-5.8	18.7	13.8	pt215	7.8	9.7	200	67
2143.8	2167.1	-0.6	-0.2	-0.5	-14.3	-5.2	20.5	15.1	pt216	7.8	10.8	200	75



# PA-S-1300 Design Specifications

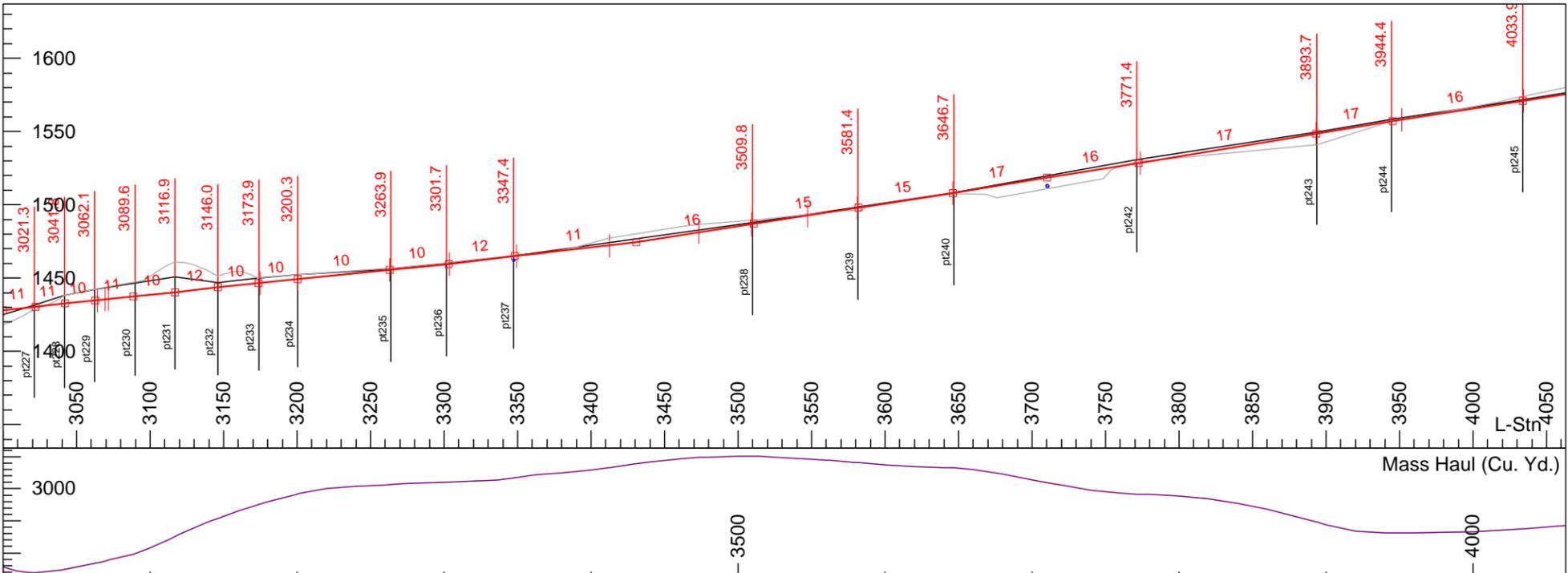
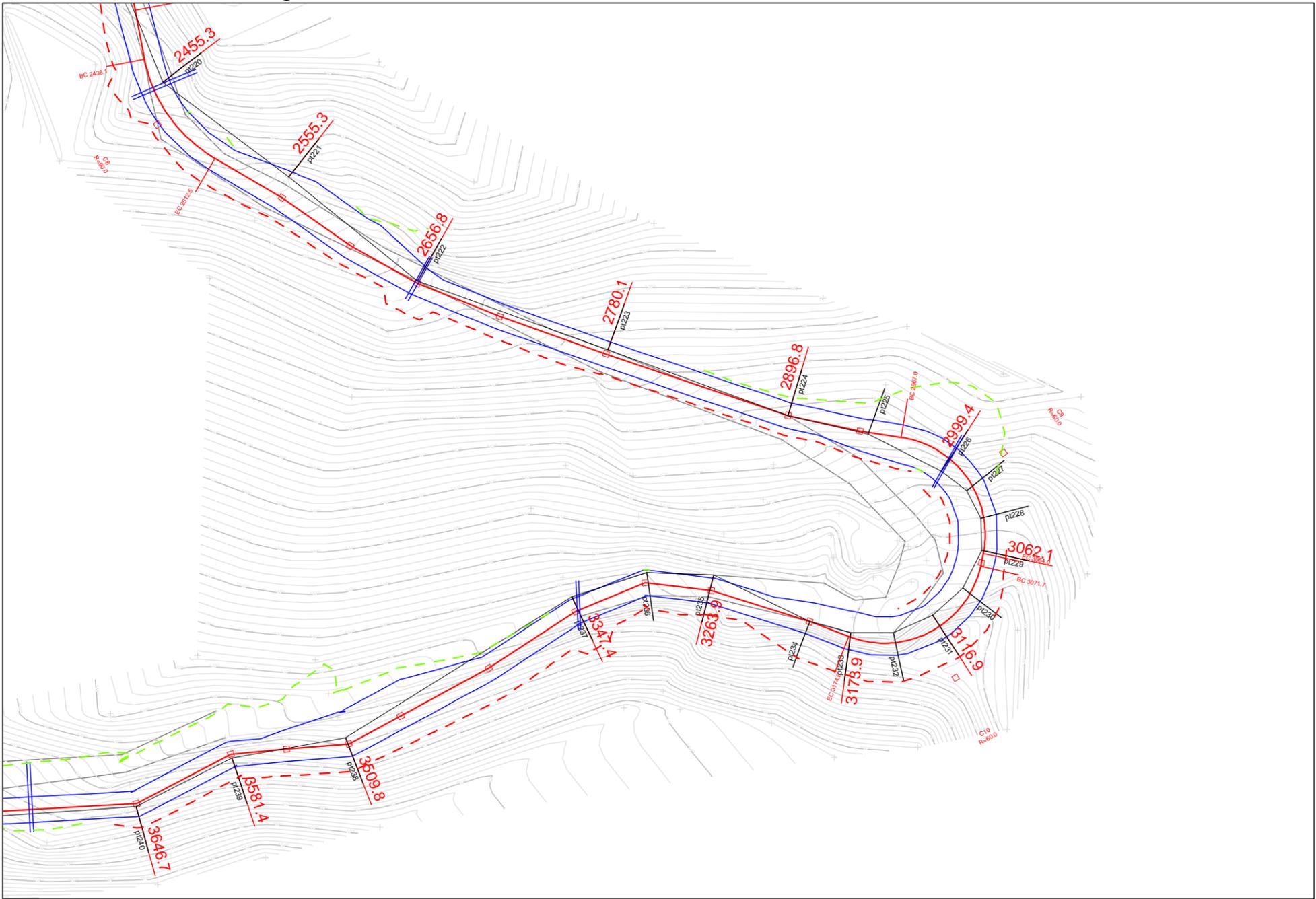
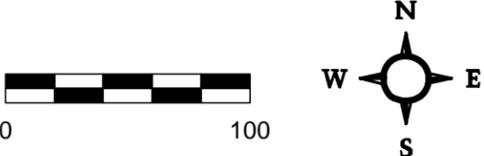
Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
2748.3	2780.1	2.6	-3.6	3.8	-13.7	-0.2	12.8	5.8	pt223	7.8	7.8	200	75
2864.9	2896.8	0.0	-0.8	0.8	-11.0	-2.7	12.3	4.9	pt224	7.8	7.8	200	75
2914.8	2946.8	-1.0	3.5	-3.7	-18.7	-8.5	16.8	4.1	pt225	7.8	12.5	200	75
2965.0	2999.4	-9.0	3.0	-10.0	-44.4	-27.7	24.7	3.4	pt226	7.8	15.8	200	75
2984.4	3021.3	-4.5	-1.1	-1.8	-17.1	-7.2	20.3	4.6	pt227	7.8	15.8	200	75
3003.3	3041.8	-1.8	-5.6	5.5	-35.3	-0.2	20.8	5.7	pt228	7.8	15.8	200	75
3022.8	3062.1	-1.2	-7.7	7.8	-13.8	8.0	21.3	6.6	pt229	7.8	15.8	200	75
3048.5	3089.6	-5.6	-8.9	9.9	-19.7	19.6	22.1	8.1	pt230	7.8	15.8	200	75
3073.1	3116.9	-8.1	-10.7	20.8	-22.3	24.9	21.8	7.6	pt231	7.8	15.8	200	75
3099.3	3146.0	-6.3	-3.3	7.6	-24.3	28.8	45.3	-0.5	pt232	7.8	15.8	200	75
3125.1	3173.9	-2.8	-3.8	3.8	-22.7	25.6	39.8	-0.5	pt233	7.8	15.8	200	75
3151.0	3200.3	0.0	-3.4	3.4	-23.5	27.4	32.0	-0.4	pt234	7.8	11.7	200	75
3215.9	3263.9	-9.7	-0.2	1.2	-15.1	10.4	10.4	-0.2	pt235	7.8	7.8	200	67

# PA-S-1300 Design Specifications

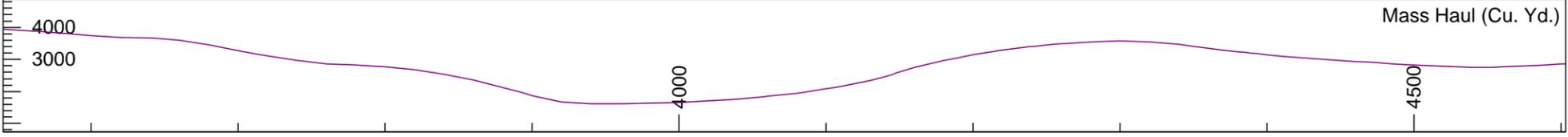
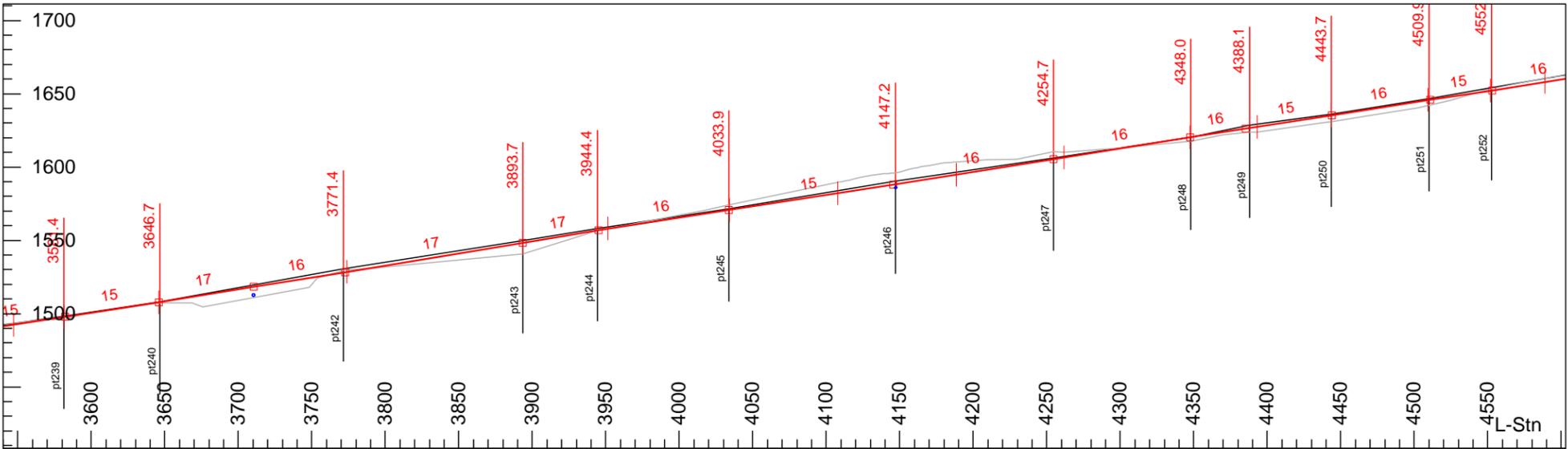
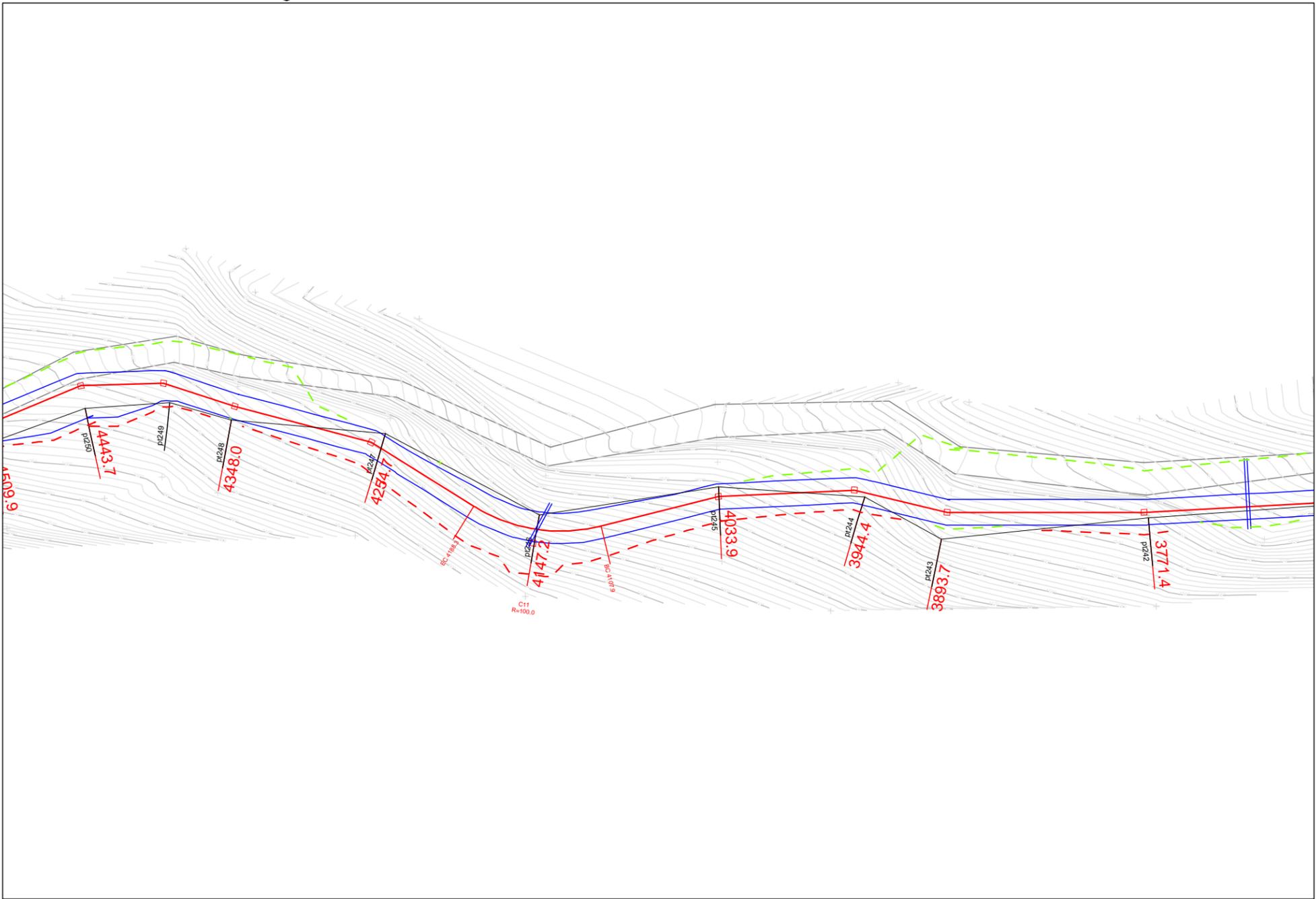
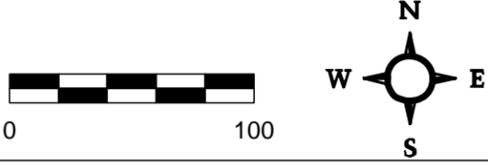
Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
3215.9	3263.9	-9.7	-0.2	1.2	-15.1	10.4	10.4	-0.2	pt235	7.8	7.8	200	67
3256.7	3301.7	-6.5	-0.4	1.0	-14.5	9.2	7.9	-0.3	pt236	7.8	7.8	200	67
3304.4	3347.4	-9.1	-0.4	0.3	-25.9	22.0	10.0	-0.2	pt237	7.8	7.8	200	67
3466.8	3509.8	-4.0	-1.1	2.7	-17.0	14.3	33.1	-10.6	pt238	7.8	19.8	200	75
3537.1	3581.4	2.3	-0.6	-1.9	-14.2	8.7	26.1	-12.5	pt239	7.8	7.8	200	67
3602.3	3646.7	1.6	-0.3	-0.4	-14.5	9.3	30.4	-15.4	pt240	7.8	7.8	200	67
3727.3	3771.4	3.4	-2.6	1.4	-13.6	7.5	25.2	-11.8	pt242	7.8	7.8	200	67

# PA-S-1300 Design Specifications

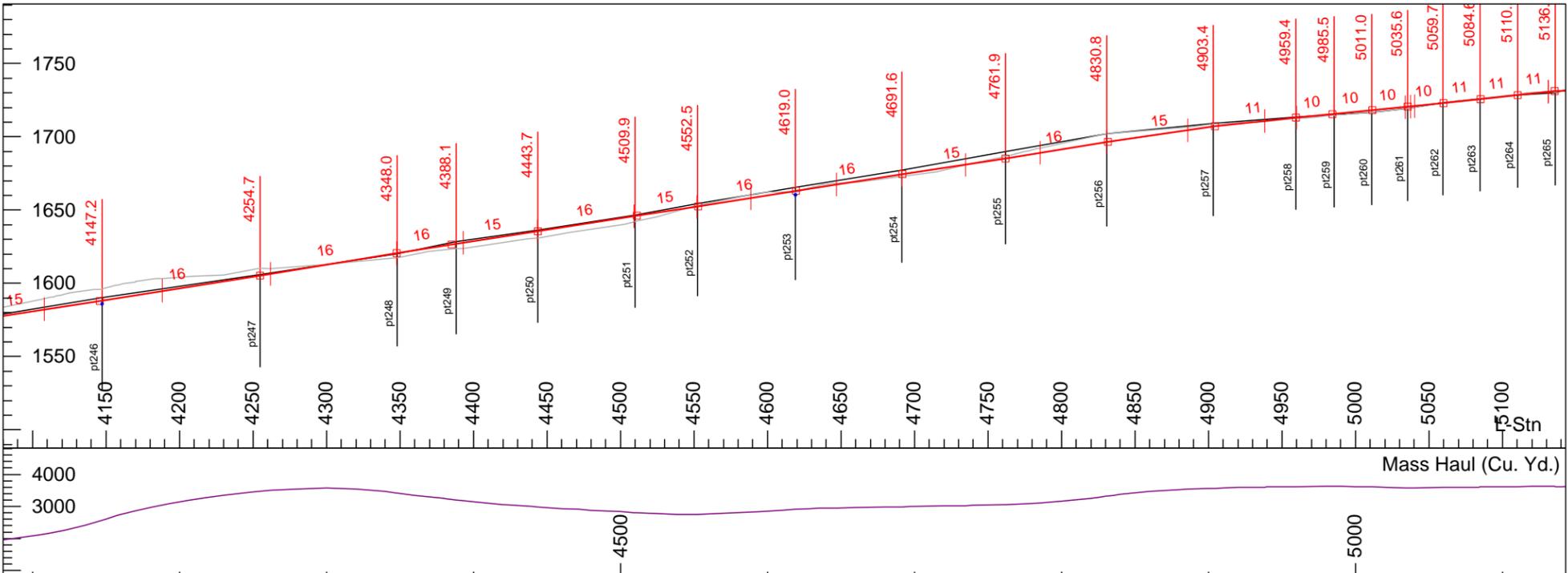
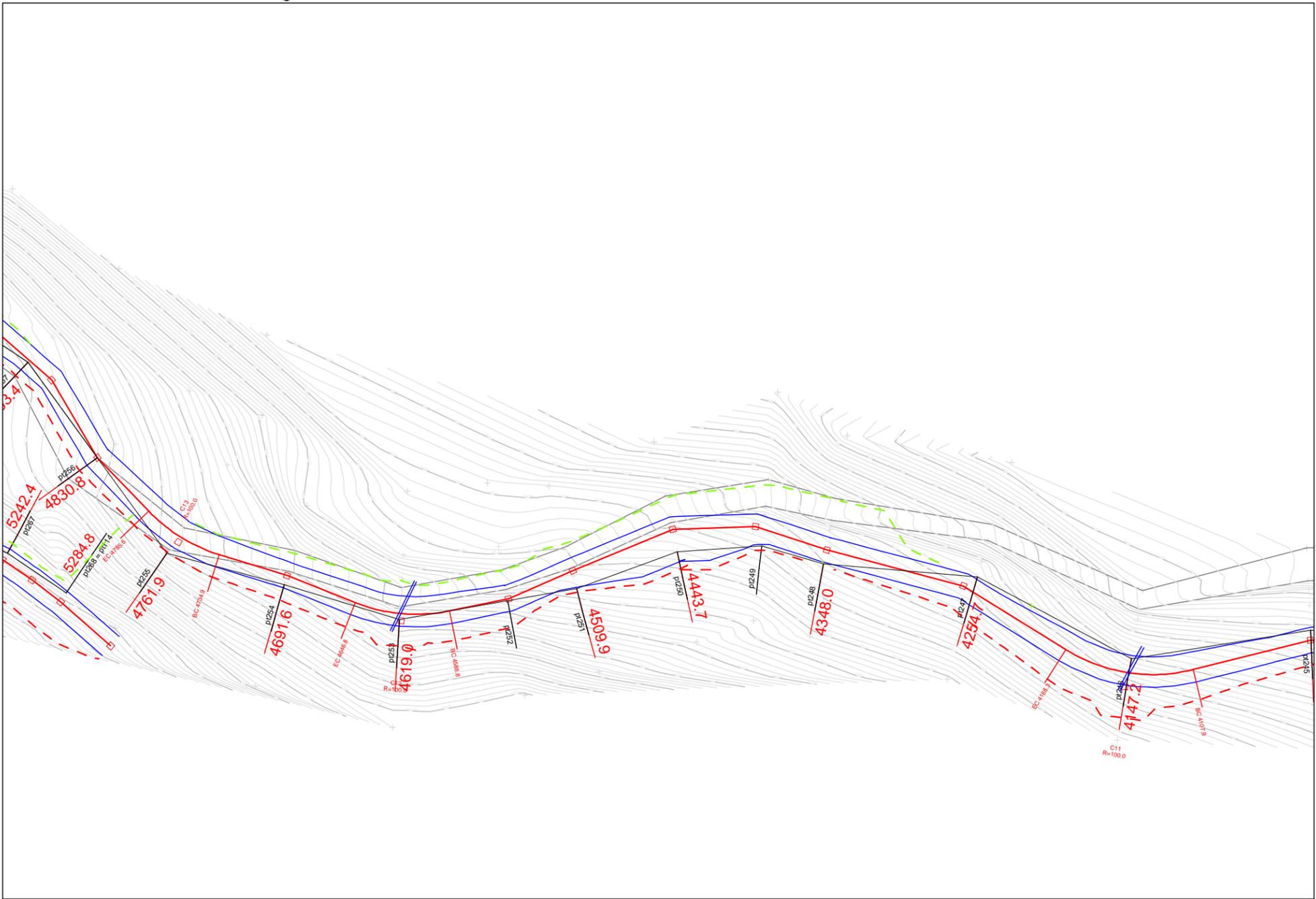
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
3853.9	3893.7	16.9	-1.3	-7.4	-10.3	-2.0	40.3	-21.9	pt243	7.8	7.8	200	67
3907.2	3944.4	2.6	-1.3	0.5	-12.2	4.6	12.7	-3.5	pt244	7.8	7.8	200	67
3996.2	4033.9	-6.0	-0.8	3.4	-14.9	10.2	8.5	-0.2	pt245	7.8	7.8	200	67
4106.6	4147.2	-8.8	-2.0	7.7	-27.7	25.6	12.1	-0.3	pt246	7.8	10.8	200	67
4212.5	4254.7	-9.5	-0.8	4.9	-15.9	12.0	10.0	-0.2	pt247	7.8	7.8	200	67
4306.4	4348.0	8.7	0.2	-3.0	-7.8	-0.3	31.2	-15.9	pt248	7.8	7.8	200	67

# PA-S-1300 Design Specifications

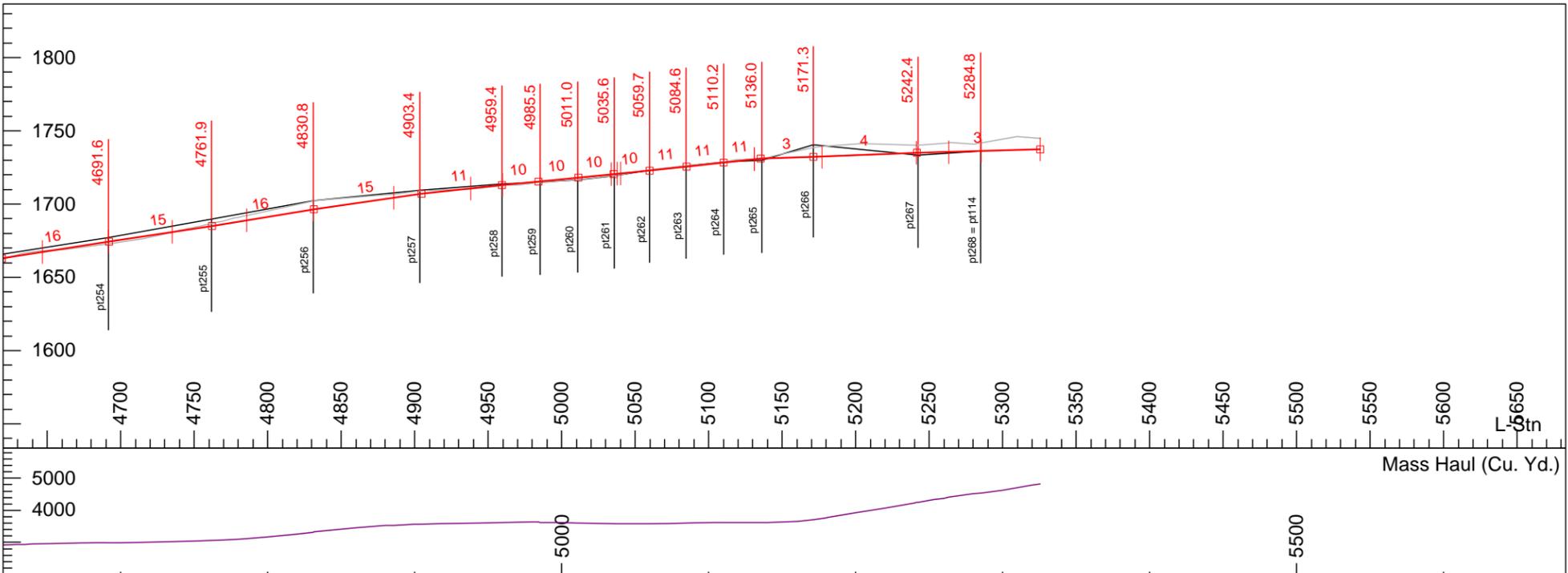
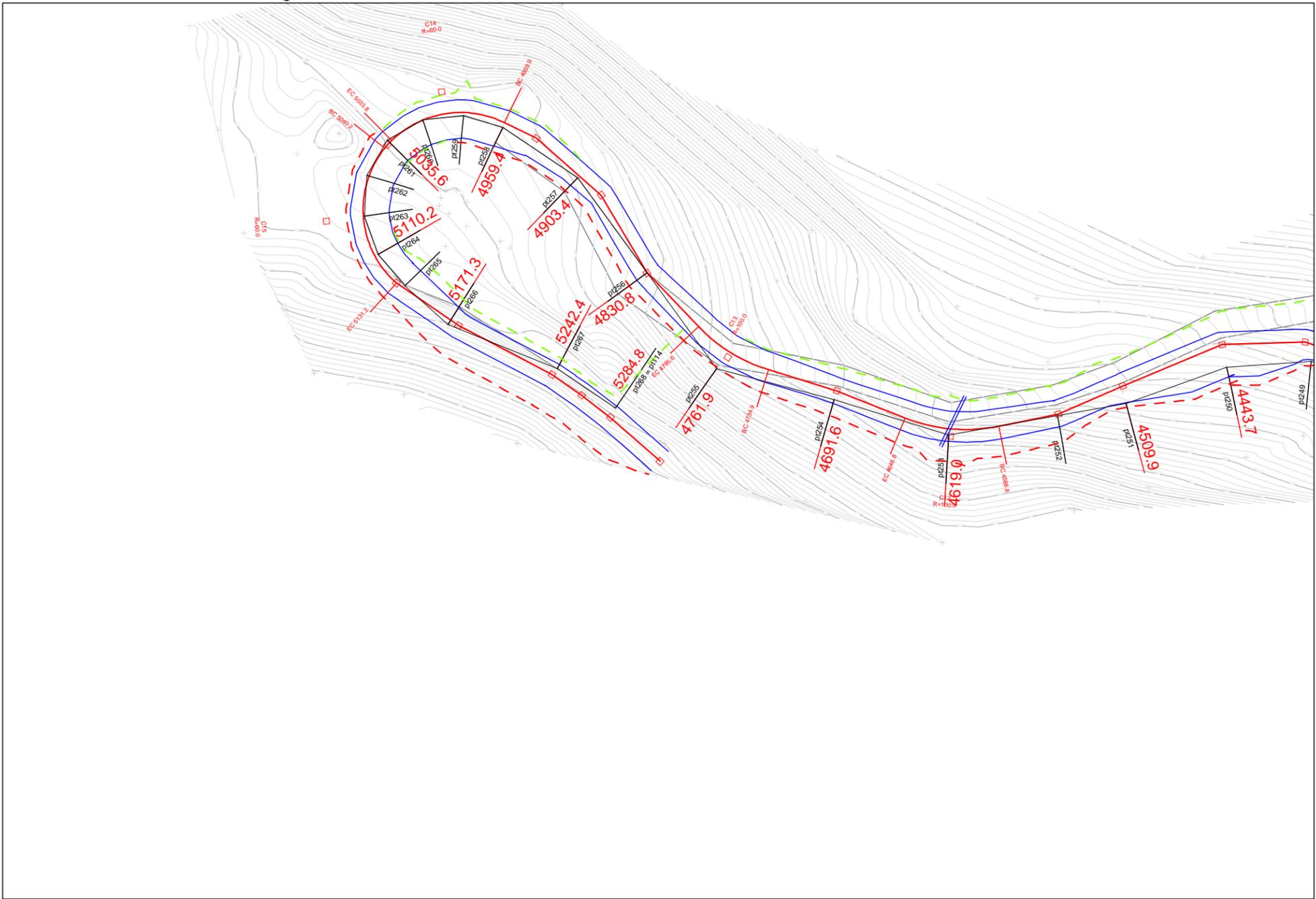
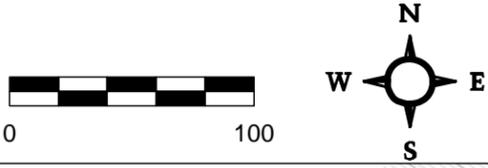
Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
4306.4	4348.0	8.7	0.2	-3.0	-7.8	-0.3	31.2	-15.9	pt248	7.8	7.8	200	67
4345.6	4388.1	10.3	-1.7	-2.9	-13.5	3.2	27.9	-13.7	pt249	9.7	7.8	200	67
4397.0	4443.7	14.0	-0.8	-4.4	-23.9	3.6	18.6	-7.5	pt250	19.8	7.8	200	67
4462.2	4509.9	11.0	-0.8	-3.7	-13.4	1.5	17.4	-6.7	pt251	10.6	7.8	200	67
4504.5	4552.5	0.9	-2.0	1.0	-17.3	15.0	18.0	-6.5	pt252	7.8	8.6	200	67
4571.5	4619.0	3.7	-2.7	-1.0	-19.8	11.8	19.8	-6.3	pt253	7.8	10.8	200	67
4644.6	4691.6	5.7	-3.0	-1.4	-15.4	11.1	14.1	-4.2	pt254	7.8	8.2	200	67
4718.5	4761.9	12.8	-4.8	1.5	-12.0	4.3	11.3	-0.7	pt255	7.8	10.8	200	67
4790.5	4830.8	0.0	-5.9	5.9	-13.4	7.1	22.6	-0.2	pt256	7.8	8.0	200	75
4862.1	4903.4	1.5	-2.3	2.0	-12.3	4.9	9.2	-0.2	pt257	7.8	7.8	200	75

# PA-S-1300 Design Specifications

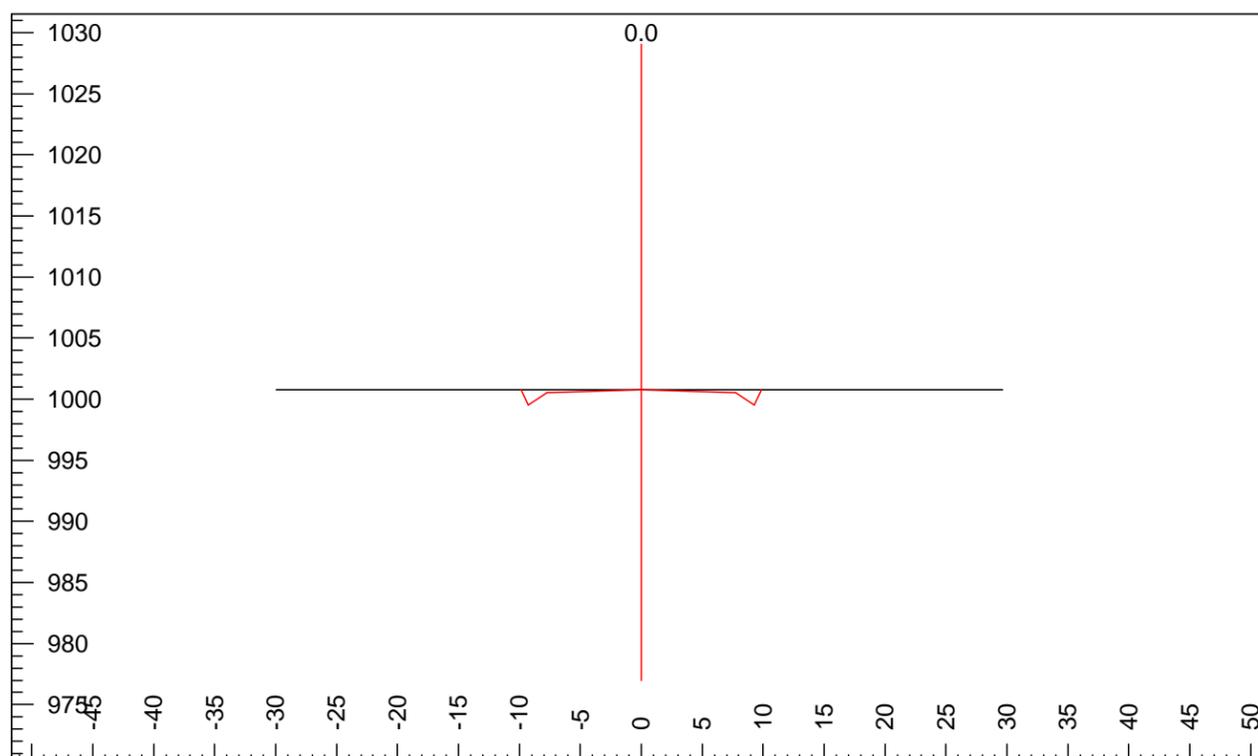
Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume



P-Stn ft.	L-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
4862.1	4903.4	1.5	-2.3	2.0	-12.3	4.9	9.2	-0.2	pt257	7.8	7.8	200	75
4917.0	4959.4	3.1	-0.6	-0.3	-19.3	2.8	9.1	-1.2	pt258	15.7	7.8	200	75
4941.9	4985.5	1.9	0.6	-0.7	-18.4	0.8	18.7	-8.5	pt259	15.8	7.8	200	75
4966.9	5011.0	-0.1	1.5	-1.4	-16.7	-1.2	11.3	-2.9	pt260	15.8	7.8	200	75
4991.7	5035.6	-2.0	1.1	-1.2	-16.4	-1.1	8.9	-1.1	pt261	15.5	7.8	200	75
5016.4	5059.7	-1.3	-0.5	0.4	-20.9	-0.5	10.8	1.8	pt262	15.8	7.8	200	75
5041.3	5084.6	0.5	-0.5	0.5	-22.4	-0.5	10.5	1.3	pt263	15.8	7.8	200	75
5066.1	5110.2	2.3	-0.2	0.5	-17.0	-1.4	10.7	1.7	pt264	15.8	7.8	200	75
5091.1	5136.0	1.6	1.1	-0.6	-20.4	-4.5	11.9	4.1	pt265	15.0	7.8	200	75
5126.5	5171.3	-3.1	-8.6	6.4	-14.8	-4.4	19.3	18.9	pt266	9.3	7.8	200	75
5198.2	5242.4	4.9	1.4	5.3	-11.3	-2.9	21.9	24.1	pt267	7.8	7.8	200	75

# PA-S-1300 Design Specifications

Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



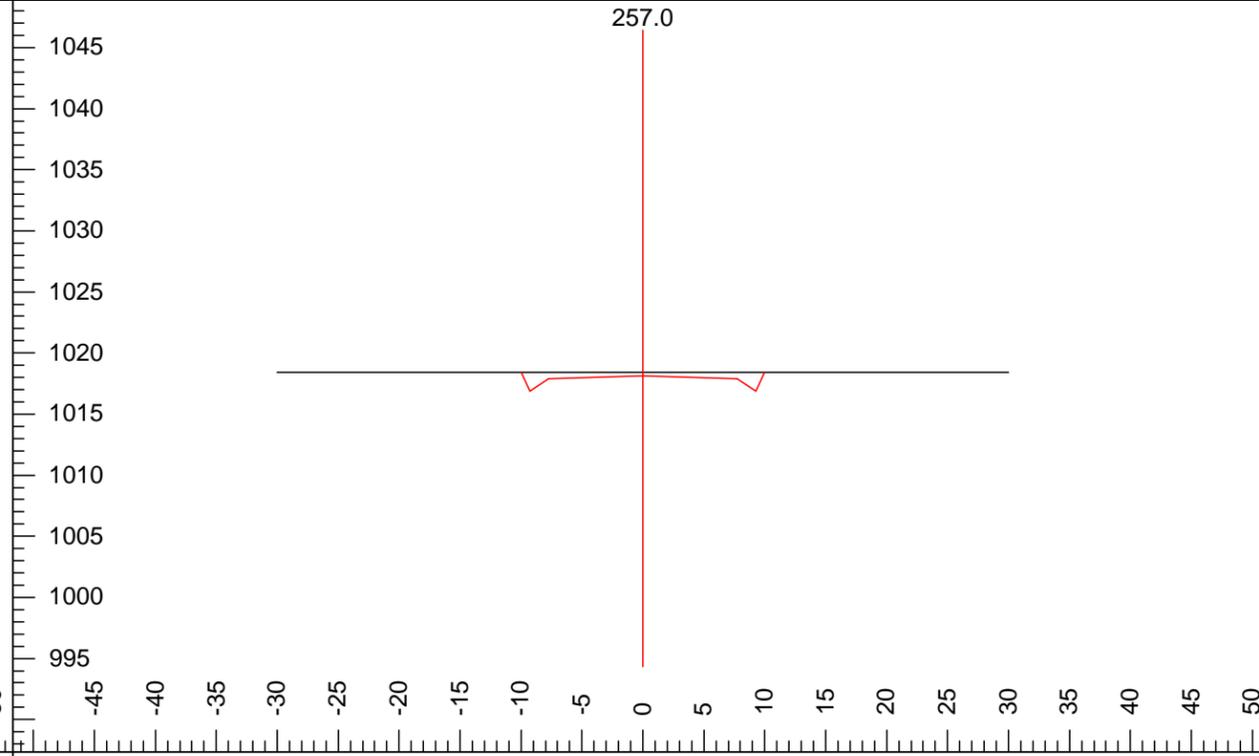
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L-Stn:	0.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.0	Stk L X:	-9.9	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	0.0	Cul Dip %:	
Grd.Nxt.:	-2	Stk R X:	9.9	Cul Length:	



Trav.Cmnt:	1+03	Grd.Lst:	5	Stk R Y:	0.1
L-Stn:	102.5	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.1	Stk L X:	-9.9	Cul DIA:	
Cut Dp:	0.1	Stk L Y:	0.1	Cul Dip %:	
Grd.Nxt.:	5	Stk R X:	9.9	Cul Length:	



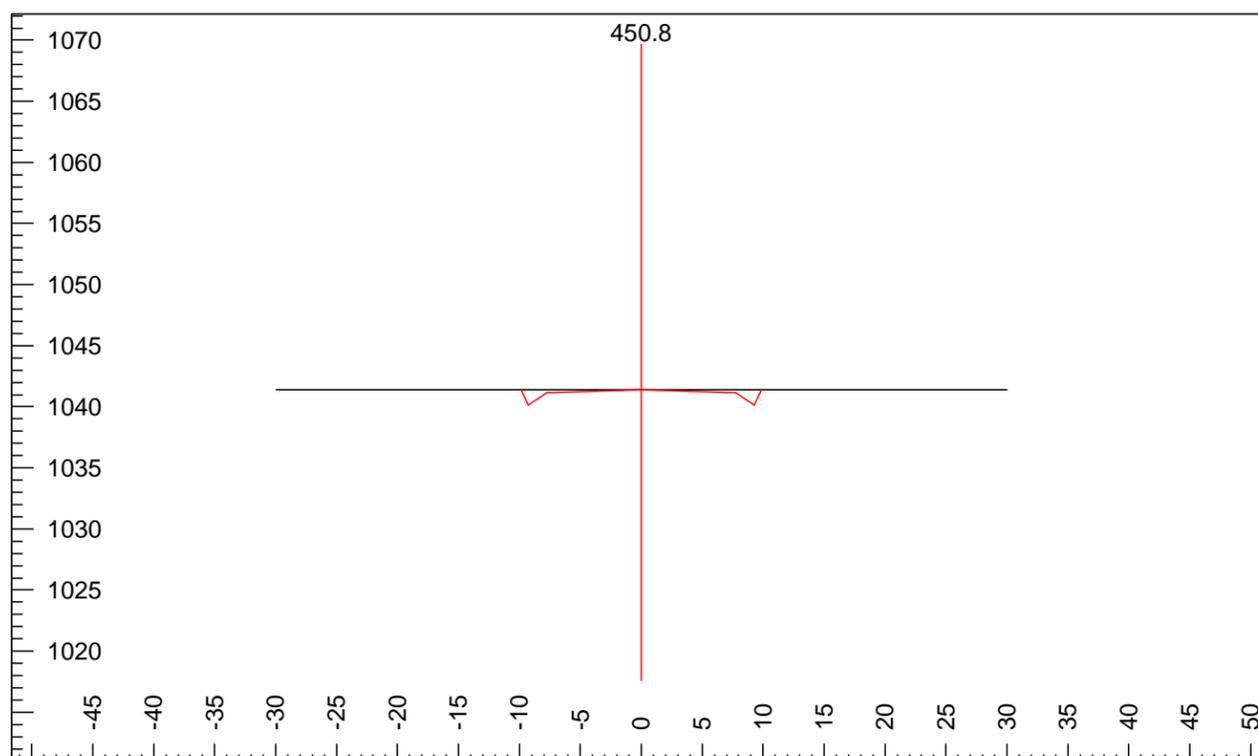
Trav.Cmnt:	1+87	Grd.Lst:	9	Stk R Y:	0.0
L-Stn:	186.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.0	Stk L X:	-9.9	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	0.0	Cul Dip %:	
Grd.Nxt.:	8	Stk R X:	9.9	Cul Length:	



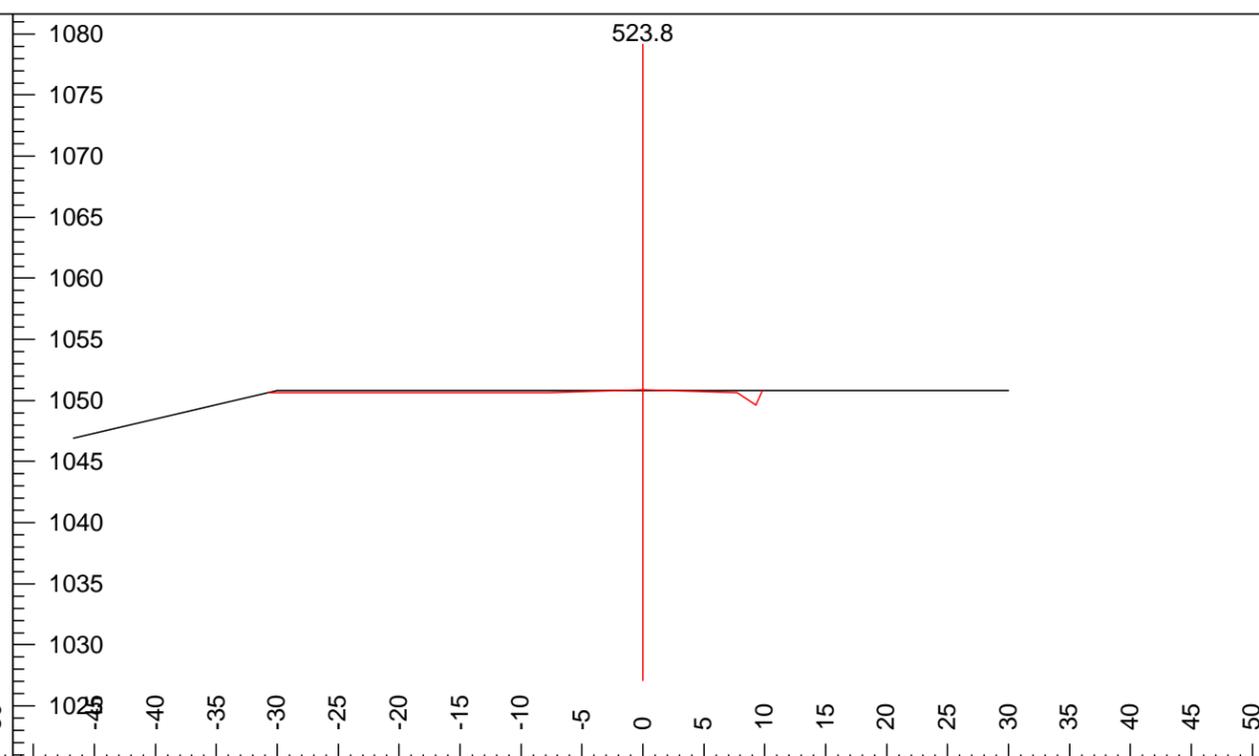
Trav.Cmnt:	2+59	Grd.Lst:	12	Stk R Y:	0.3
L-Stn:	257.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.3	Stk L X:	-10.0	Cul DIA:	
Cut Dp:	0.3	Stk L Y:	0.3	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	10.0	Cul Length:	

# PA-S-1300 Design Specifications

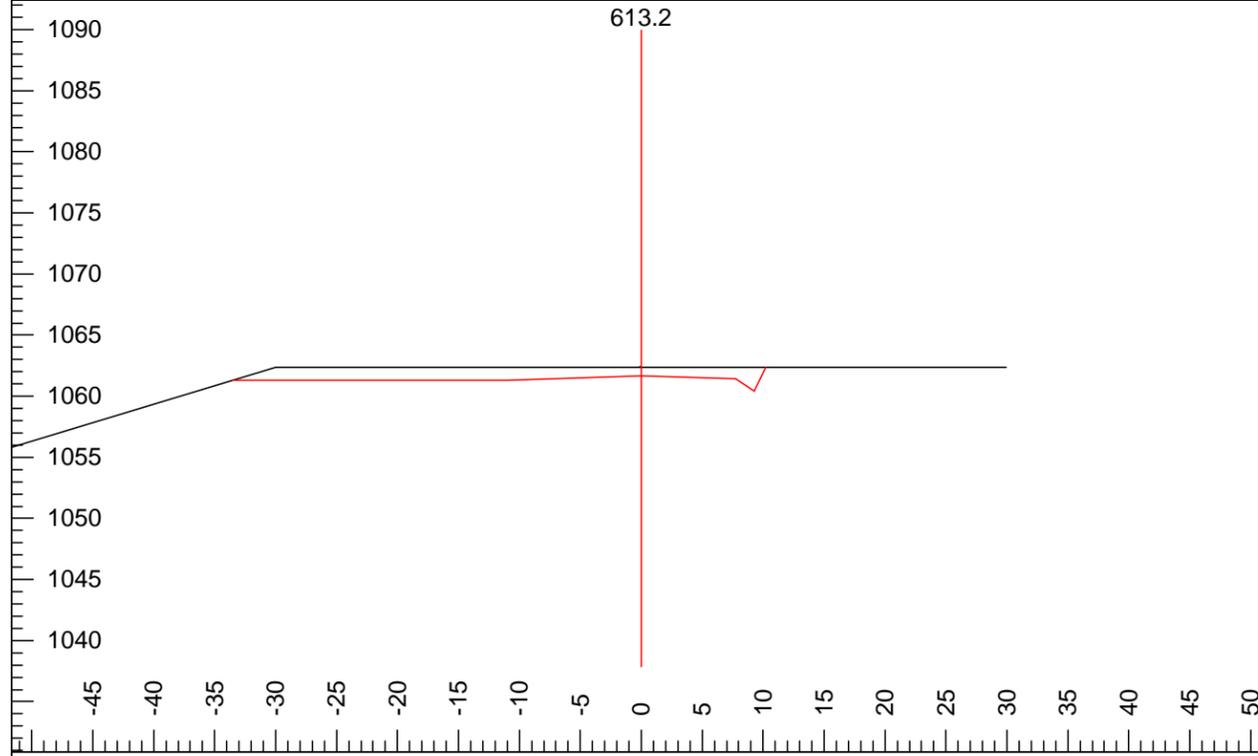
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



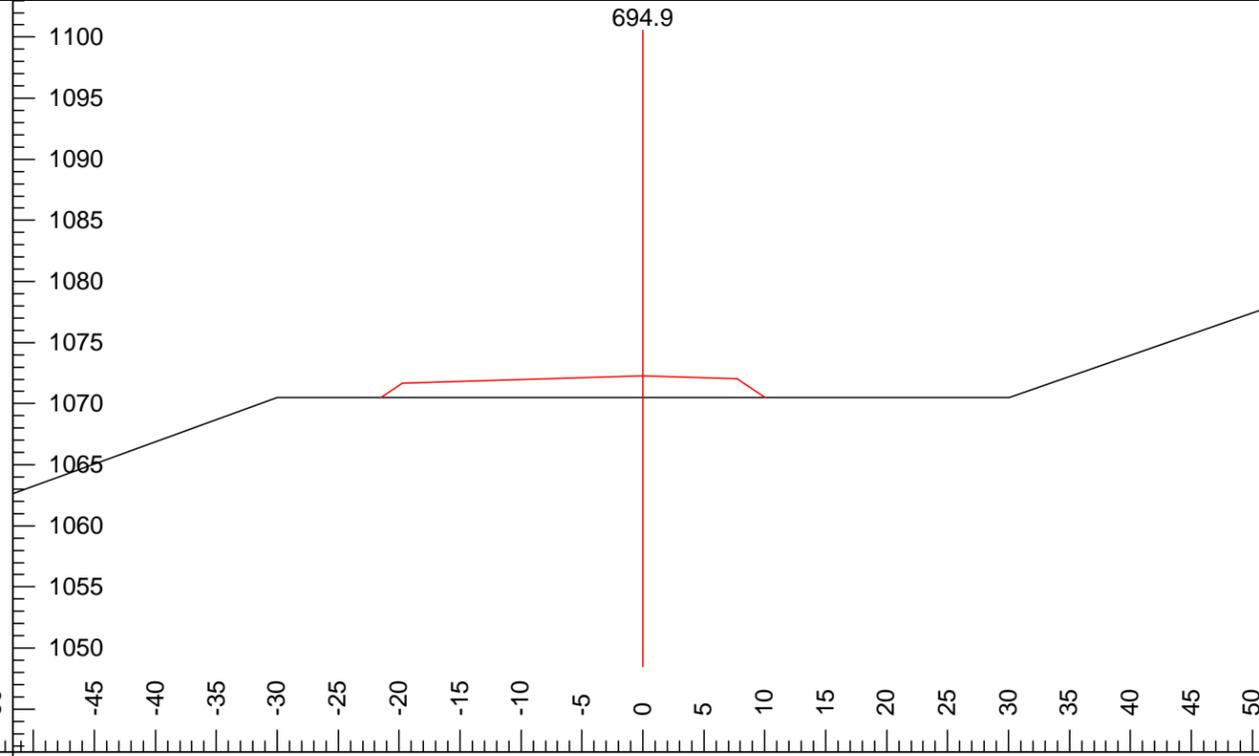
Trav.Cmnt:	4+54	Grd.Lst:	12	Stk R Y:	0.0
L-Stn:	450.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.0	Stk L X:	-9.9	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	0.0	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	9.9	Cul Length:	



Trav.Cmnt:	5+28	Grd.Lst:	13	Stk R Y:	-0.1
L-Stn:	523.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.1	Stk L X:	-30.7	Cul DIA:	
Cut Dp:	-0.1	Stk L Y:	-0.2	Cul Dip %:	
Grd.Nxt.:	13	Stk R X:	9.8	Cul Length:	



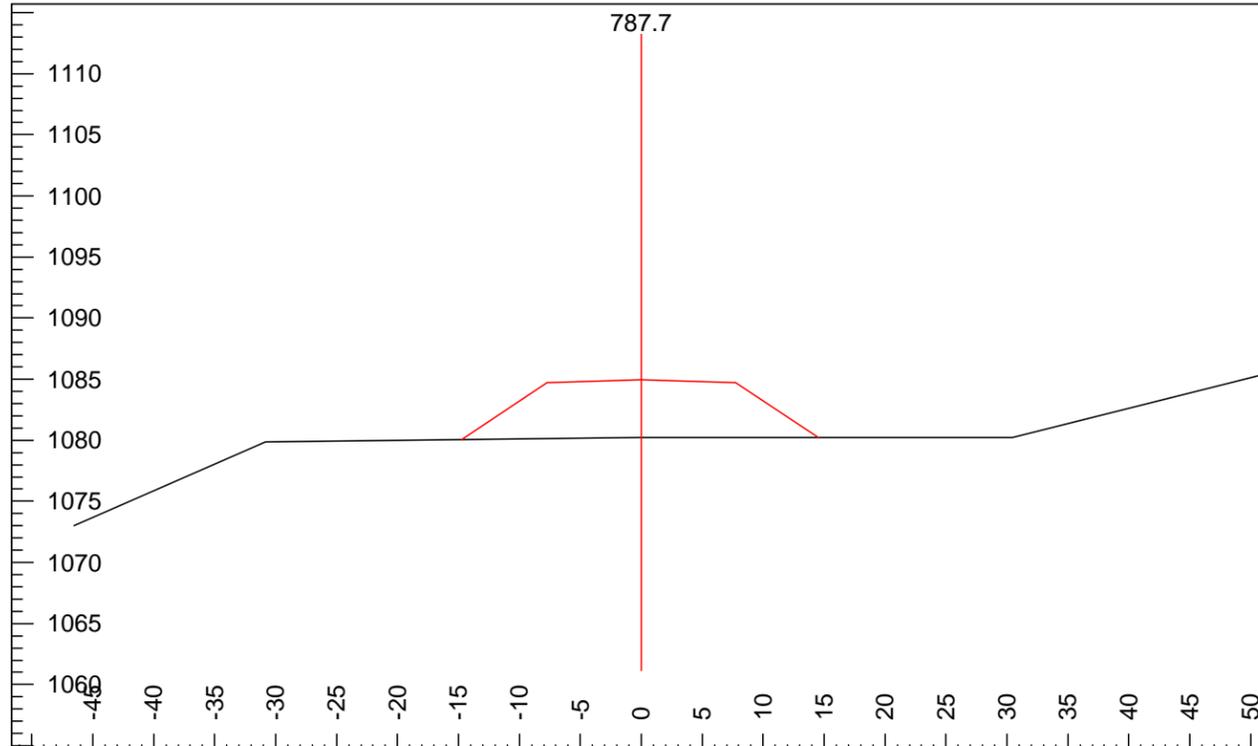
Trav.Cmnt:	6+17	Grd.Lst:	13	Stk R Y:	0.7
L-Stn:	613.2	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	10.9	FILL_SLOPE (Right):	67
V.Offset:	-0.7	Stk L X:	-33.5	Cul DIA:	
Cut Dp:	0.7	Stk L Y:	-0.3	Cul Dip %:	
Grd.Nxt.:	13	Stk R X:	10.2	Cul Length:	



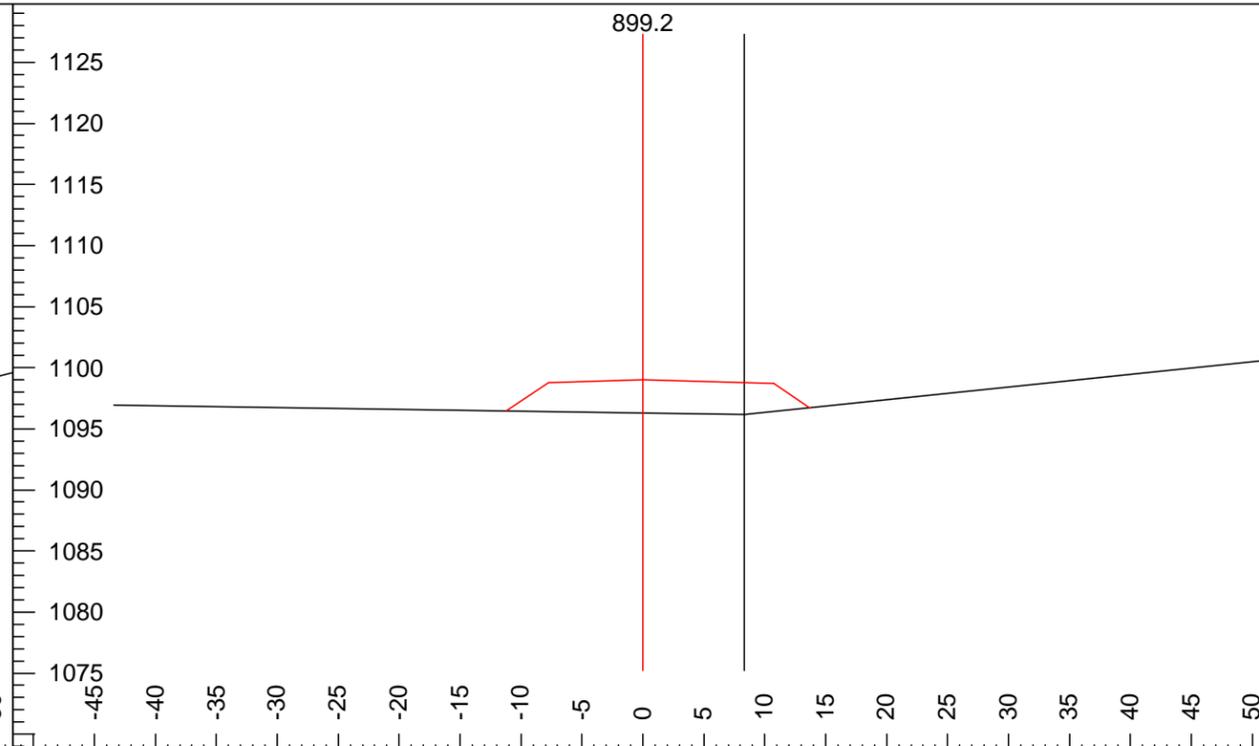
Trav.Cmnt:	7+01	Grd.Lst:	14	Stk R Y:	-1.8
L-Stn:	694.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	19.8	FILL_SLOPE (Right):	67
V.Offset:	1.7	Stk L X:	-21.5	Cul DIA:	
Cut Dp:	-1.8	Stk L Y:	-1.8	Cul Dip %:	
Grd.Nxt.:	14	Stk R X:	10.1	Cul Length:	

# PA-S-1300 Design Specifications

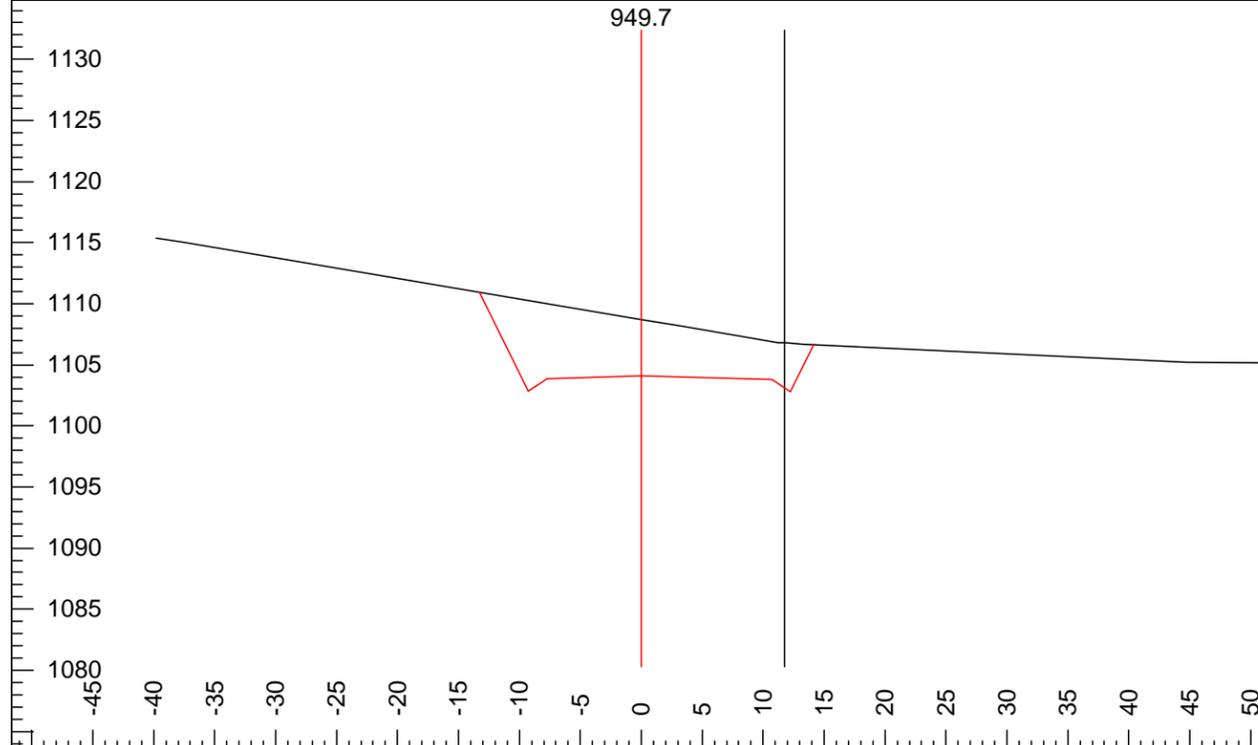
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



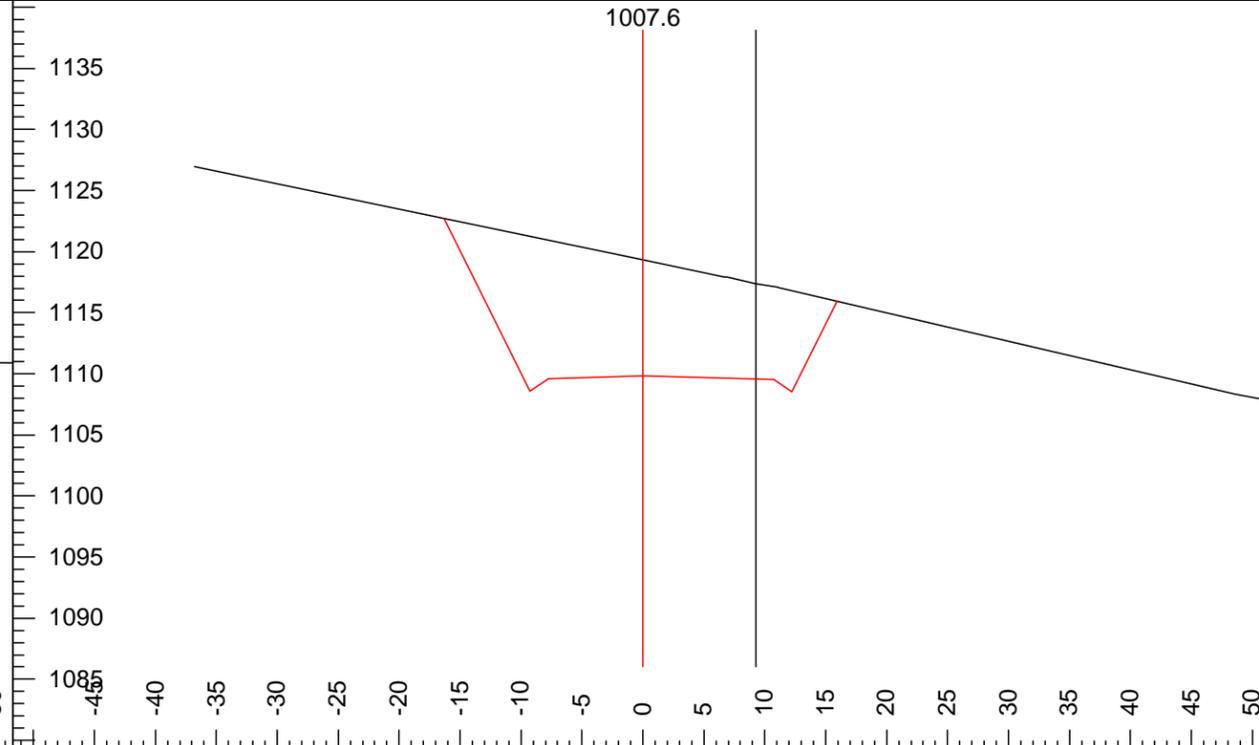
Trav.Cmnt:	7+94	Grd.Lst:	14	Stk R Y:	-4.7
L-Stn:	787.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	4.7	Stk L X:	-14.7	Cul DIA:	
Cut Dp:	-4.7	Stk L Y:	-4.9	Cul Dip %:	
Grd.Nxt.:	14	Stk R X:	14.5	Cul Length:	



Trav.Cmnt:	9+08	Grd.Lst:	10	Stk R Y:	-2.3
L-Stn:	899.2	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.2	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	2.9	Stk L X:	-11.2	Cul DIA:	
Cut Dp:	-2.7	Stk L Y:	-2.5	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	13.7	Cul Length:	



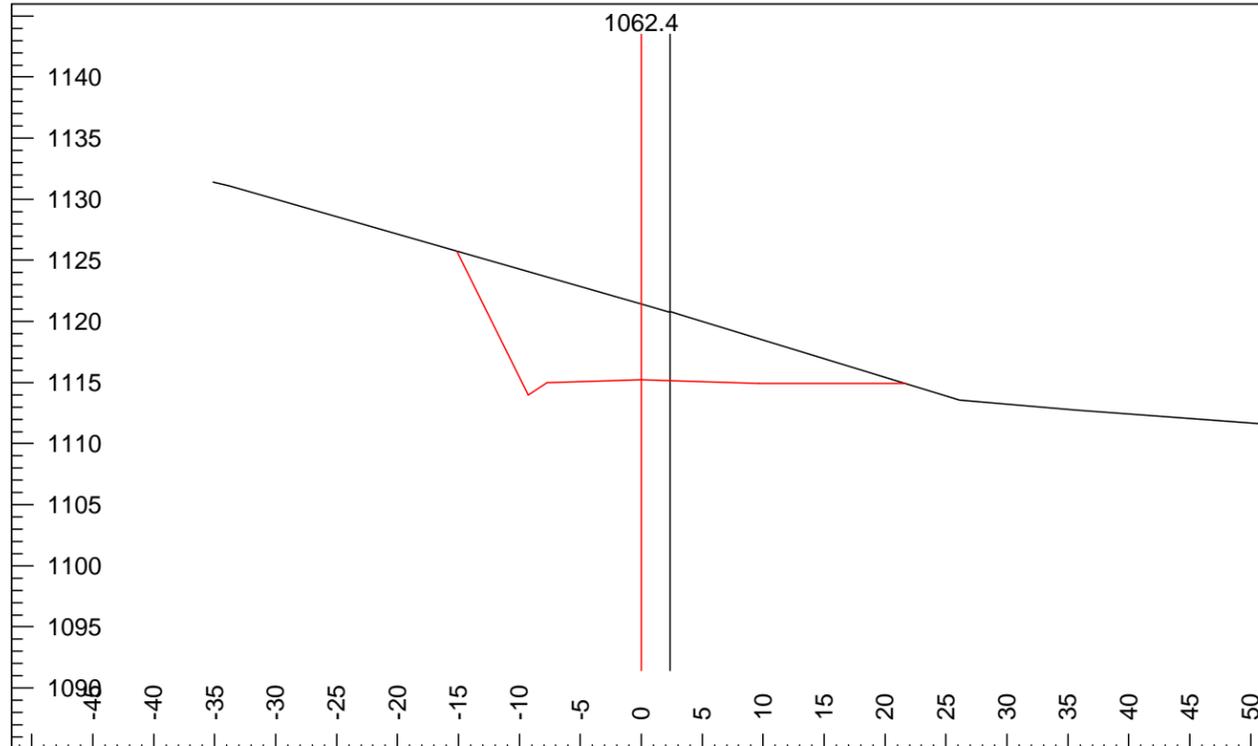
Trav.Cmnt:	9+61	Grd.Lst:	10	Stk R Y:	2.6
L-Stn:	949.7	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-11.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.6	Stk L X:	-13.3	Cul DIA:	
Cut Dp:	4.6	Stk L Y:	6.8	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	14.2	Cul Length:	



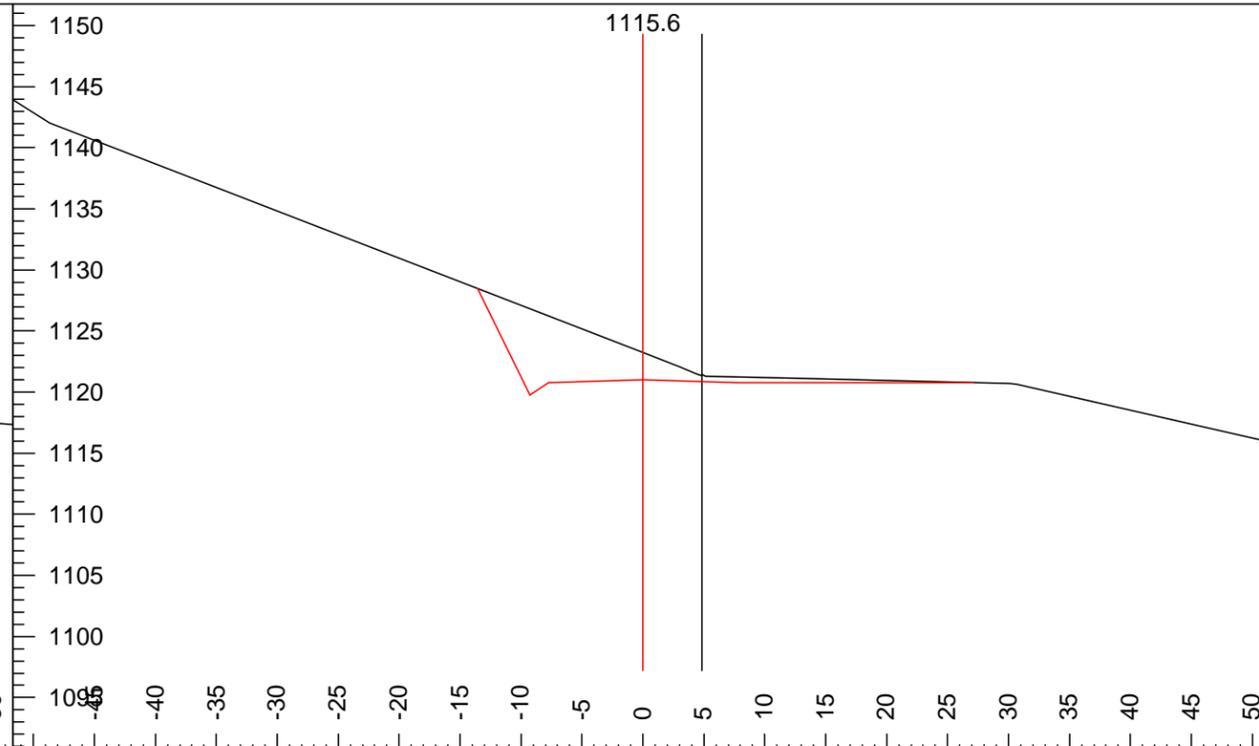
Trav.Cmnt:	10+11	Grd.Lst:	10	Stk R Y:	6.1
L-Stn:	1007.6	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.9	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-7.8	Stk L X:	-16.3	Cul DIA:	
Cut Dp:	9.5	Stk L Y:	12.9	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	16.0	Cul Length:	

# PA-S-1300 Design Specifications

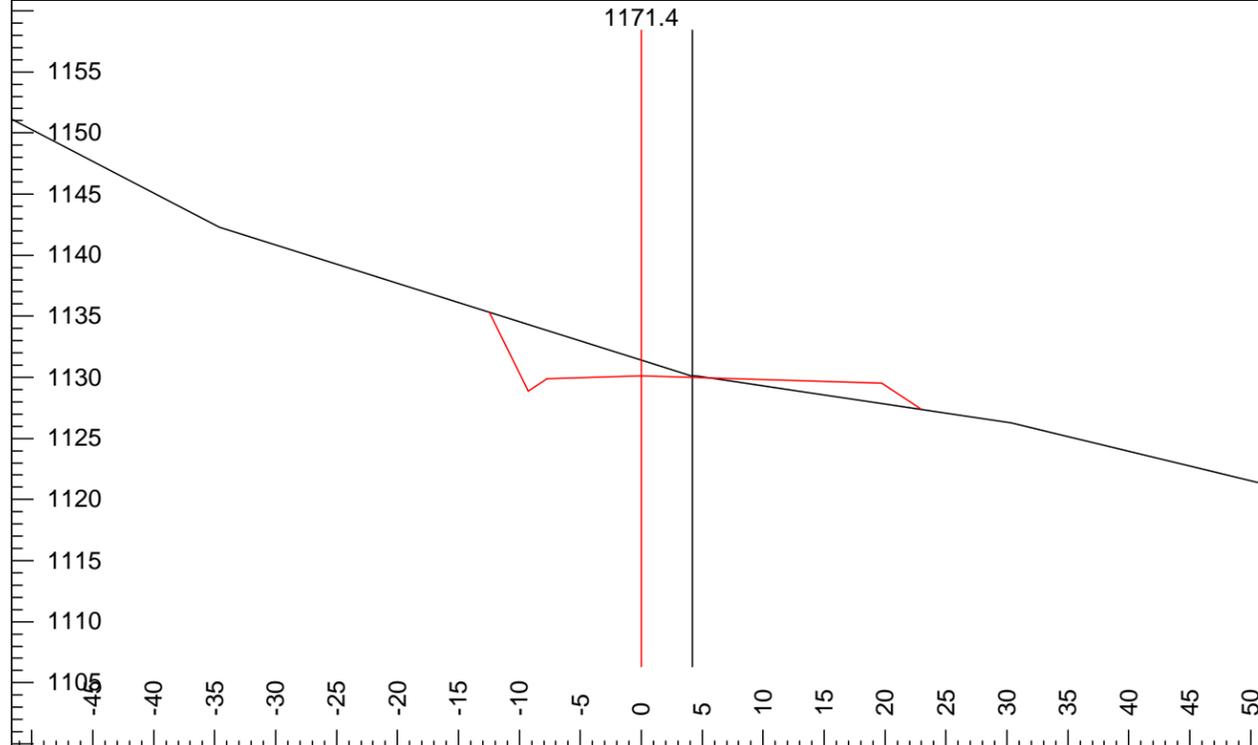
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



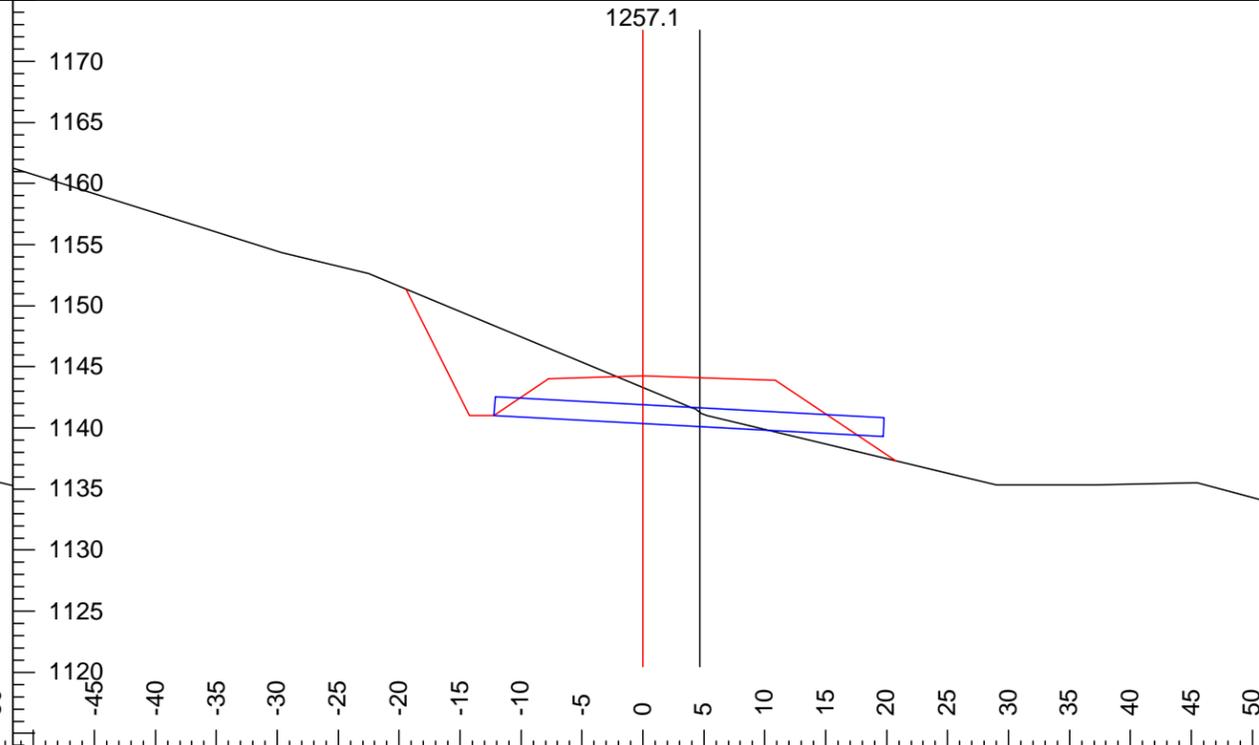
Trav.Cmnt:	10+61	Grd.Lst:	11	Stk R Y:	-0.3
L-Stn:	1062.4	Rd. Wd. R:	9.7	CUT_SLOPE1 (Right):	200
H. Offset:	-2.3	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-5.6	Stk L X:	-15.1	Cul DIA:	
Cut Dp:	6.2	Stk L Y:	10.5	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	21.7	Cul Length:	



Trav.Cmnt:	11+10	Grd.Lst:	11	Stk R Y:	-0.2
L-Stn:	1115.6	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-4.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.4	Stk L X:	-13.6	Cul DIA:	
Cut Dp:	2.2	Stk L Y:	7.5	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	27.1	Cul Length:	



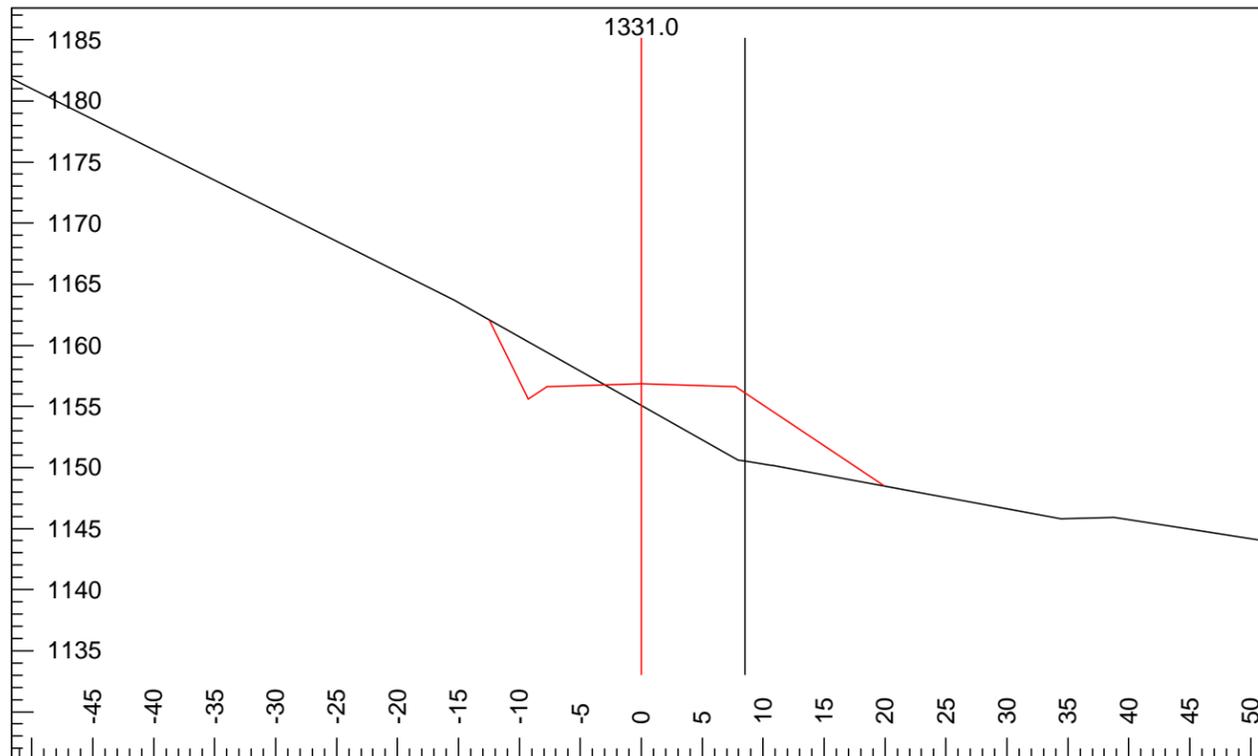
Trav.Cmnt:	11+55	Grd.Lst:	16	Stk R Y:	-2.7
L-Stn:	1171.4	Rd. Wd. R:	19.8	CUT_SLOPE1 (Right):	200
H. Offset:	-4.1	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.1	Stk L X:	-12.5	Cul DIA:	
Cut Dp:	1.3	Stk L Y:	5.2	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	23.0	Cul Length:	



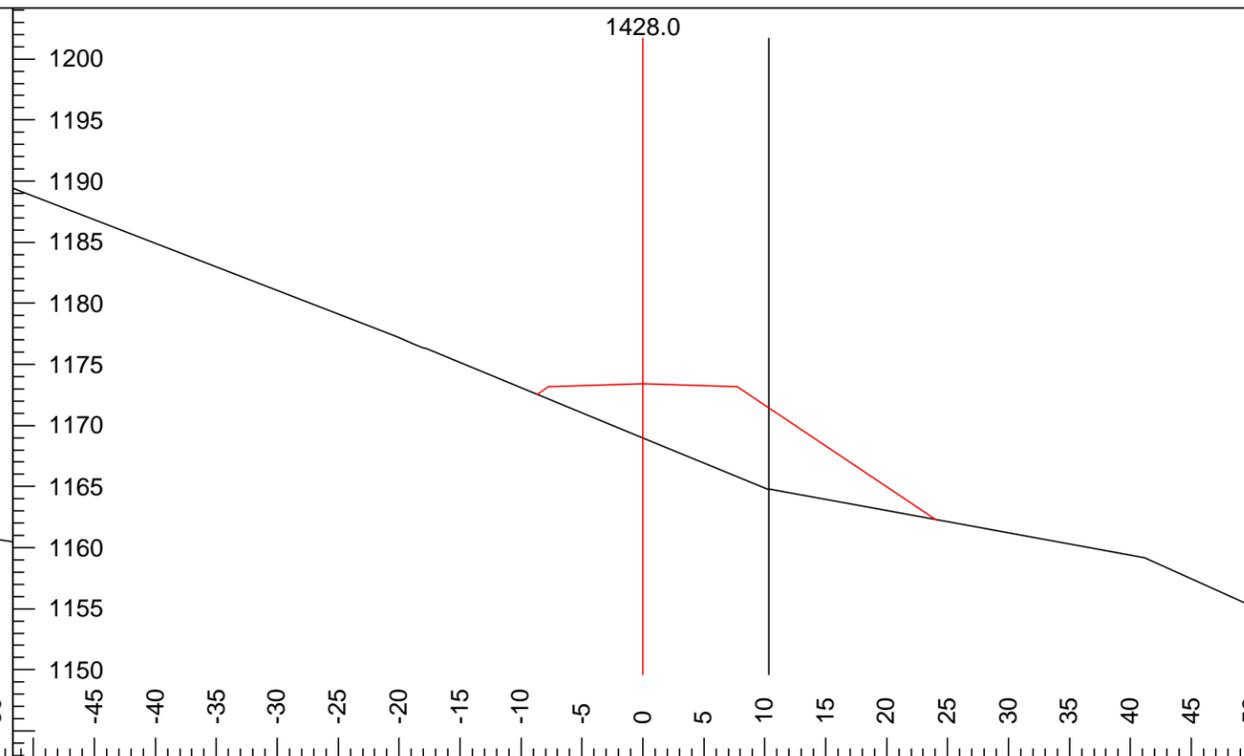
Trav.Cmnt:	12+42	Grd.Lst:	17	Stk R Y:	-7.0
L-Stn:	1257.1	Rd. Wd. R:	10.9	CUT_SLOPE1 (Right):	200
H. Offset:	-4.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	3.2	Stk L X:	-19.4	Cul DIA:	18in
Cut Dp:	-1.0	Stk L Y:	7.1	Cul Dip %:	5
Grd.Nxt.:	17	Stk R X:	20.8	Cul Length:	34.0

# PA-S-1300 Design Specifications

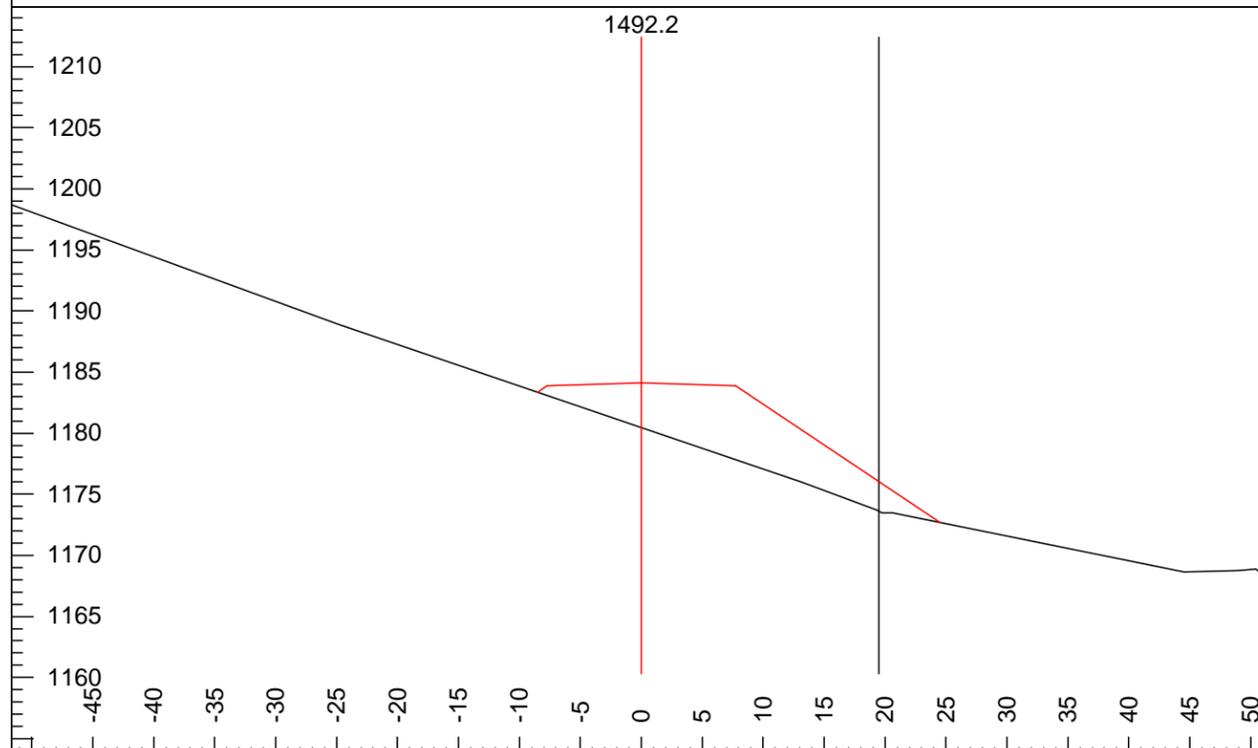
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



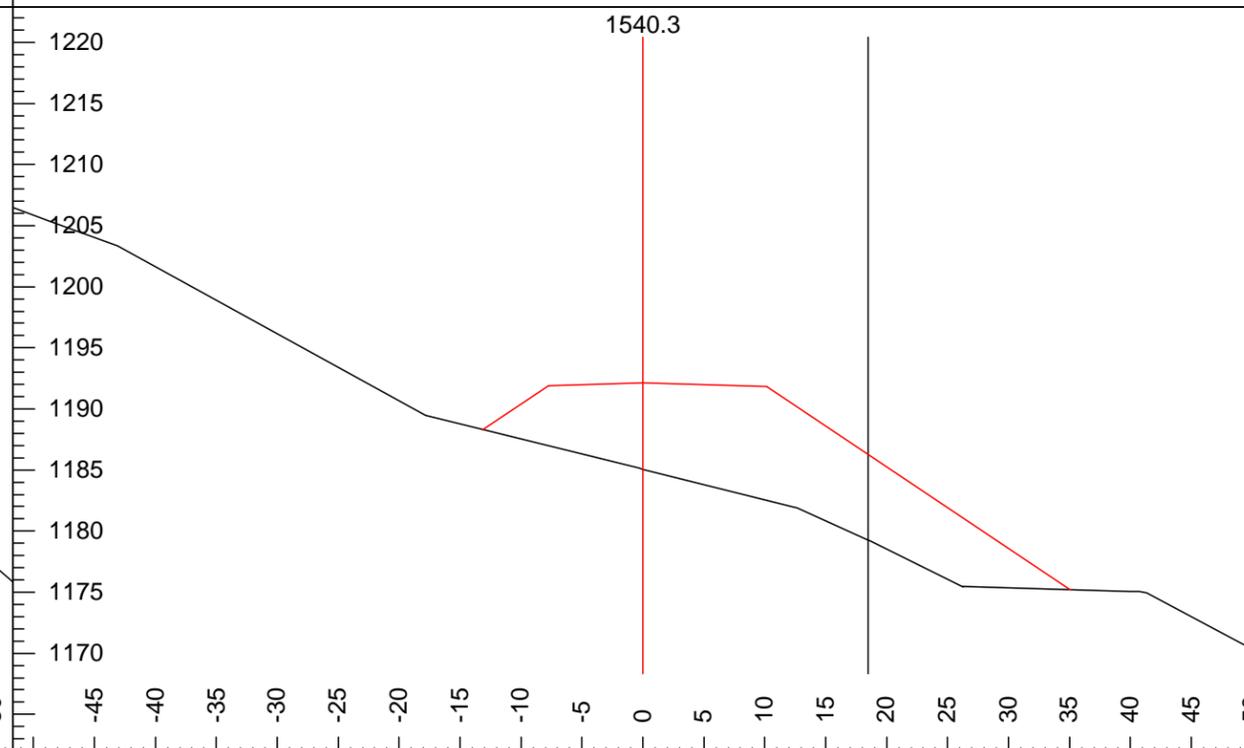
Trav.Cmnt:	13+17	Grd.Lst:	17	Stk R Y:	-8.3
L-Stn:	1331.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	6.4	Stk L X:	-12.5	Cul DIA:	
Cut Dp:	-1.8	Stk L Y:	5.2	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	19.9	Cul Length:	



Trav.Cmnt:	14+17	Grd.Lst:	17	Stk R Y:	-11.1
L-Stn:	1428.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-10.3	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	8.7	Stk L X:	-8.7	Cul DIA:	
Cut Dp:	-4.4	Stk L Y:	-0.9	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	24.1	Cul Length:	



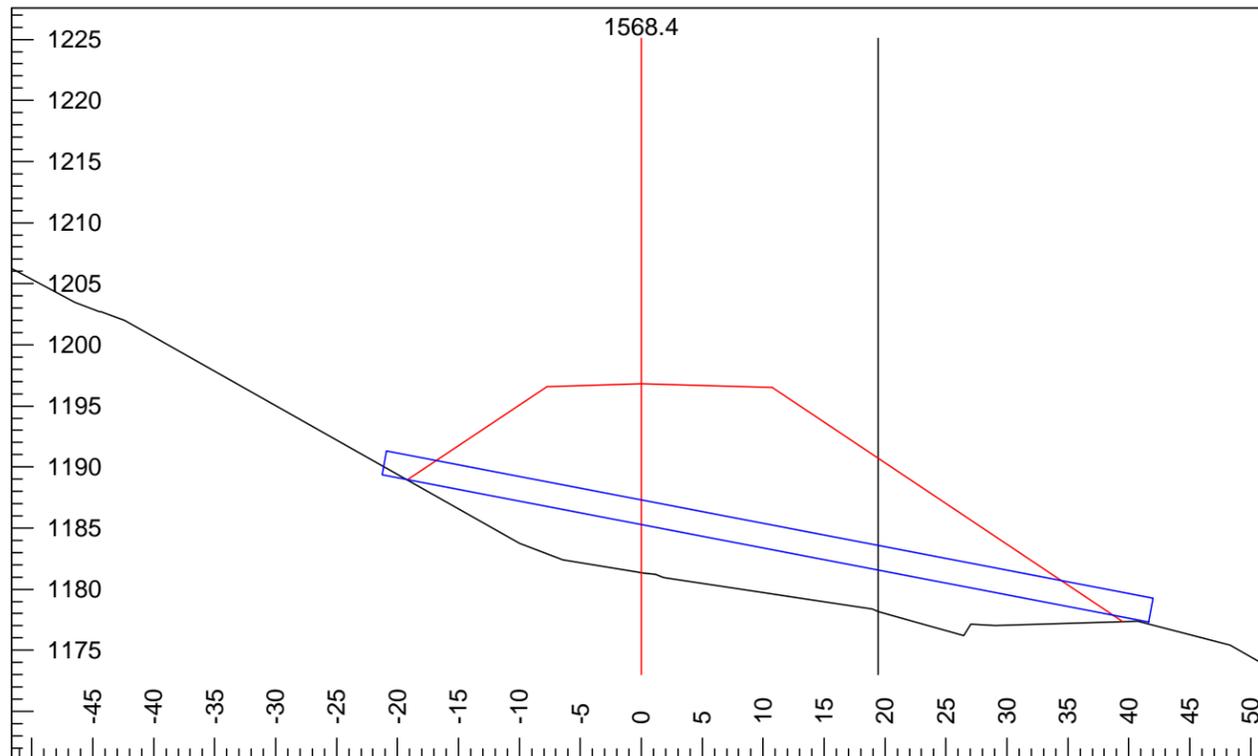
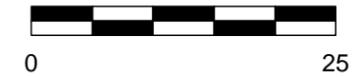
Trav.Cmnt:	14+84	Grd.Lst:	17	Stk R Y:	-11.4
L-Stn:	1492.2	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-19.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	10.7	Stk L X:	-8.5	Cul DIA:	
Cut Dp:	-3.6	Stk L Y:	-0.7	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	24.6	Cul Length:	



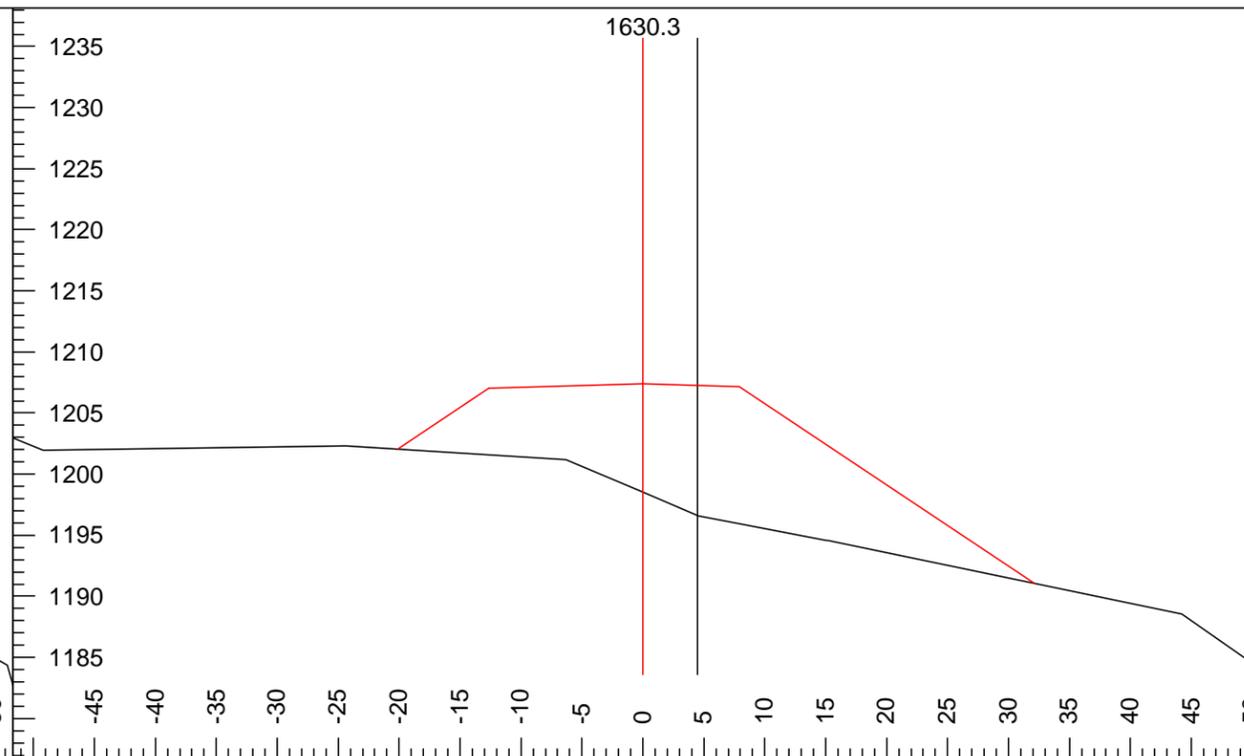
Trav.Cmnt:	15+34	Grd.Lst:	17	Stk R Y:	-16.9
L-Stn:	1540.3	Rd. Wd. R:	10.1	CUT_SLOPE1 (Right):	200
H. Offset:	-18.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	12.8	Stk L X:	-13.1	Cul DIA:	
Cut Dp:	-7.1	Stk L Y:	-3.8	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	35.1	Cul Length:	

# PA-S-1300 Design Specifications

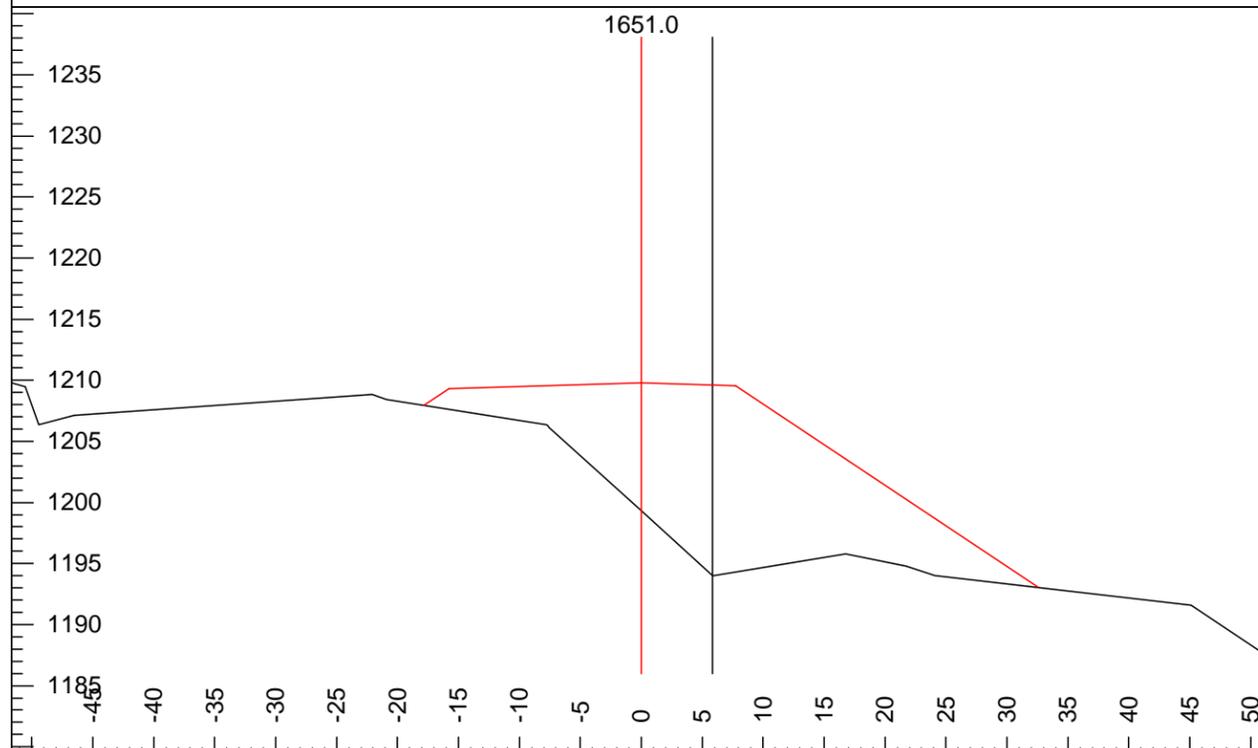
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



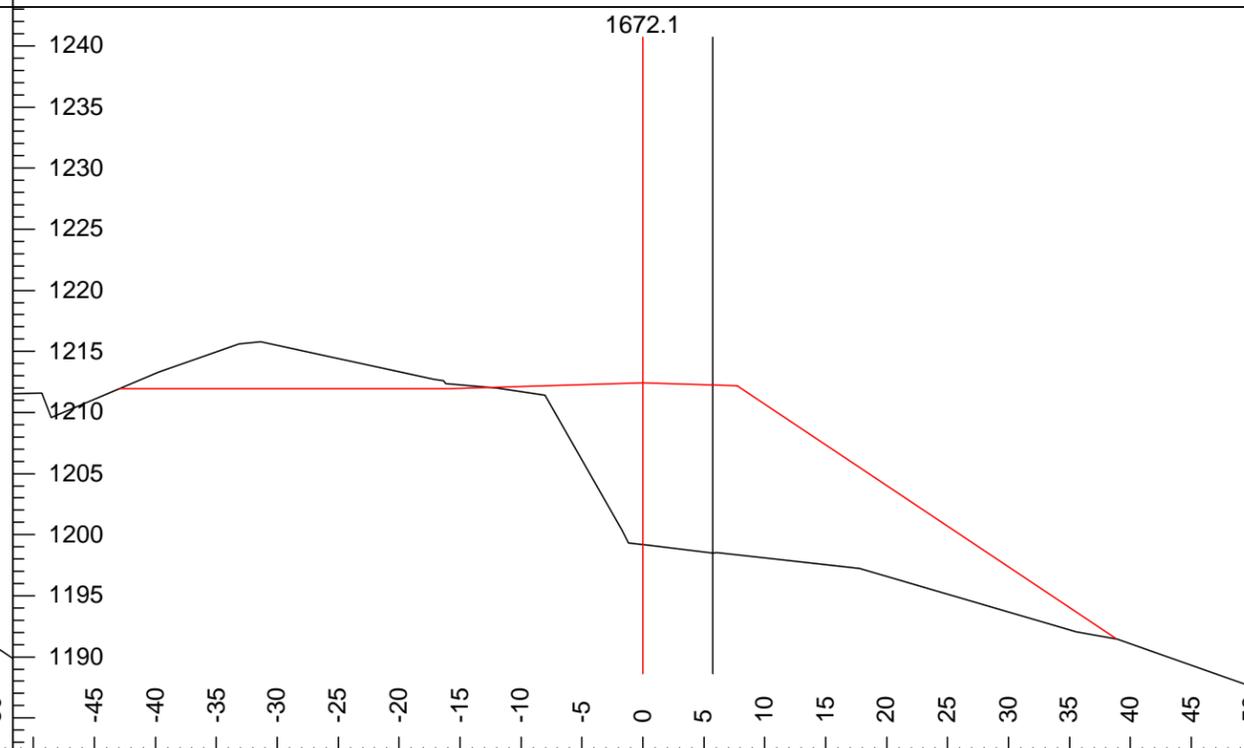
Trav.Cmnt:	15+62	Grd.Lst:	17	Stk R Y:	-19.5
L-Stn:	1568.4	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-19.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	18.8	Stk L X:	-19.2	Cul DIA:	24in
Cut Dp:	-15.5	Stk L Y:	-7.9	Cul Dip %:	18
Grd.Nxt.:	17	Stk R X:	39.4	Cul Length:	68.0



Trav.Cmnt:	16+23	Grd.Lst:	17	Stk R Y:	-16.3
L-Stn:	1630.3	Rd. Wd. R:	7.9	CUT_SLOPE1 (Right):	200
H. Offset:	-4.5	Rd. Wd. L:	12.7	FILL_SLOPE (Right):	67
V.Offset:	10.8	Stk L X:	-20.1	Cul DIA:	
Cut Dp:	-8.9	Stk L Y:	-5.3	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	32.1	Cul Length:	



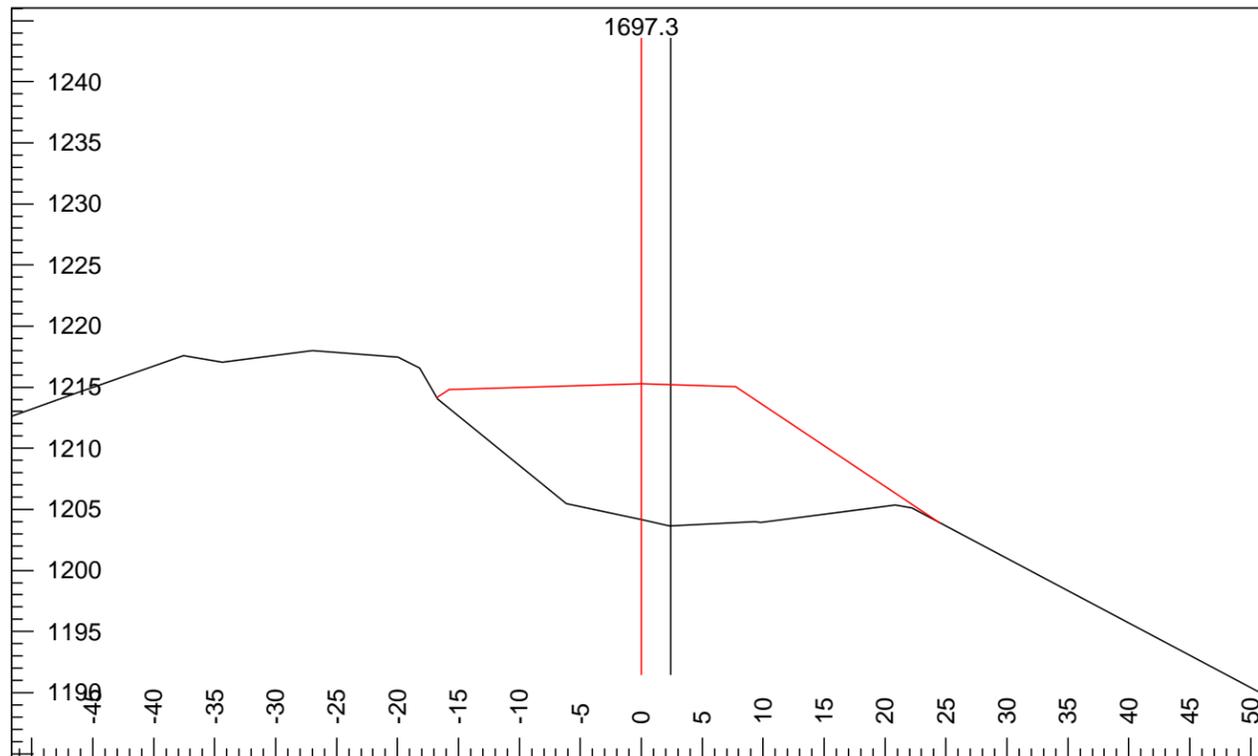
Trav.Cmnt:	pt200	Grd.Lst:	12	Stk R Y:	-16.7
L-Stn:	1651.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-5.9	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	15.7	Stk L X:	-17.8	Cul DIA:	
Cut Dp:	-10.5	Stk L Y:	-1.9	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	32.5	Cul Length:	



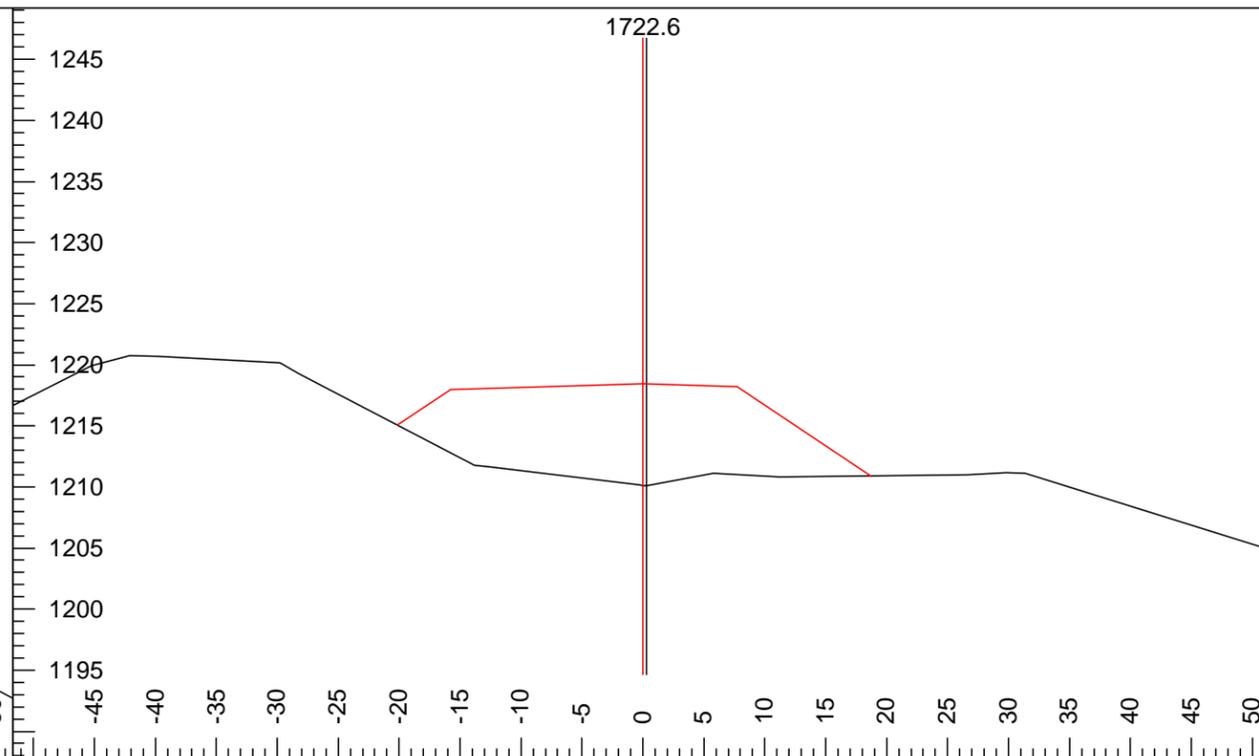
Trav.Cmnt:	pt201	Grd.Lst:	12	Stk R Y:	-20.9
L-Stn:	1672.1	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-5.8	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	13.8	Stk L X:	-43.0	Cul DIA:	
Cut Dp:	-13.2	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	38.8	Cul Length:	

# PA-S-1300 Design Specifications

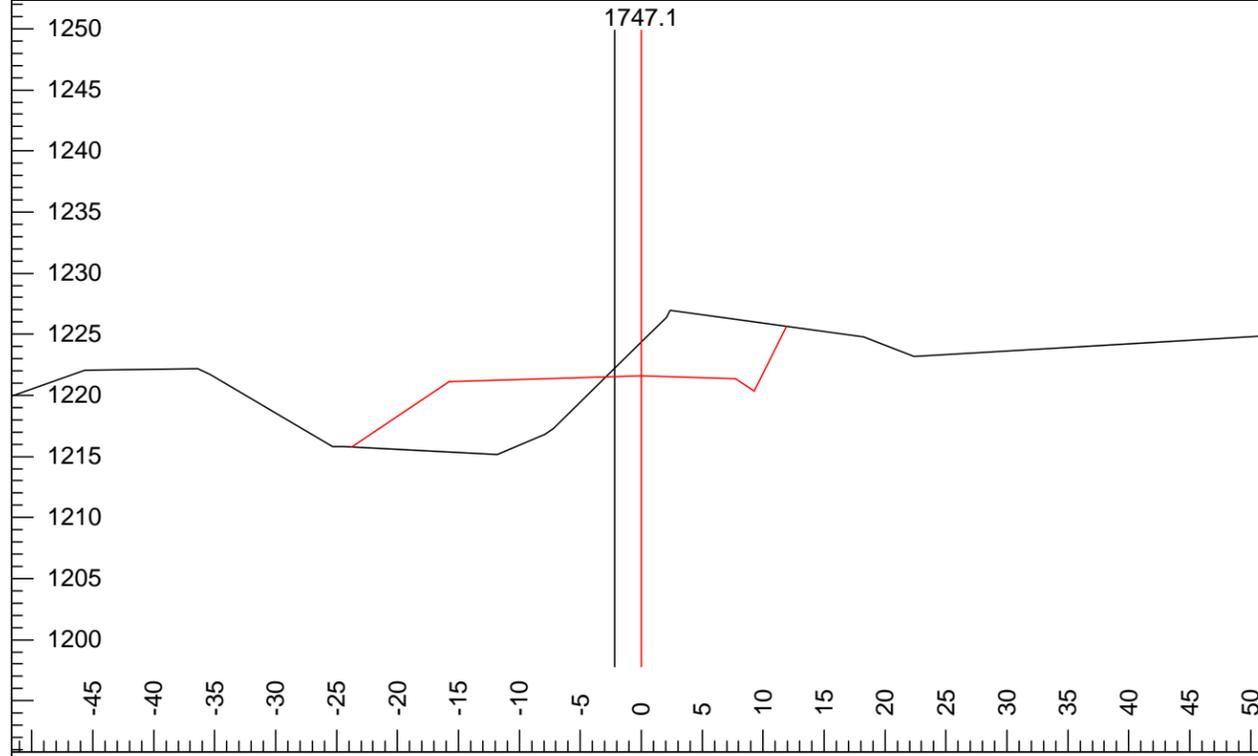
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



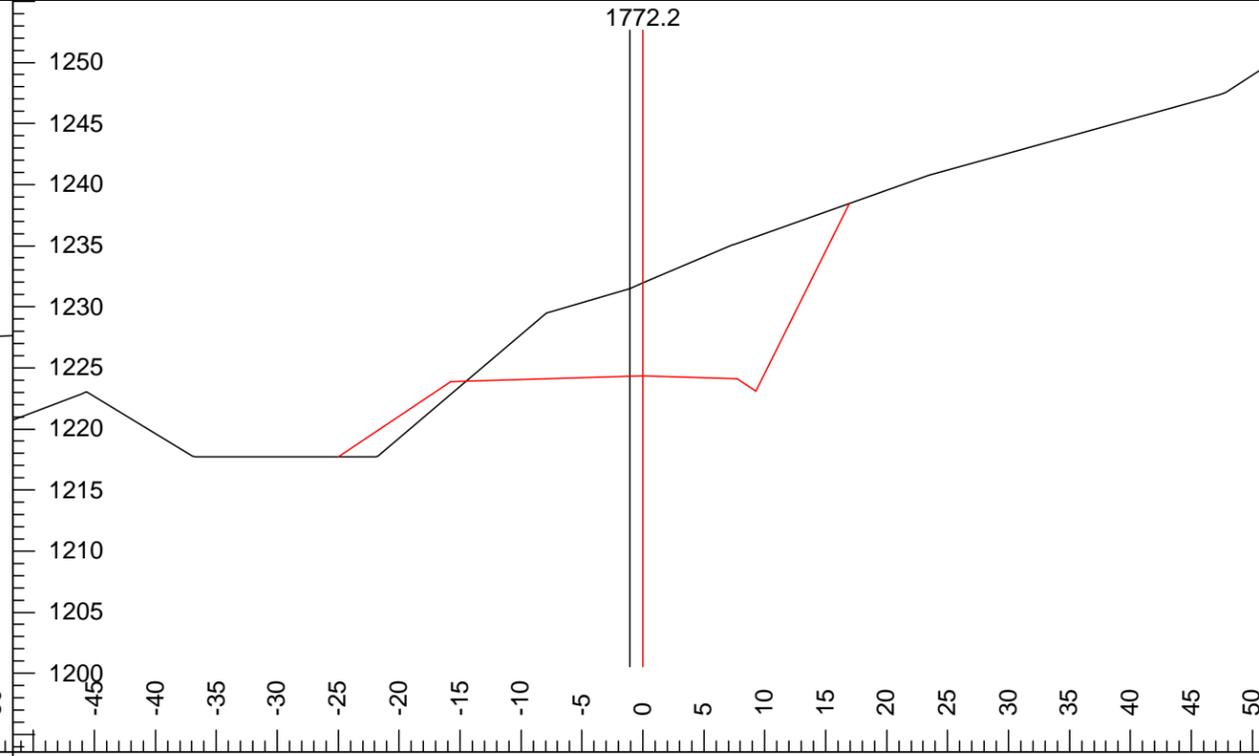
Trav.Cmnt:	pt202	Grd.Lst:	11	Stk R Y:	-11.4
L-Stn:	1697.3	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.4	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	11.6	Stk L X:	-16.8	Cul DIA:	
Cut Dp:	-11.1	Stk L Y:	-1.1	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	24.5	Cul Length:	



Trav.Cmnt:	pt203	Grd.Lst:	13	Stk R Y:	-7.5
L-Stn:	1722.6	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-0.3	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	8.4	Stk L X:	-20.1	Cul DIA:	
Cut Dp:	-8.3	Stk L Y:	-3.4	Cul Dip %:	
Grd.Nxt.:	13	Stk R X:	18.7	Cul Length:	



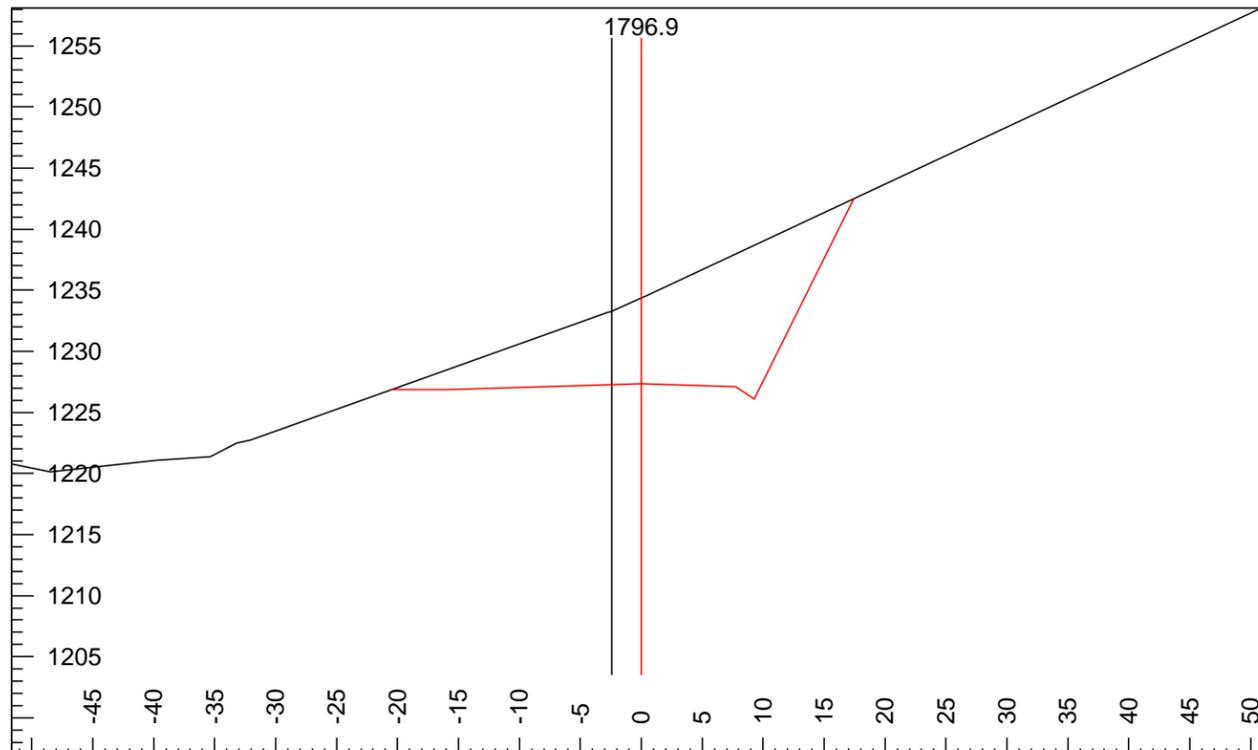
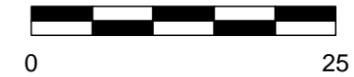
Trav.Cmnt:	pt204	Grd.Lst:	11	Stk R Y:	4.1
L-Stn:	1747.1	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.2	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	4.8	Stk L X:	-23.8	Cul DIA:	
Cut Dp:	2.8	Stk L Y:	-5.8	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	11.9	Cul Length:	



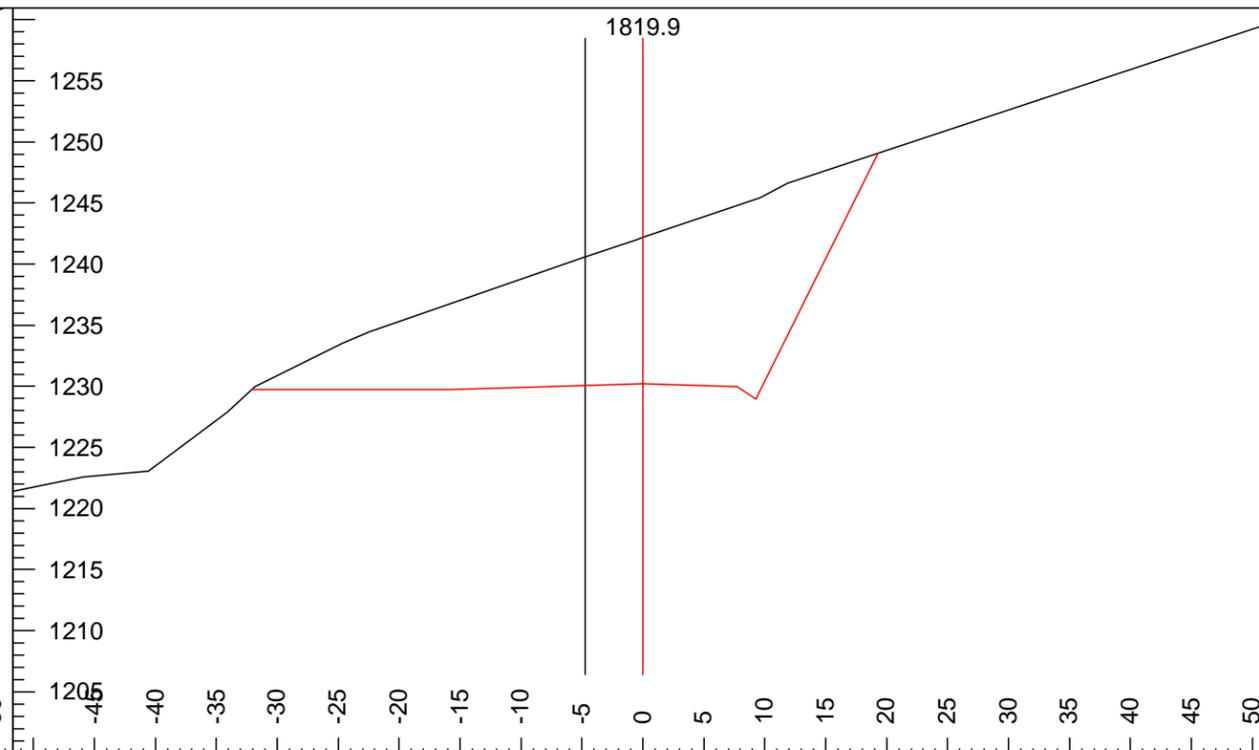
Trav.Cmnt:	pt205	Grd.Lst:	12	Stk R Y:	14.1
L-Stn:	1772.2	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.1	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	-7.2	Stk L X:	-25.0	Cul DIA:	
Cut Dp:	7.6	Stk L Y:	-6.6	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	16.9	Cul Length:	

# PA-S-1300 Design Specifications

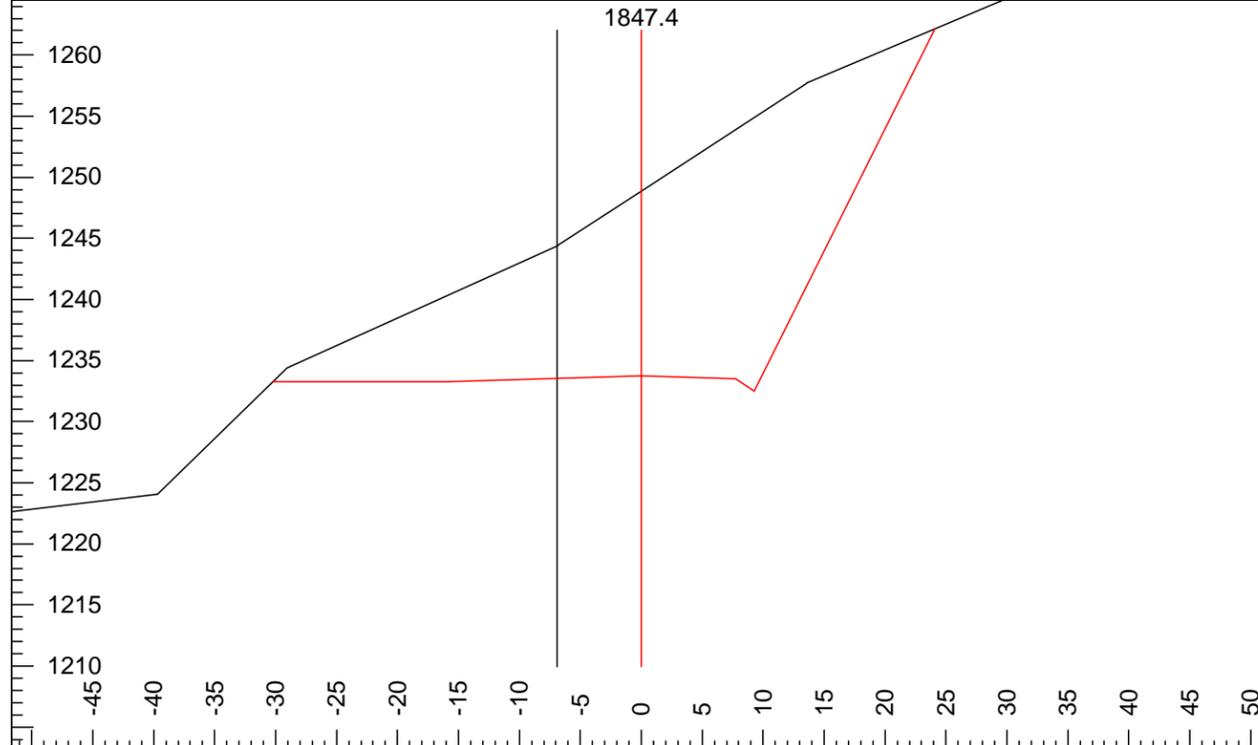
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



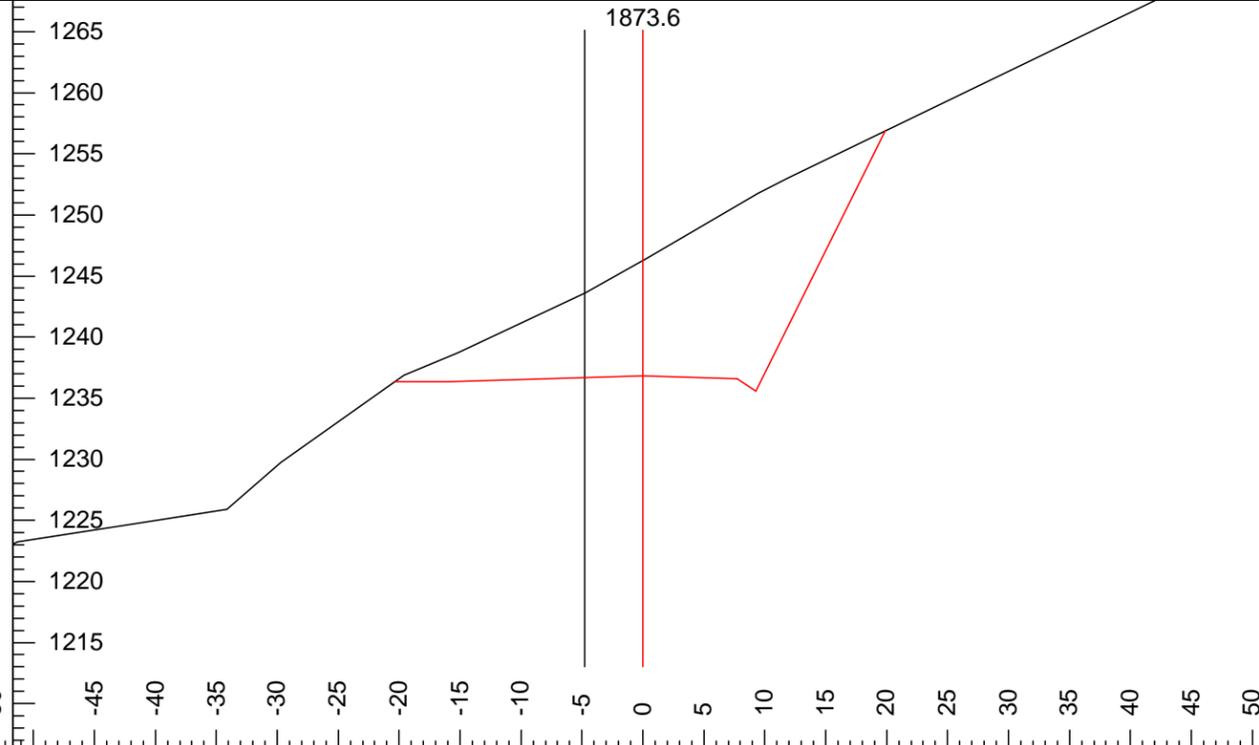
Trav.Cmnt:	pt206	Grd.Lst:	12	Stk R Y:	15.1
L-Stn:	1796.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.4	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	-5.8	Stk L X:	-20.6	Cul DIA:	
Cut Dp:	7.0	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	17.4	Cul Length:	



Trav.Cmnt:	pt207	Grd.Lst:	12	Stk R Y:	18.9
L-Stn:	1819.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.6	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	-10.3	Stk L X:	-32.1	Cul DIA:	
Cut Dp:	12.0	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	19.3	Cul Length:	



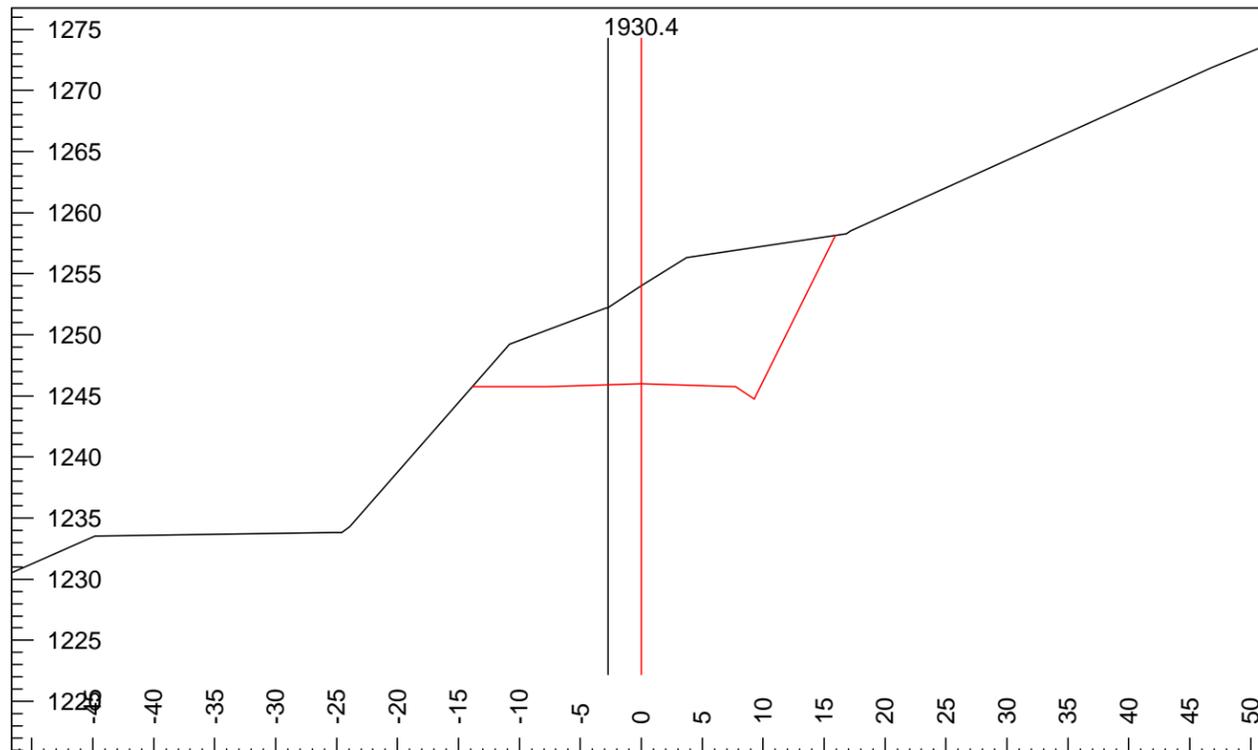
Trav.Cmnt:	pt208	Grd.Lst:	13	Stk R Y:	28.4
L-Stn:	1847.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.9	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	-10.6	Stk L X:	-30.2	Cul DIA:	
Cut Dp:	15.1	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	13	Stk R X:	24.1	Cul Length:	



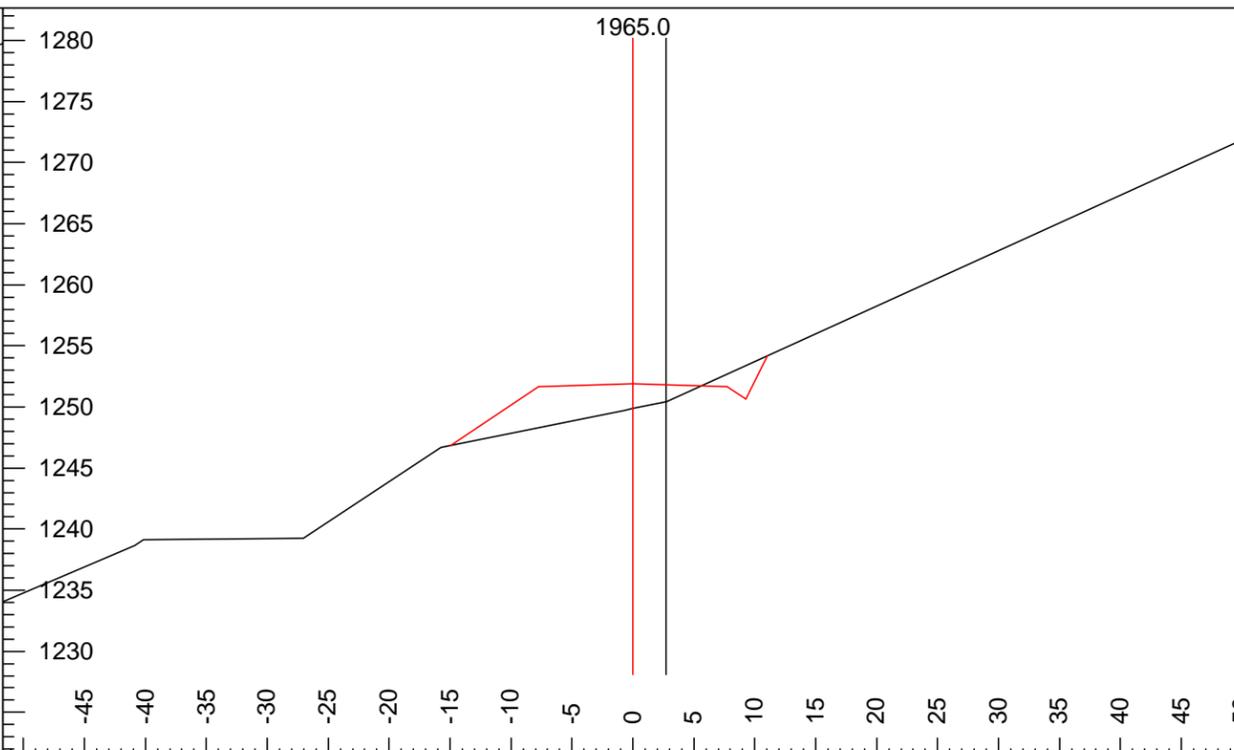
Trav.Cmnt:	pt209	Grd.Lst:	12	Stk R Y:	20.1
L-Stn:	1873.6	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.6	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	67
V.Offset:	-6.8	Stk L X:	-20.3	Cul DIA:	
Cut Dp:	9.4	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	19.9	Cul Length:	

# PA-S-1300 Design Specifications

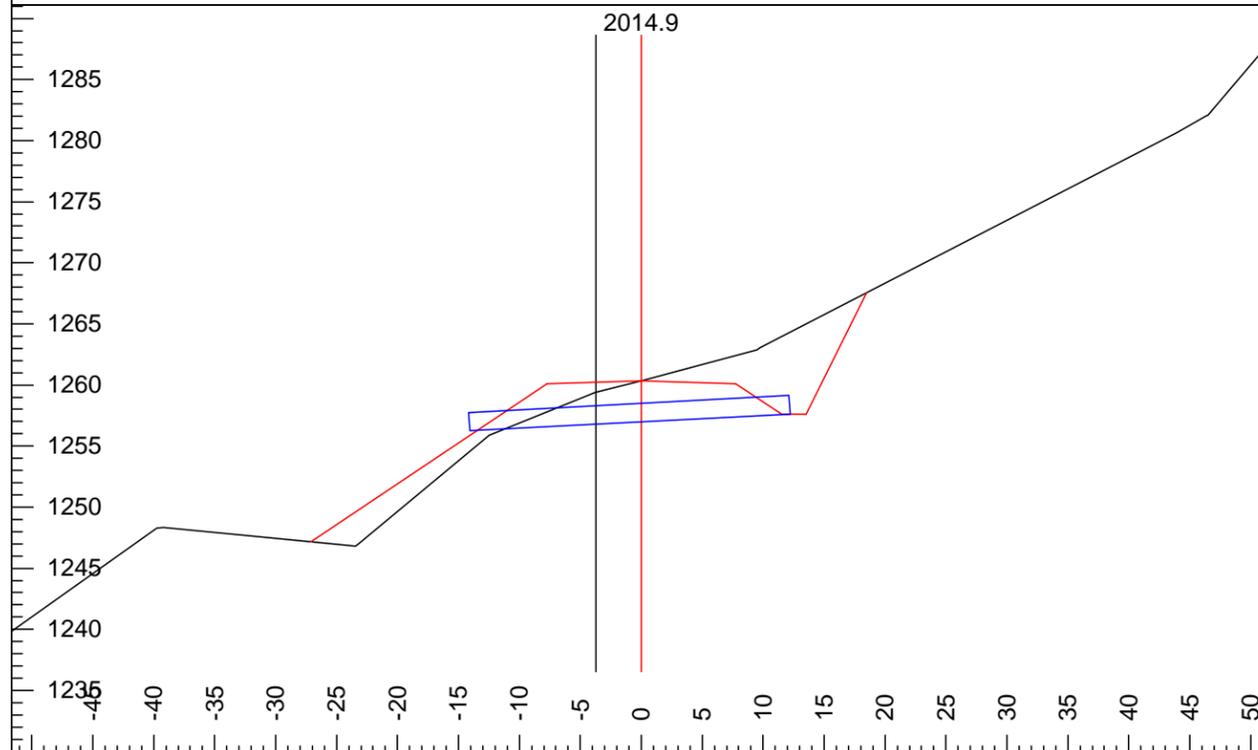
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



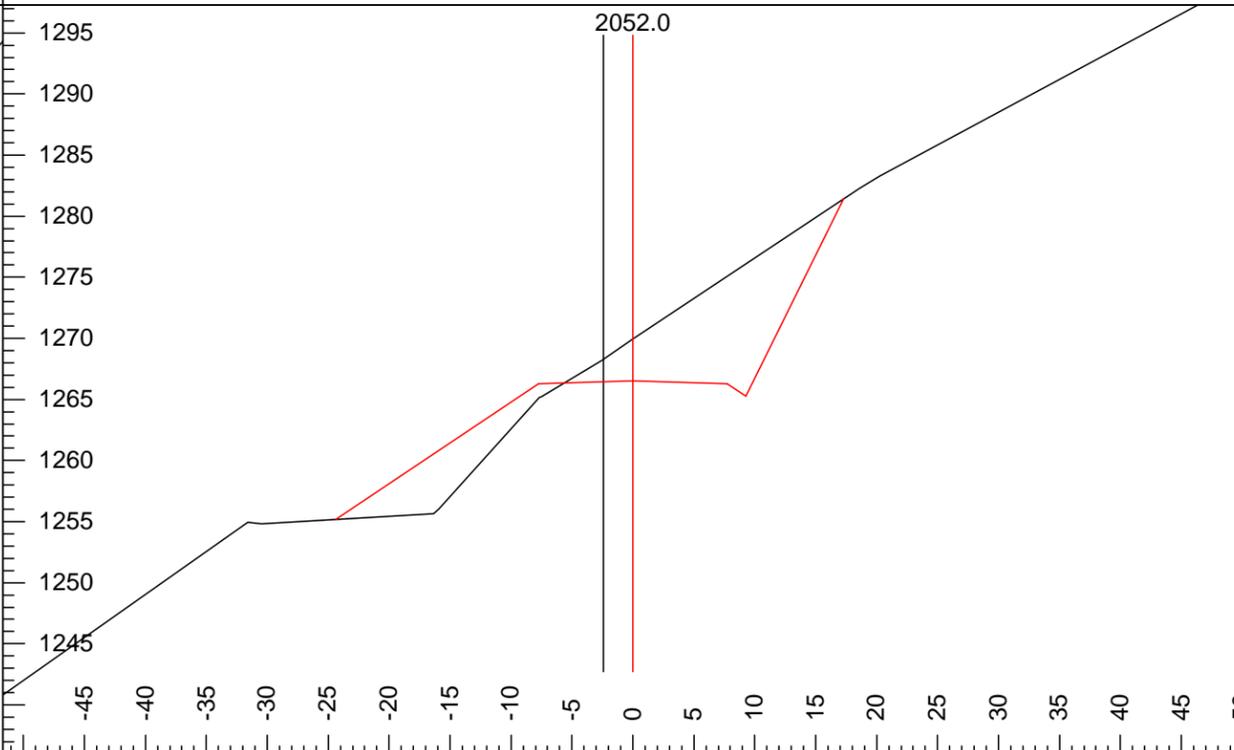
Trav.Cmnt:	pt210	Grd.Lst:	17	Stk R Y:	12.2
L-Stn:	1930.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-6.2	Stk L X:	-13.8	Cul DIA:	
Cut Dp:	8.0	Stk L Y:	-0.2	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	16.0	Cul Length:	



Trav.Cmnt:	pt211	Grd.Lst:	17	Stk R Y:	2.3
L-Stn:	1965.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	1.5	Stk L X:	-15.0	Cul DIA:	
Cut Dp:	-2.0	Stk L Y:	-5.1	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	11.0	Cul Length:	



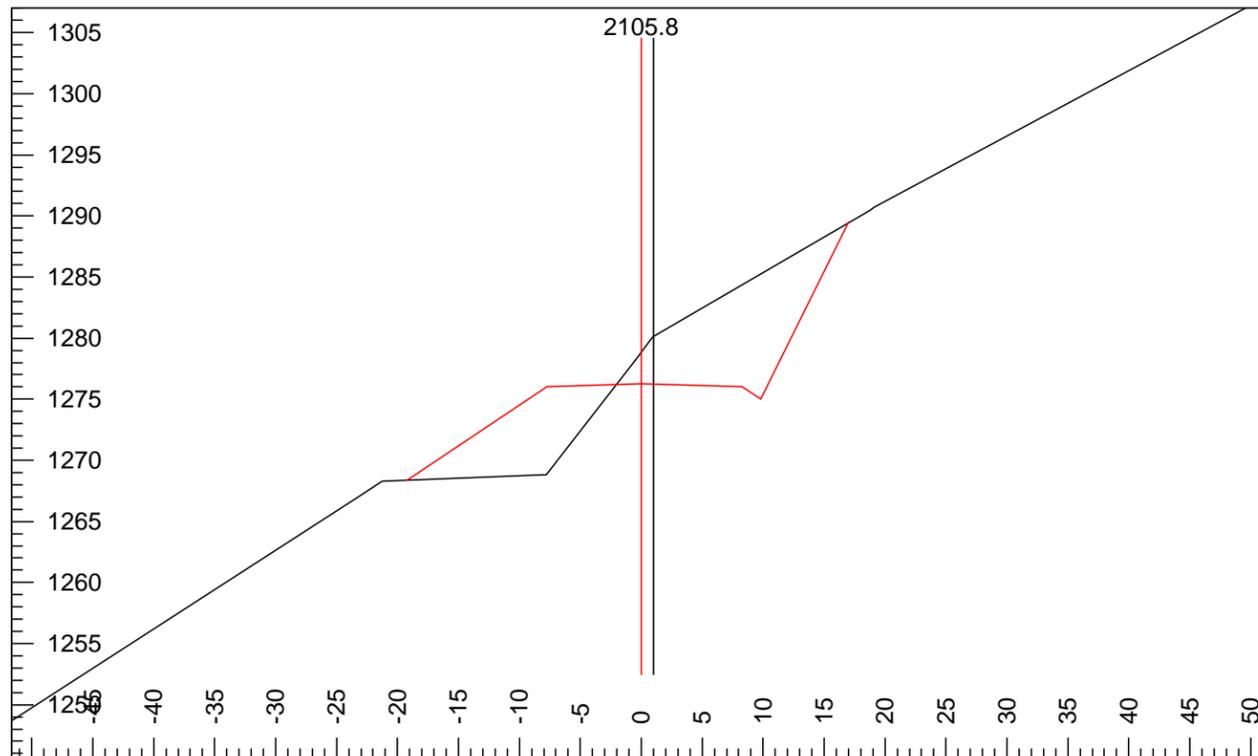
Trav.Cmnt:	pt212	Grd.Lst:	17	Stk R Y:	7.2
L-Stn:	2014.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.9	Stk L X:	-27.1	Cul DIA:	18in
Cut Dp:	0.0	Stk L Y:	-13.2	Cul Dip %:	-5
Grd.Nxt.:	17	Stk R X:	18.5	Cul Length:	28.0



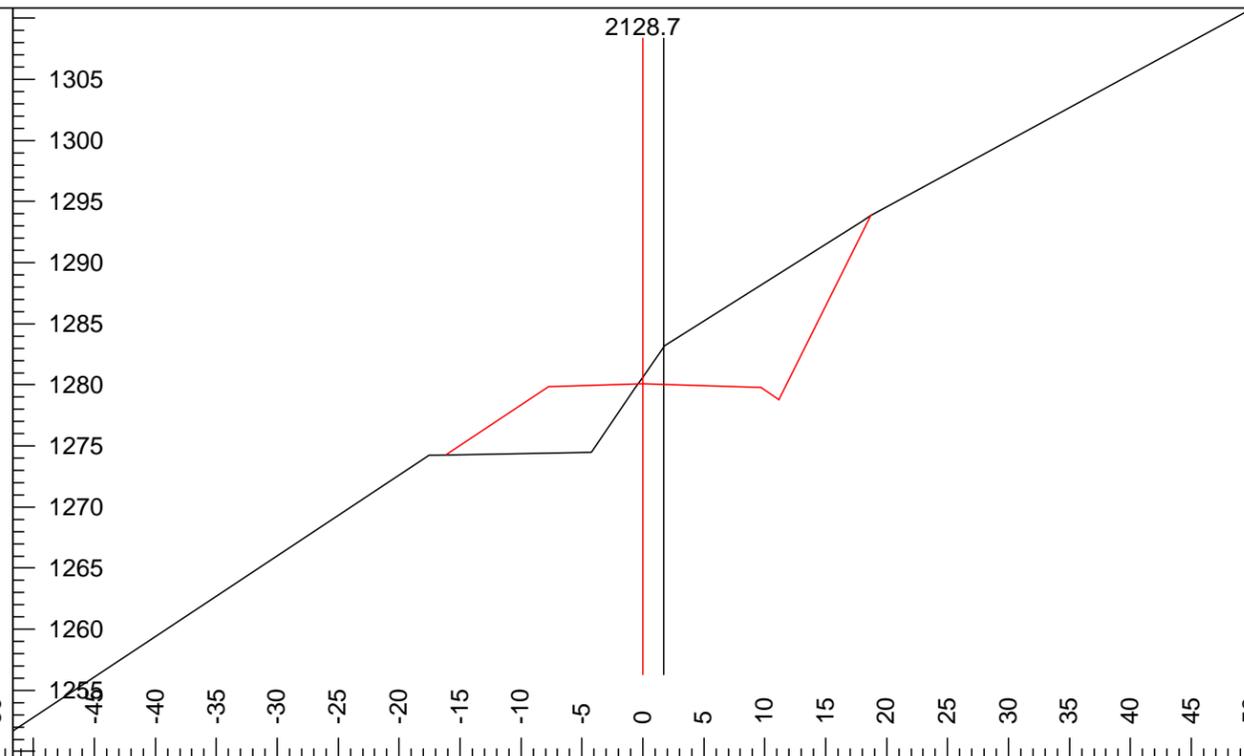
Trav.Cmnt:	pt213	Grd.Lst:	18	Stk R Y:	14.9
L-Stn:	2052.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-1.8	Stk L X:	-24.4	Cul DIA:	
Cut Dp:	3.4	Stk L Y:	-11.3	Cul Dip %:	
Grd.Nxt.:	18	Stk R X:	17.3	Cul Length:	

# PA-S-1300 Design Specifications

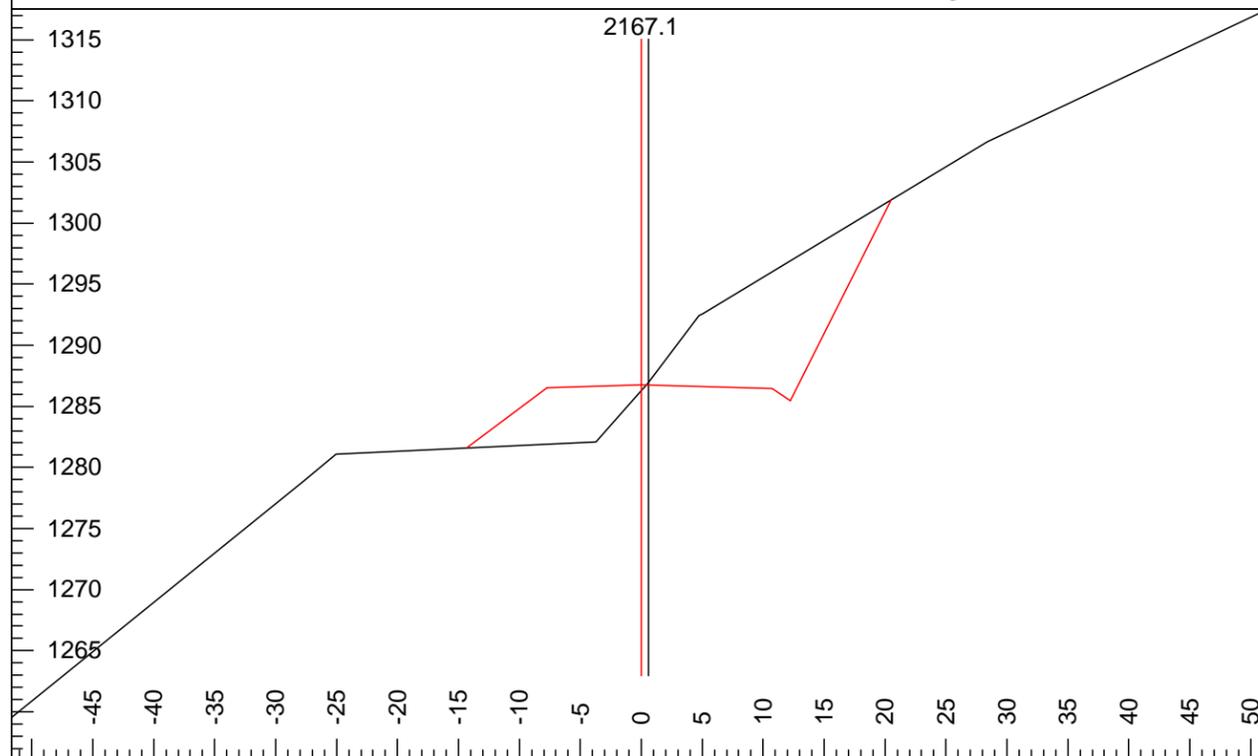
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



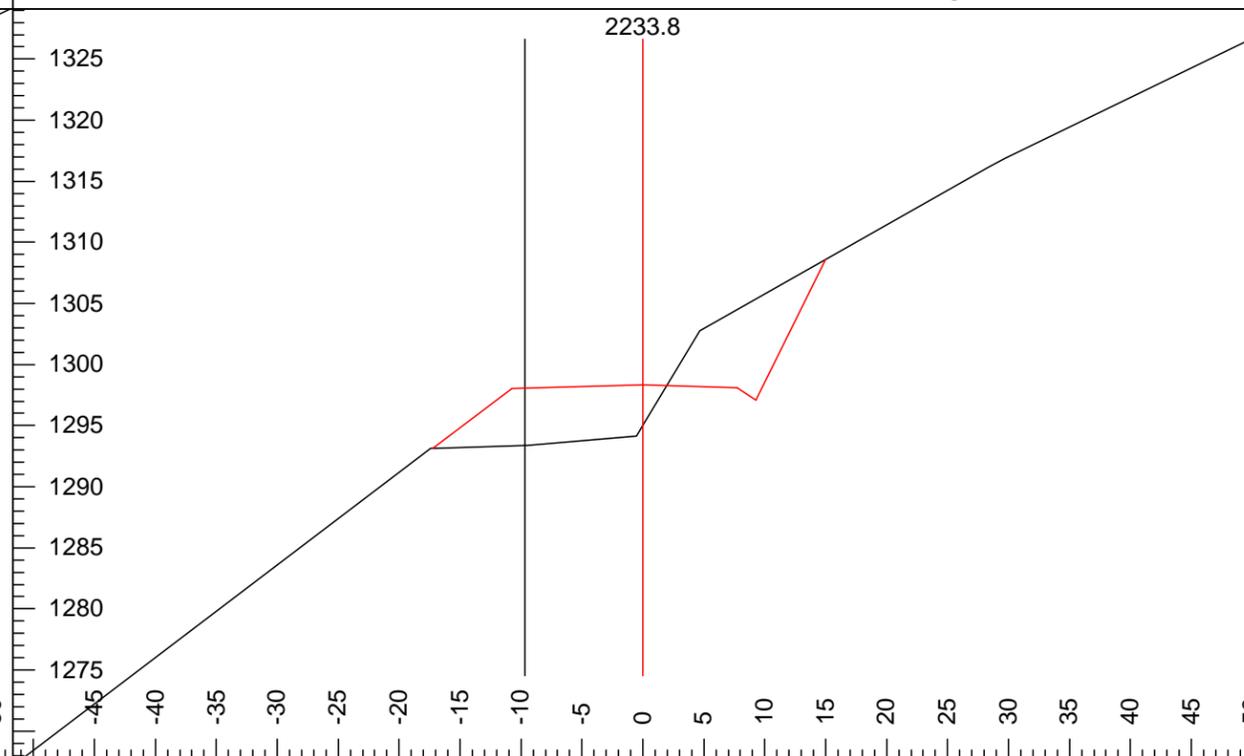
Trav.Cmnt:	pt214	Grd.Lst:	18	Stk R Y:	13.2
L-Stn:	2105.8	Rd. Wd. R:	8.3	CUT_SLOPE1 (Right):	200
H. Offset:	-1.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-3.9	Stk L X:	-19.2	Cul DIA:	
Cut Dp:	2.6	Stk L Y:	-7.9	Cul Dip %:	
Grd.Nxt.:	18	Stk R X:	17.0	Cul Length:	



Trav.Cmnt:	pt215	Grd.Lst:	17	Stk R Y:	13.8
L-Stn:	2128.7	Rd. Wd. R:	9.7	CUT_SLOPE1 (Right):	200
H. Offset:	-1.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-3.0	Stk L X:	-16.1	Cul DIA:	
Cut Dp:	0.5	Stk L Y:	-5.8	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	18.7	Cul Length:	



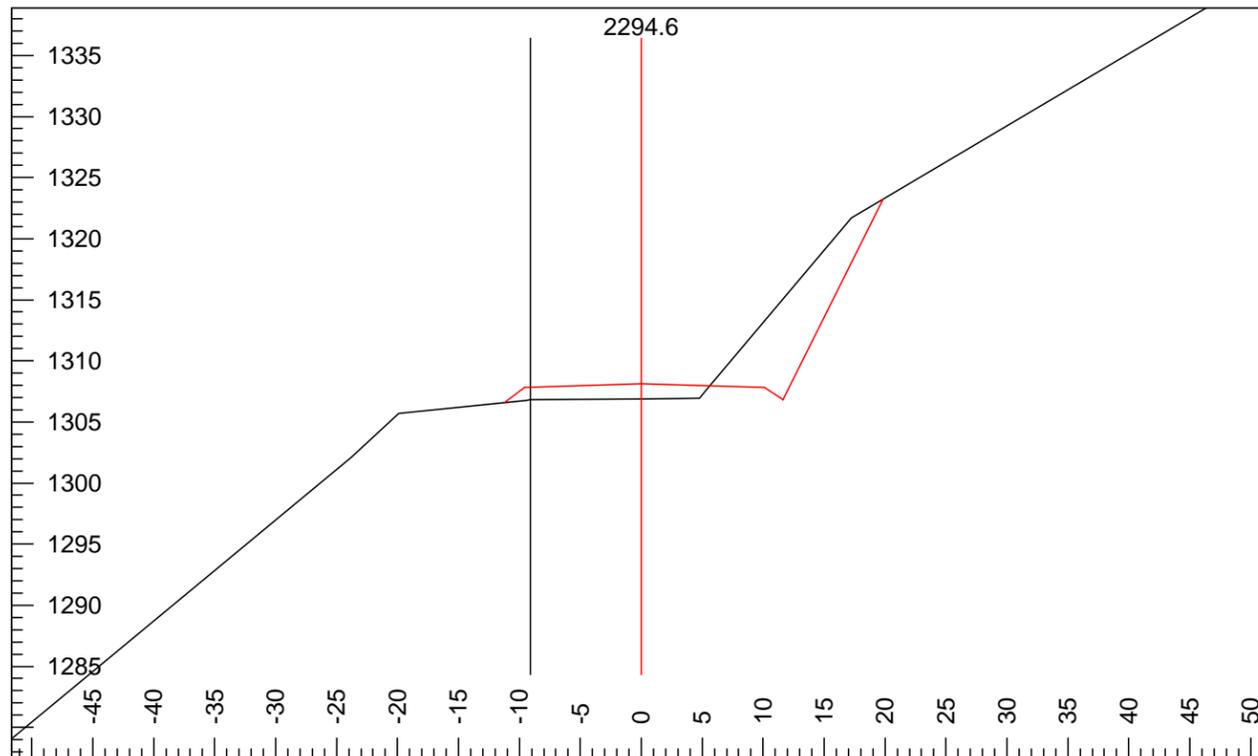
Trav.Cmnt:	pt216	Grd.Lst:	17	Stk R Y:	15.1
L-Stn:	2167.1	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-0.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-0.2	Stk L X:	-14.3	Cul DIA:	
Cut Dp:	-0.5	Stk L Y:	-5.2	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	20.5	Cul Length:	



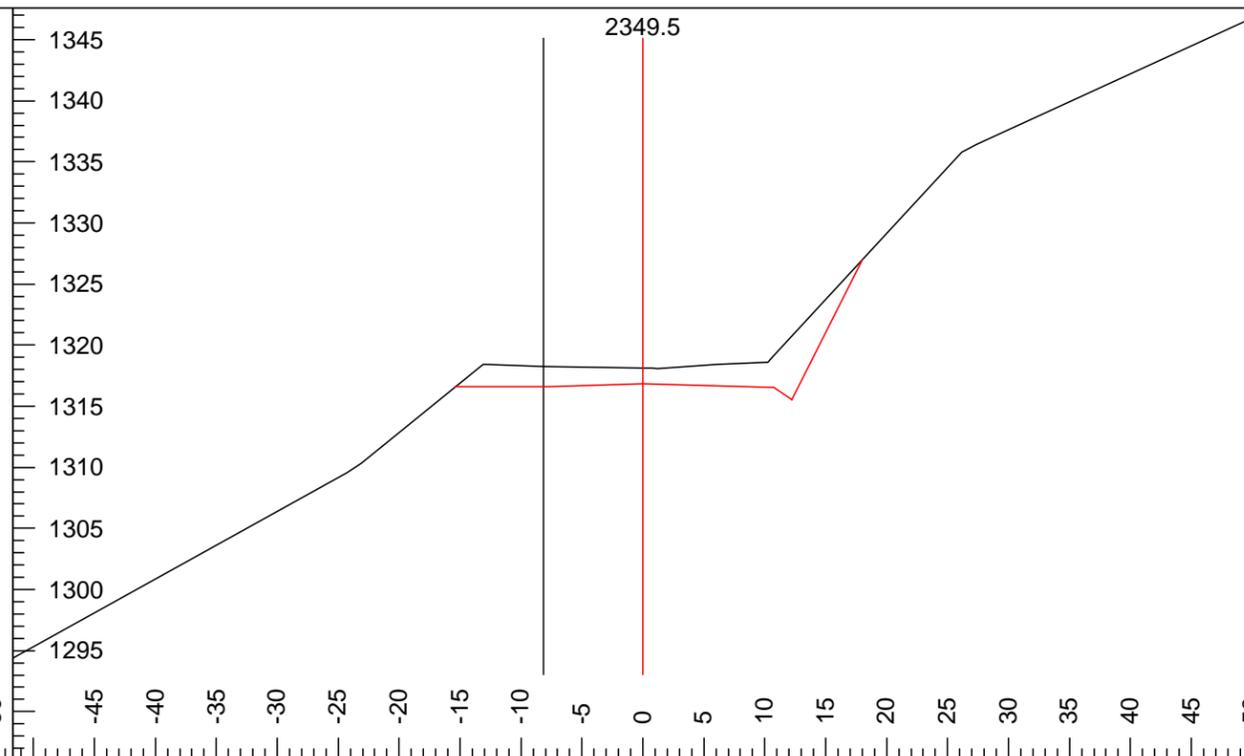
Trav.Cmnt:	pt217	Grd.Lst:	17	Stk R Y:	10.3
L-Stn:	2233.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	9.5	Rd. Wd. L:	10.8	FILL_SLOPE (Right):	75
V.Offset:	5.1	Stk L X:	-17.3	Cul DIA:	
Cut Dp:	-3.3	Stk L Y:	-5.2	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	15.0	Cul Length:	

# PA-S-1300 Design Specifications

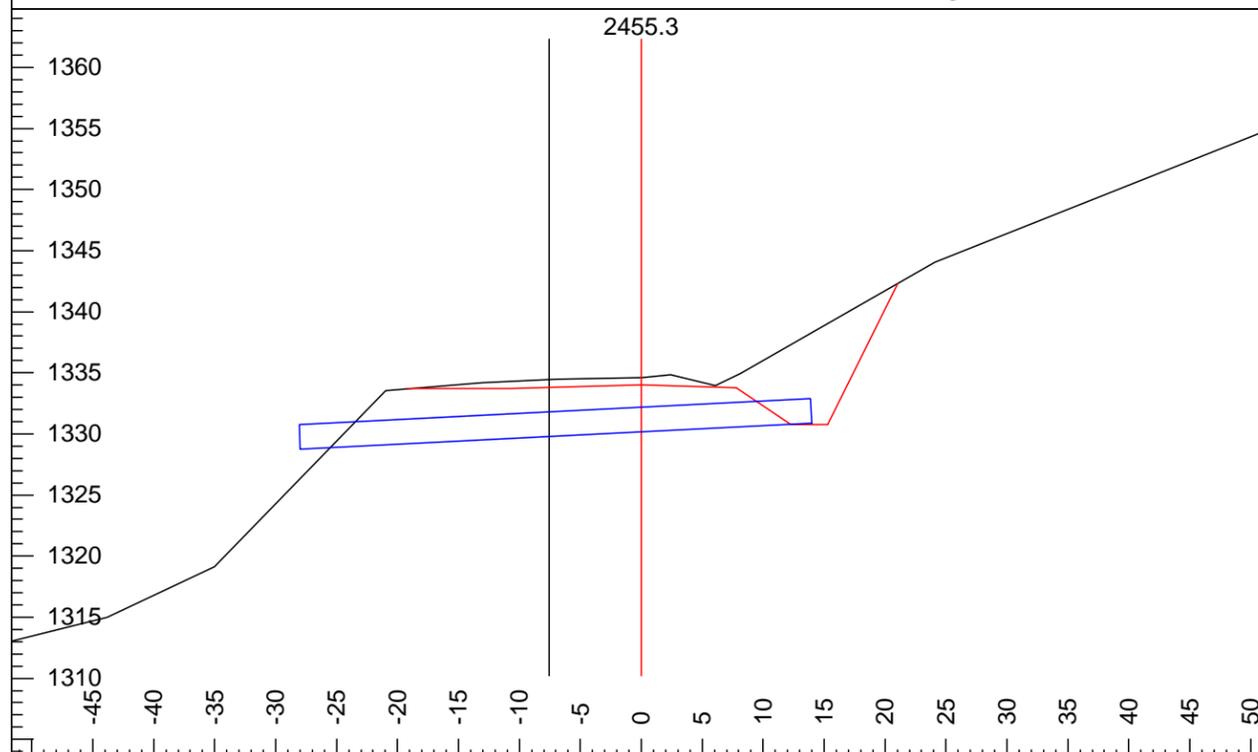
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



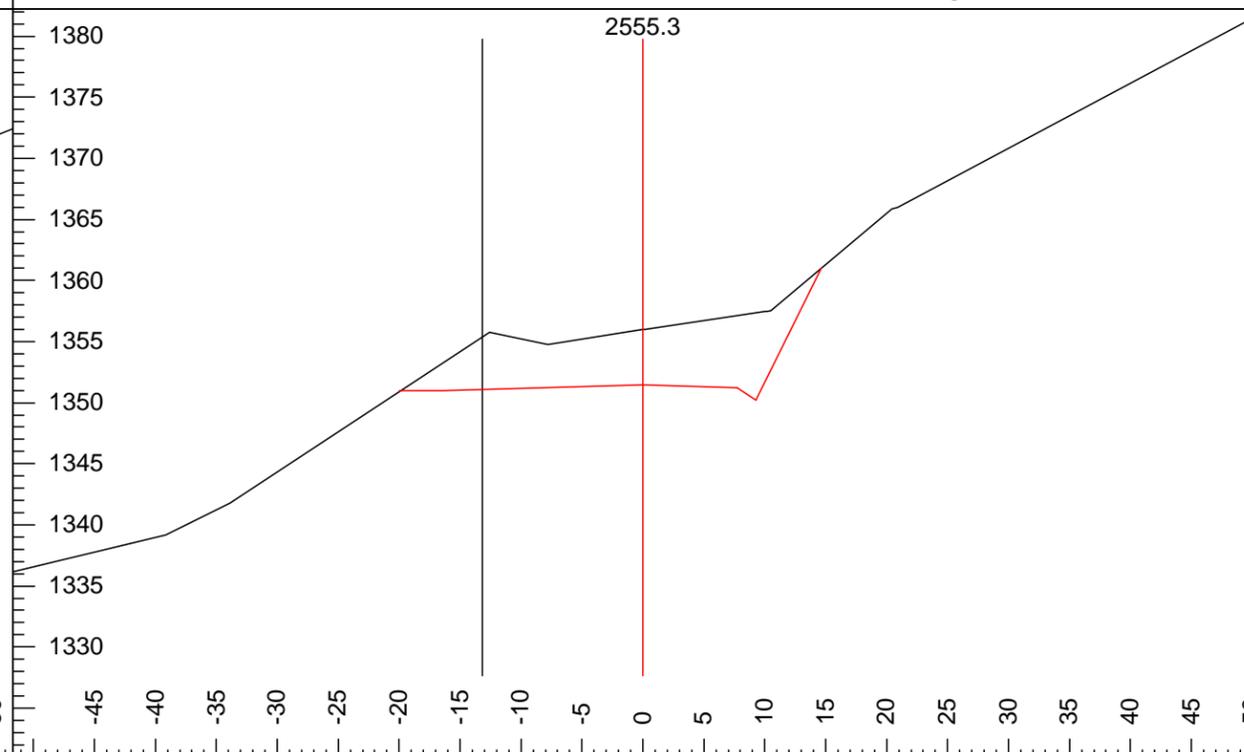
Trav.Cmnt:	pt218	Grd.Lst:	16	Stk R Y:	15.1
L-Stn:	2294.6	Rd. Wd. R:	10.1	CUT_SLOPE1 (Right):	200
H. Offset:	9.0	Rd. Wd. L:	9.5	FILL_SLOPE (Right):	75
V.Offset:	0.8	Stk L X:	-11.2	Cul DIA:	
Cut Dp:	-1.2	Stk L Y:	-1.5	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	19.8	Cul Length:	



Trav.Cmnt:	pt219	Grd.Lst:	16	Stk R Y:	10.1
L-Stn:	2349.5	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	8.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-1.5	Stk L X:	-15.4	Cul DIA:	
Cut Dp:	1.3	Stk L Y:	-0.2	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	18.0	Cul Length:	



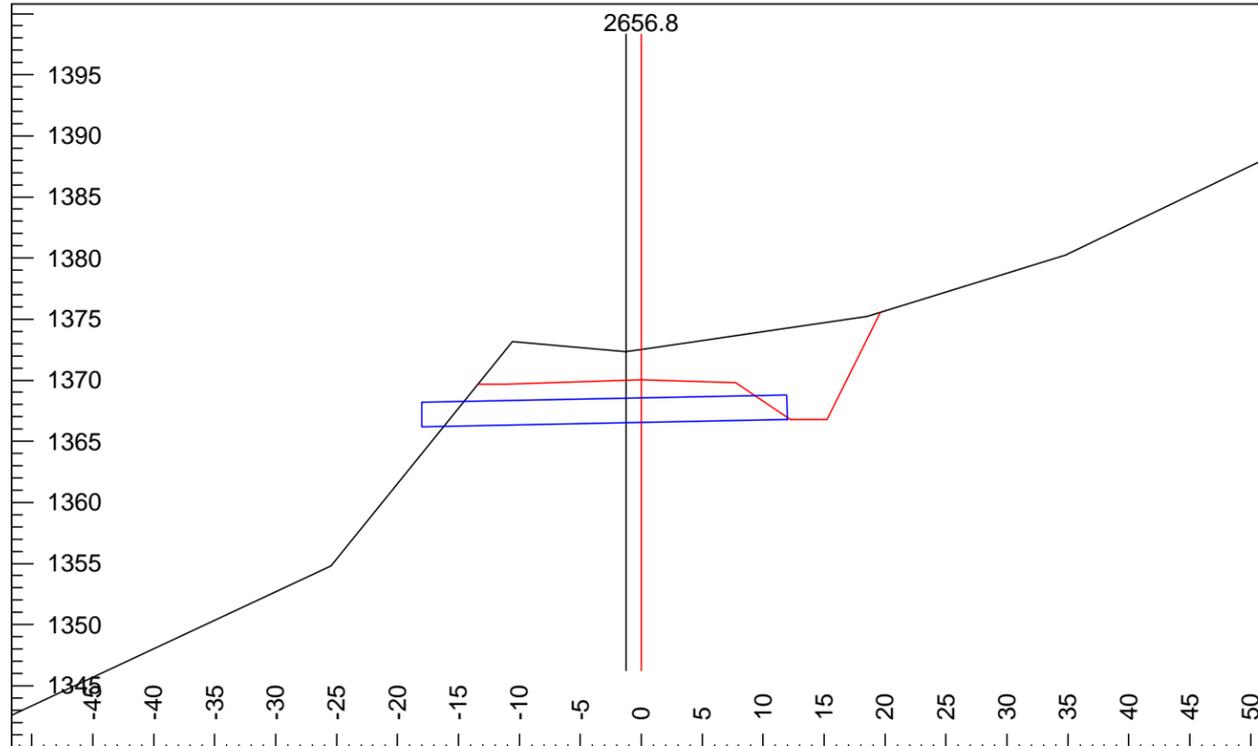
Trav.Cmnt:	pt220	Grd.Lst:	17	Stk R Y:	8.3
L-Stn:	2455.3	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.8	Rd. Wd. L:	10.8	FILL_SLOPE (Right):	75
V.Offset:	-0.1	Stk L X:	-19.2	Cul DIA:	24in
Cut Dp:	0.6	Stk L Y:	-0.3	Cul Dip %:	-5
Grd.Nxt.:	17	Stk R X:	21.0	Cul Length:	42.0



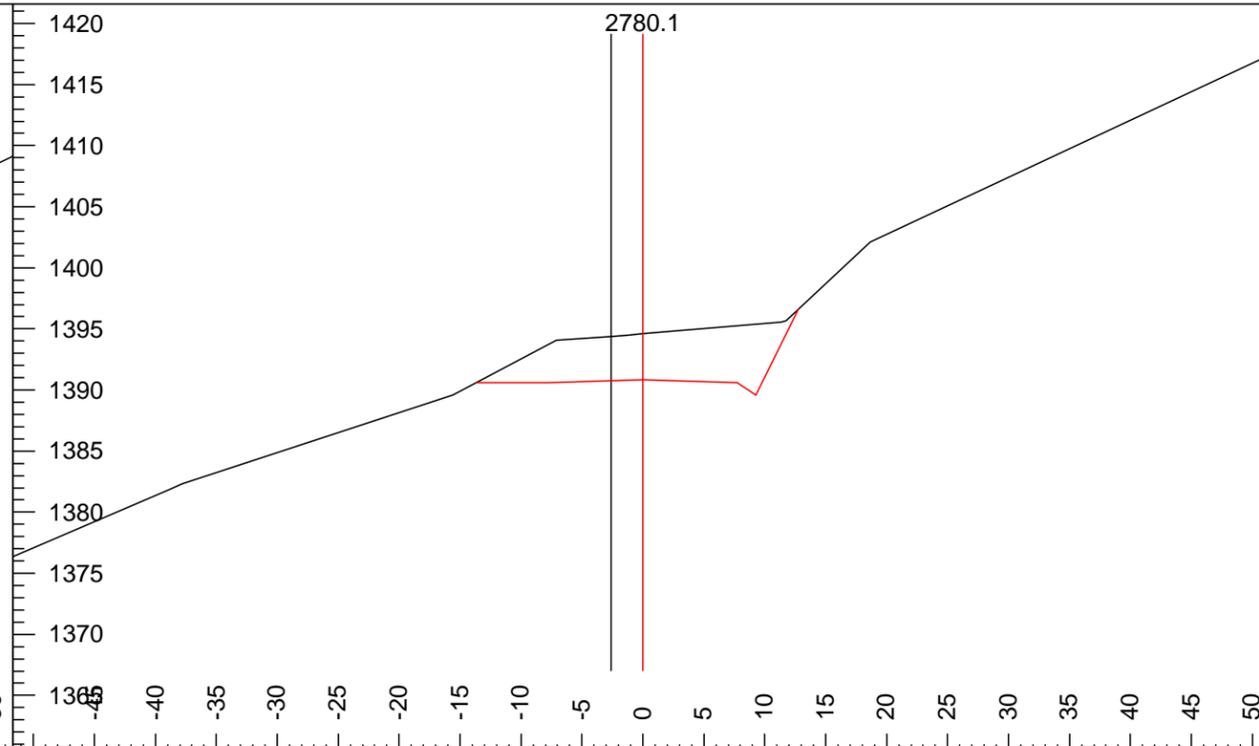
Trav.Cmnt:	pt221	Grd.Lst:	17	Stk R Y:	9.5
L-Stn:	2555.3	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	13.1	Rd. Wd. L:	16.4	FILL_SLOPE (Right):	75
V.Offset:	-4.7	Stk L X:	-19.9	Cul DIA:	
Cut Dp:	4.5	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	14.6	Cul Length:	

# PA-S-1300 Design Specifications

Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



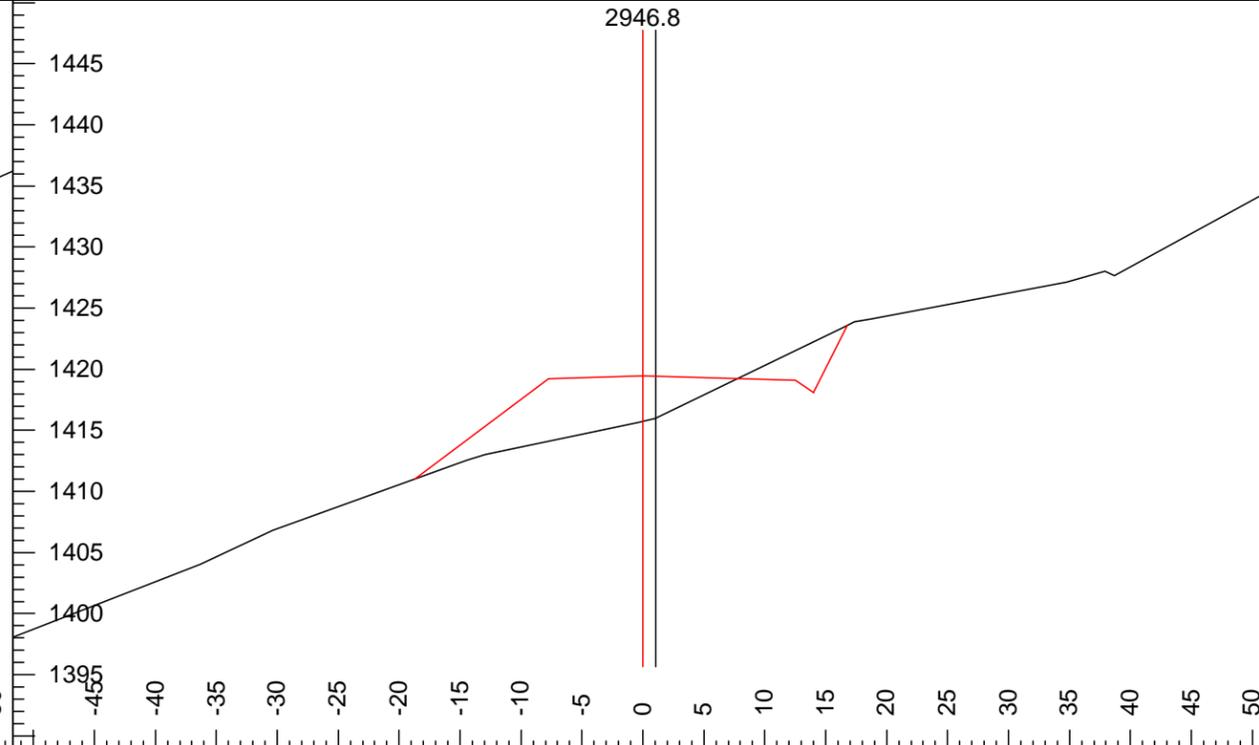
Trav.Cmnt:	pt222	Grd.Lst:	17	Stk R Y:	5.5
L-Stn:	2656.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.2	Rd. Wd. L:	11.2	FILL_SLOPE (Right):	75
V.Offset:	-2.2	Stk L X:	-13.3	Cul DIA:	24in
Cut Dp:	2.5	Stk L Y:	-0.3	Cul Dip %:	-2
Grd.Nxt.:	17	Stk R X:	19.6	Cul Length:	30.0



Trav.Cmnt:	pt223	Grd.Lst:	17	Stk R Y:	5.8
L-Stn:	2780.1	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-3.6	Stk L X:	-13.7	Cul DIA:	
Cut Dp:	3.8	Stk L Y:	-0.2	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	12.8	Cul Length:	



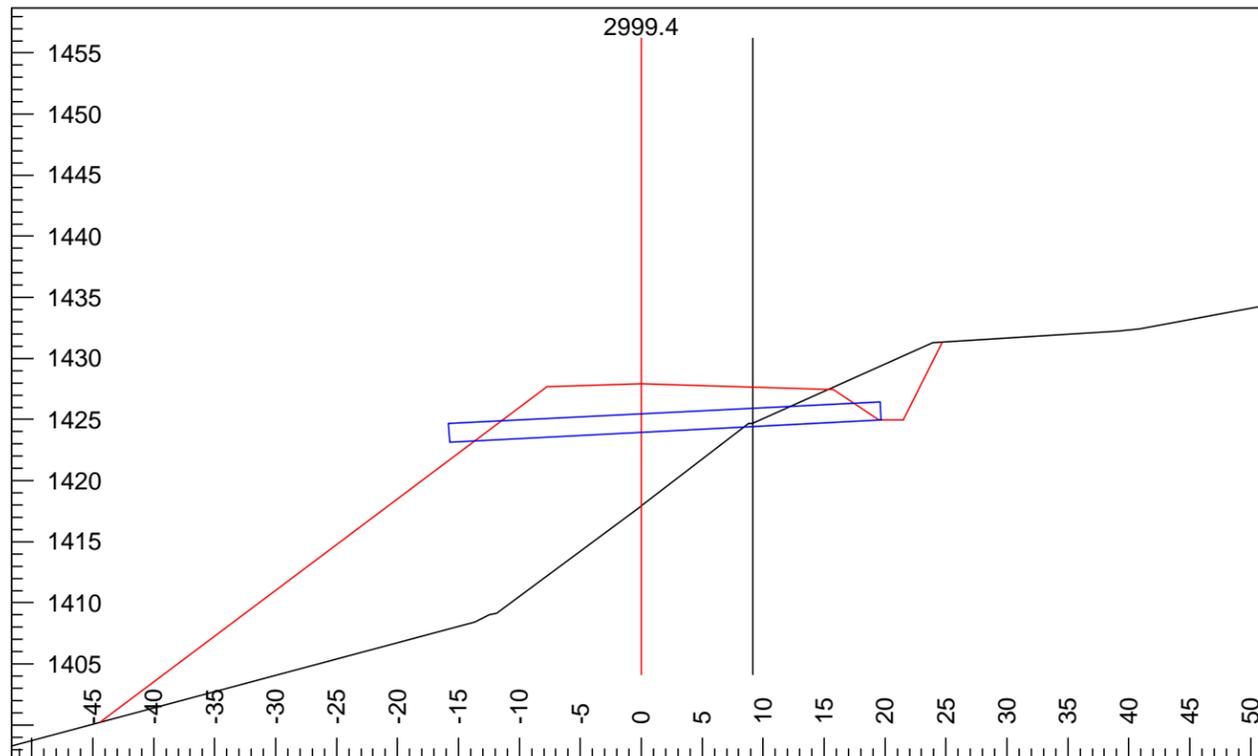
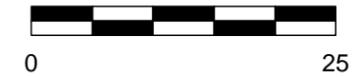
Trav.Cmnt:	pt224	Grd.Lst:	17	Stk R Y:	4.9
L-Stn:	2896.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-0.8	Stk L X:	-11.0	Cul DIA:	
Cut Dp:	0.8	Stk L Y:	-2.7	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	12.3	Cul Length:	



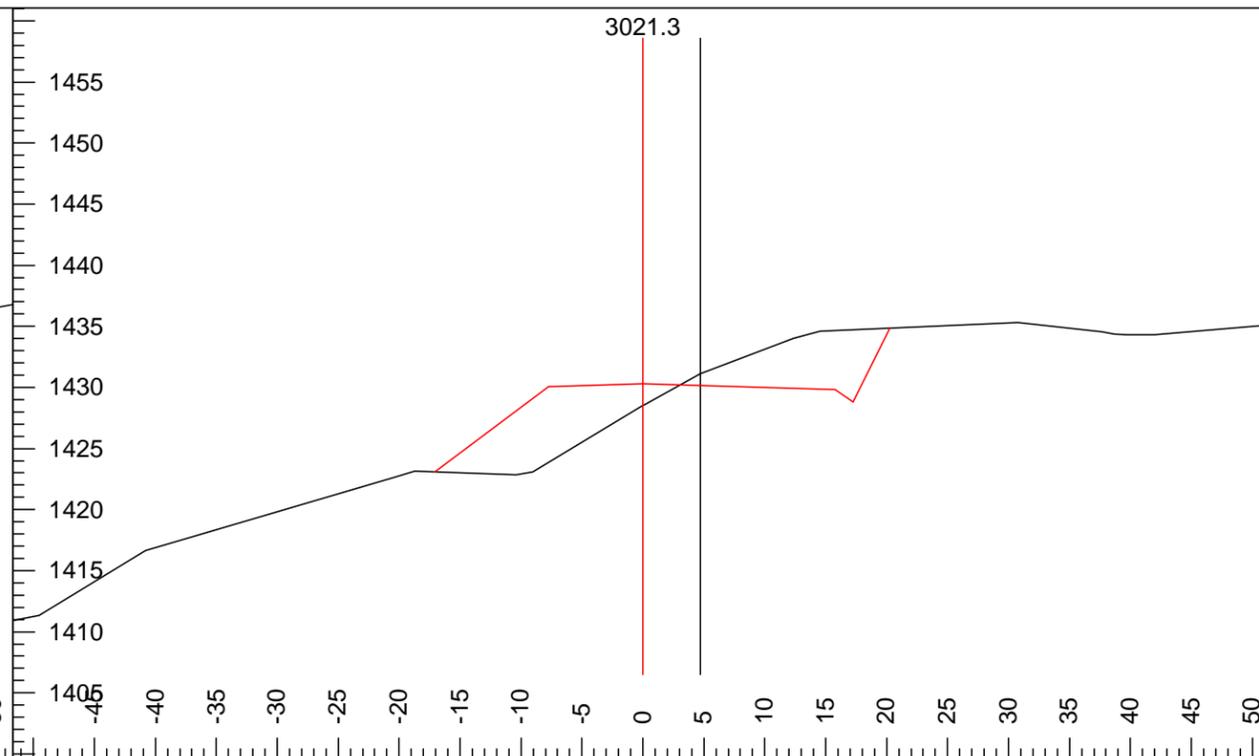
Trav.Cmnt:	pt225	Grd.Lst:	16	Stk R Y:	4.1
L-Stn:	2946.8	Rd. Wd. R:	12.5	CUT_SLOPE1 (Right):	200
H. Offset:	-1.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.5	Stk L X:	-18.7	Cul DIA:	
Cut Dp:	-3.7	Stk L Y:	-8.5	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	16.8	Cul Length:	

# PA-S-1300 Design Specifications

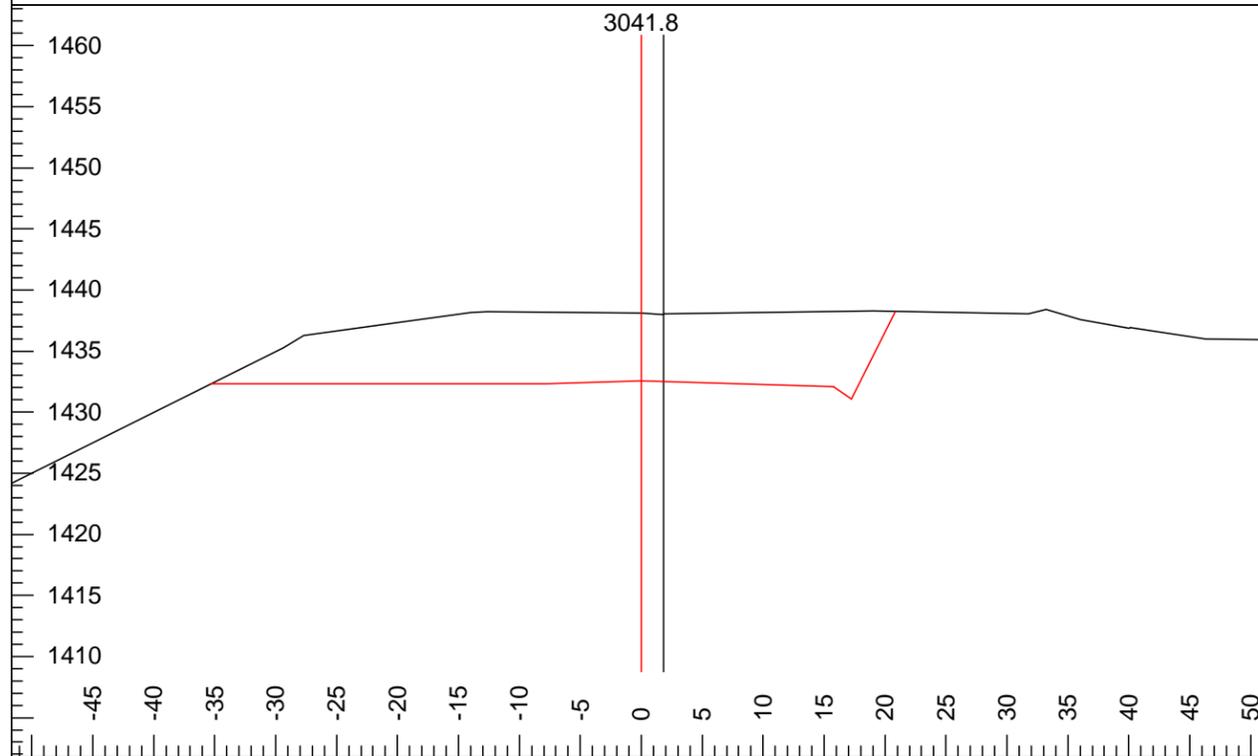
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



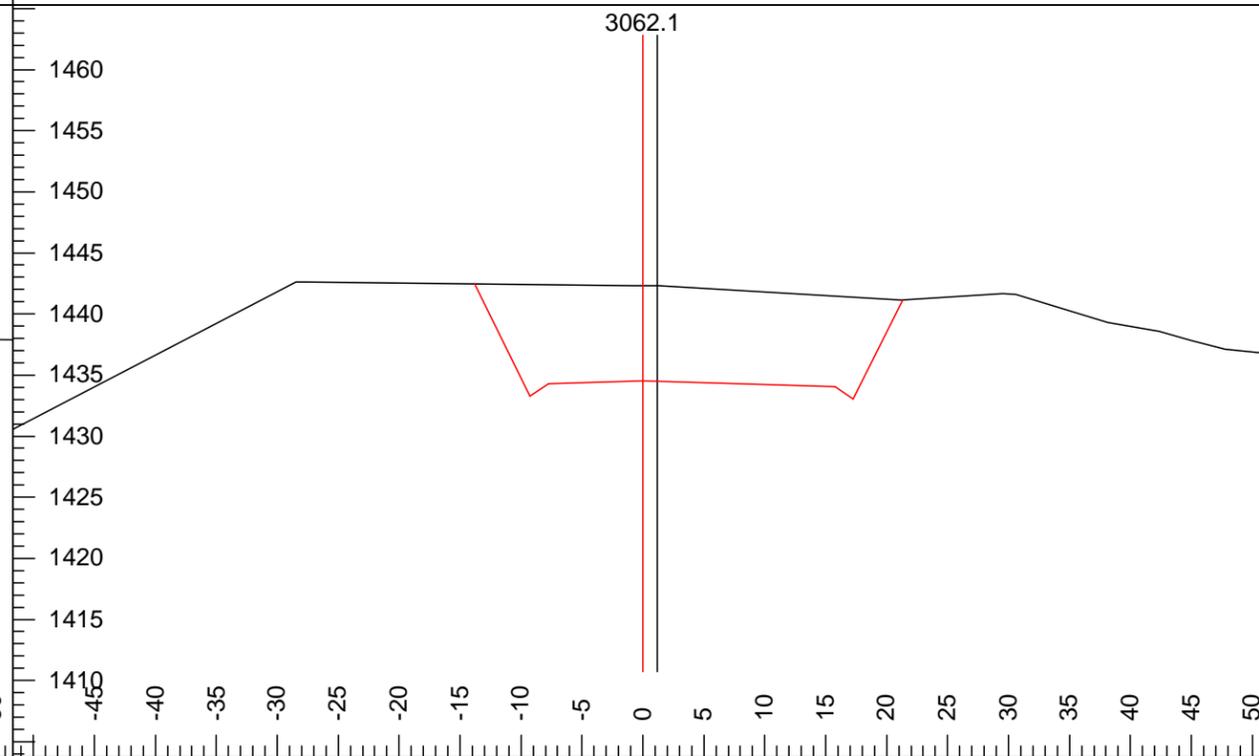
Trav.Cmnt:	pt226	Grd.Lst:	16	Stk R Y:	3.4
L-Stn:	2999.4	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.0	Stk L X:	-44.4	Cul DIA:	18in
Cut Dp:	-10.0	Stk L Y:	-27.7	Cul Dip %:	-5
Grd.Nxt.:	16	Stk R X:	24.7	Cul Length:	36.0



Trav.Cmnt:	pt227	Grd.Lst:	11	Stk R Y:	4.6
L-Stn:	3021.3	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-4.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-1.1	Stk L X:	-17.1	Cul DIA:	
Cut Dp:	-1.8	Stk L Y:	-7.2	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	20.3	Cul Length:	



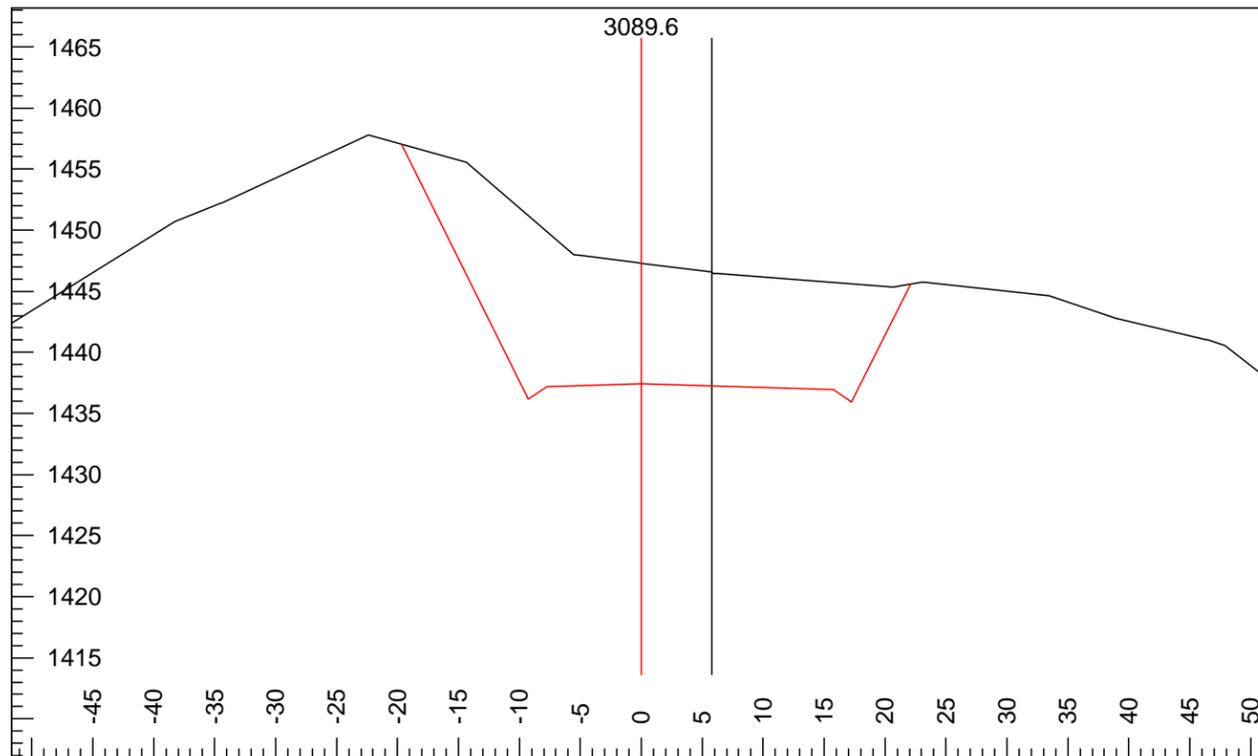
Trav.Cmnt:	pt228	Grd.Lst:	11	Stk R Y:	5.7
L-Stn:	3041.8	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-1.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-5.6	Stk L X:	-35.3	Cul DIA:	
Cut Dp:	5.5	Stk L Y:	-0.2	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	20.8	Cul Length:	



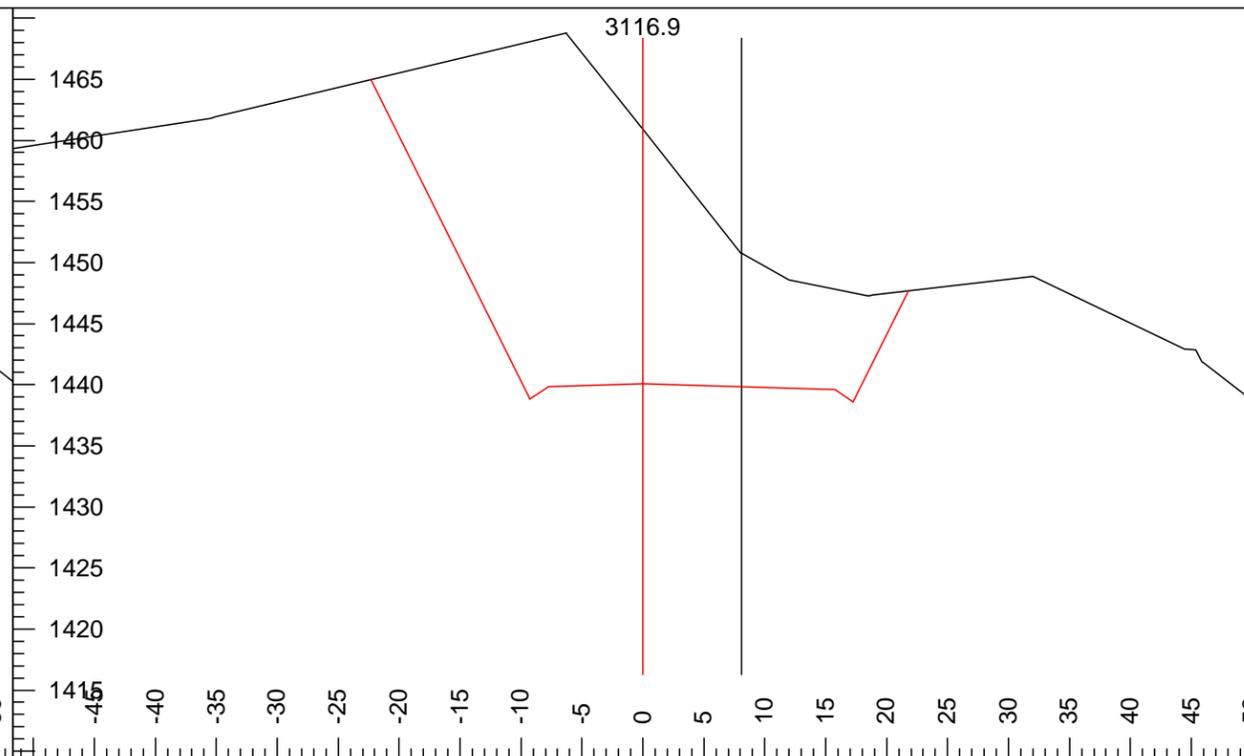
Trav.Cmnt:	pt229	Grd.Lst:	10	Stk R Y:	6.6
L-Stn:	3062.1	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-1.2	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-7.7	Stk L X:	-13.8	Cul DIA:	
Cut Dp:	7.8	Stk L Y:	8.0	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	21.3	Cul Length:	

# PA-S-1300 Design Specifications

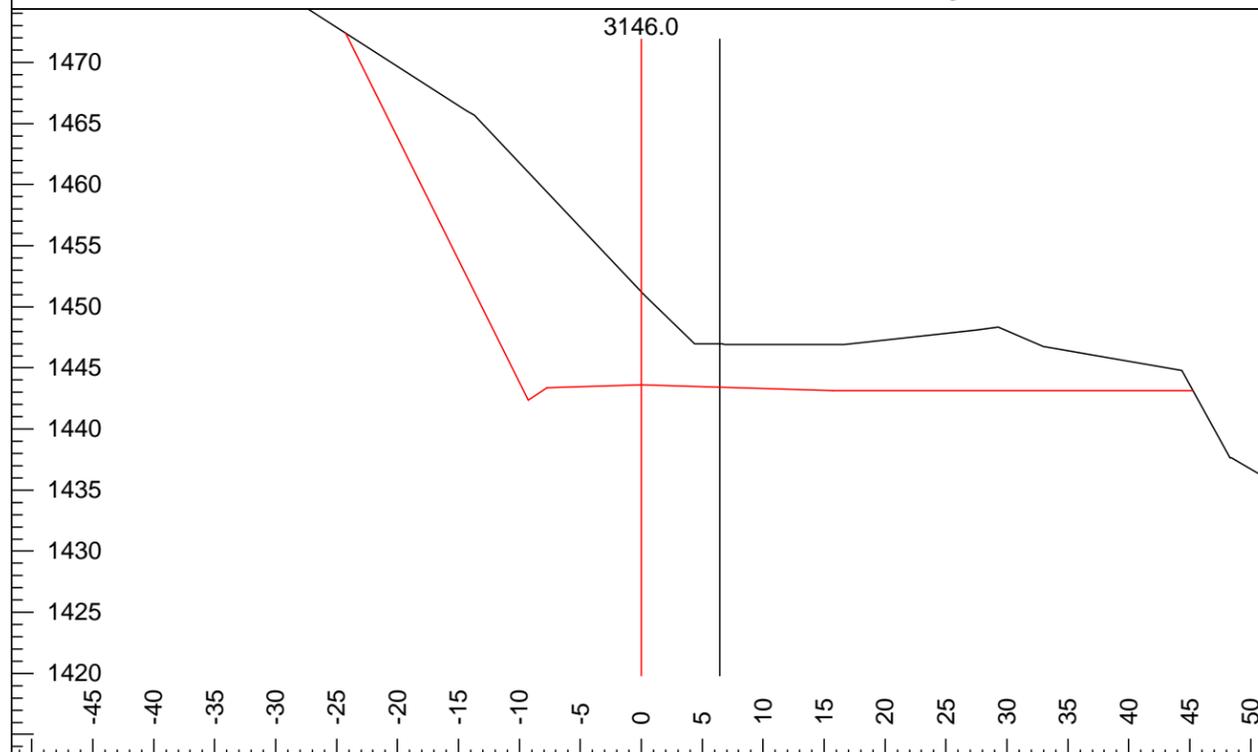
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



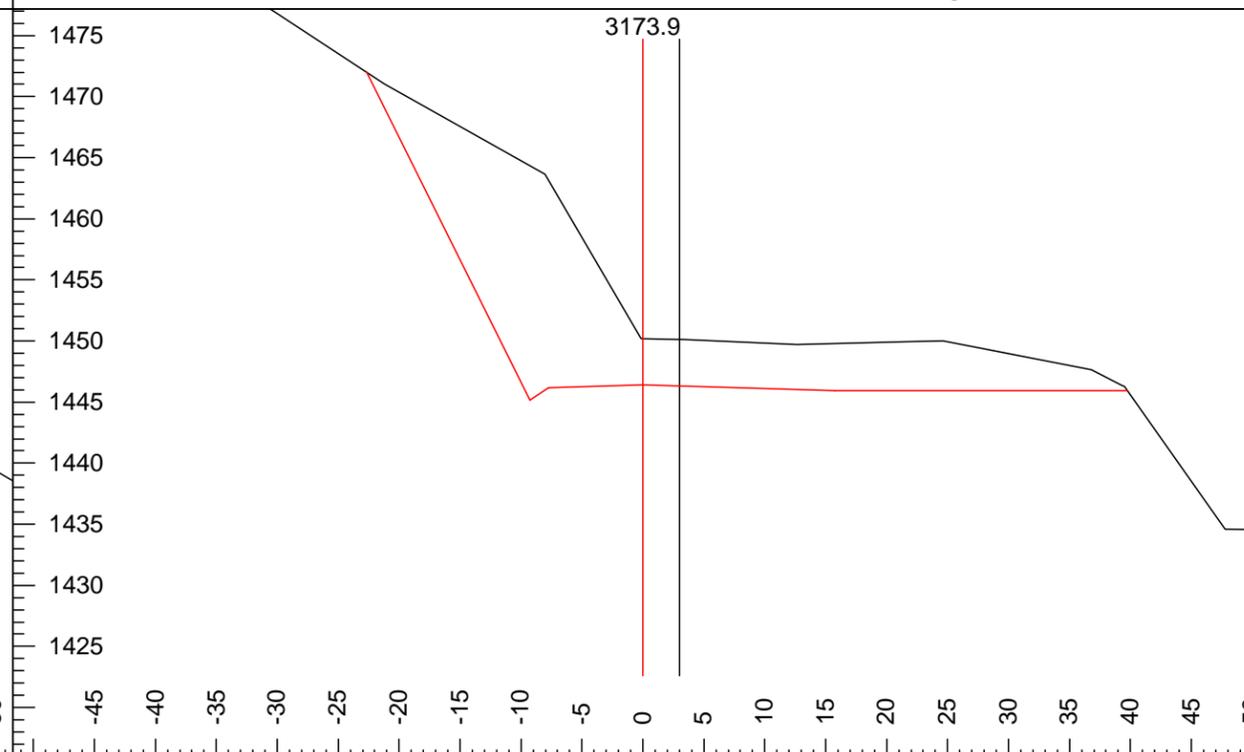
Trav.Cmnt:	pt230	Grd.Lst:	10	Stk R Y:	8.1
L-Stn:	3089.6	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-5.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-8.9	Stk L X:	-19.7	Cul DIA:	
Cut Dp:	9.9	Stk L Y:	19.6	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	22.1	Cul Length:	



Trav.Cmnt:	pt231	Grd.Lst:	10	Stk R Y:	7.6
L-Stn:	3116.9	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.1	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-10.7	Stk L X:	-22.3	Cul DIA:	
Cut Dp:	20.8	Stk L Y:	24.9	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	21.8	Cul Length:	



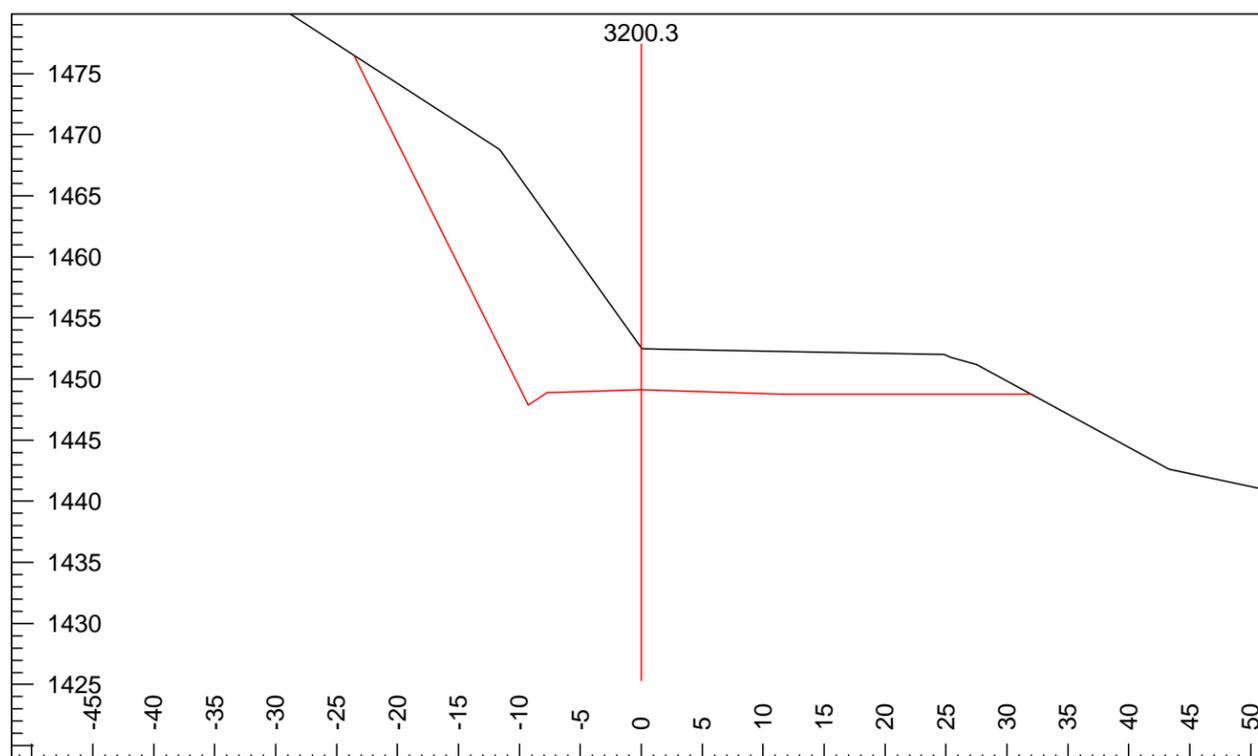
Trav.Cmnt:	pt232	Grd.Lst:	12	Stk R Y:	-0.5
L-Stn:	3146.0	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-6.3	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-3.3	Stk L X:	-24.3	Cul DIA:	
Cut Dp:	7.6	Stk L Y:	28.8	Cul Dip %:	
Grd.Nxt.:	12	Stk R X:	45.3	Cul Length:	



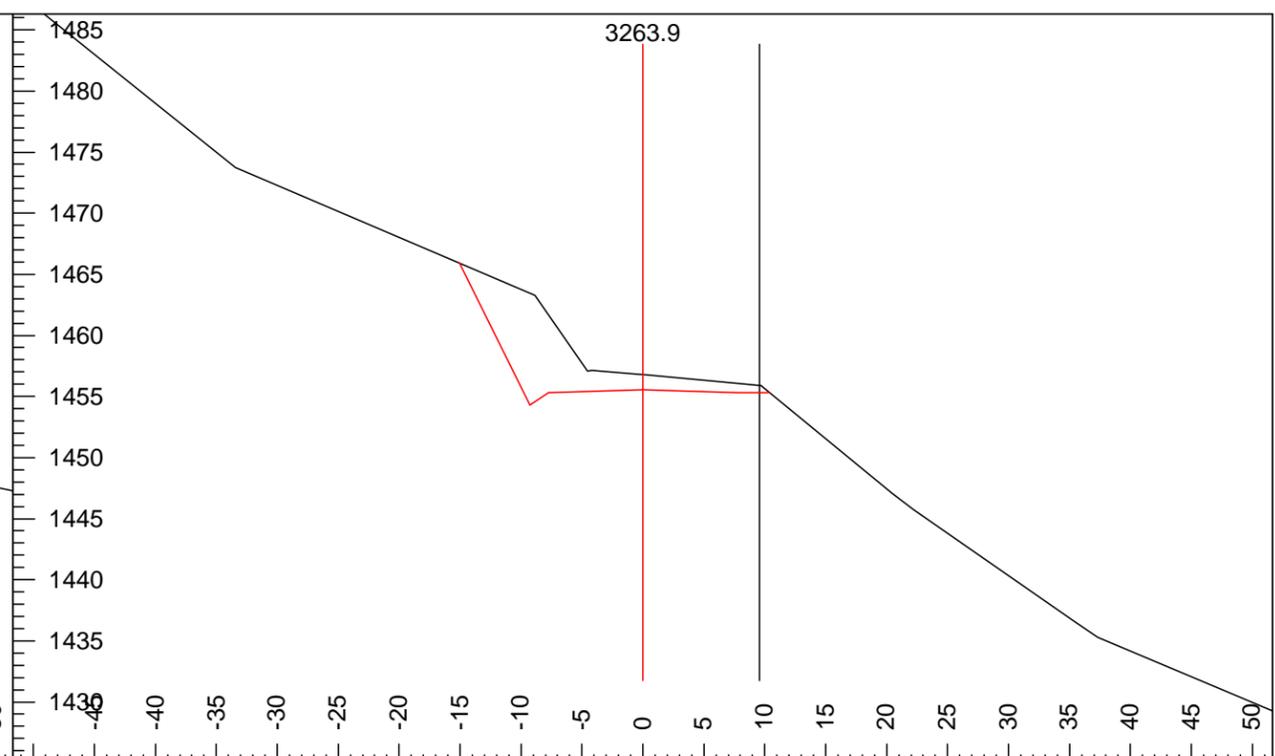
Trav.Cmnt:	pt233	Grd.Lst:	10	Stk R Y:	-0.5
L-Stn:	3173.9	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-3.8	Stk L X:	-22.7	Cul DIA:	
Cut Dp:	3.8	Stk L Y:	25.6	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	39.8	Cul Length:	

# PA-S-1300 Design Specifications

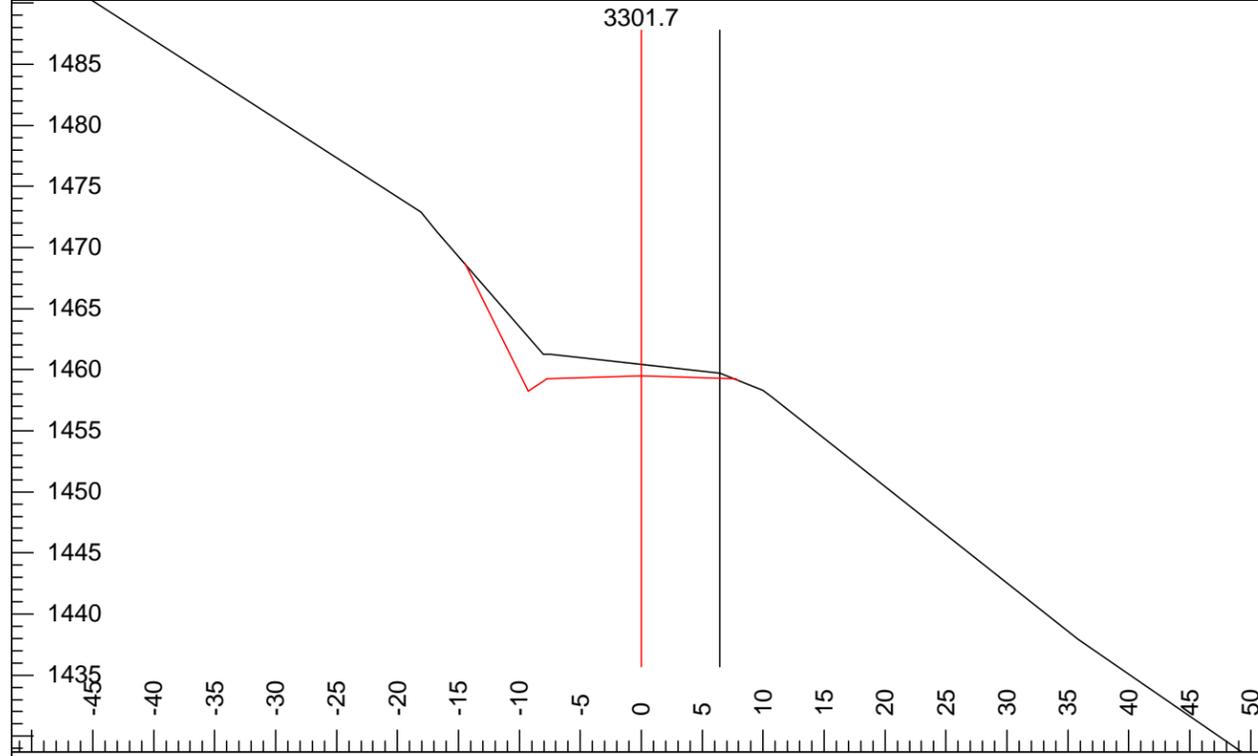
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



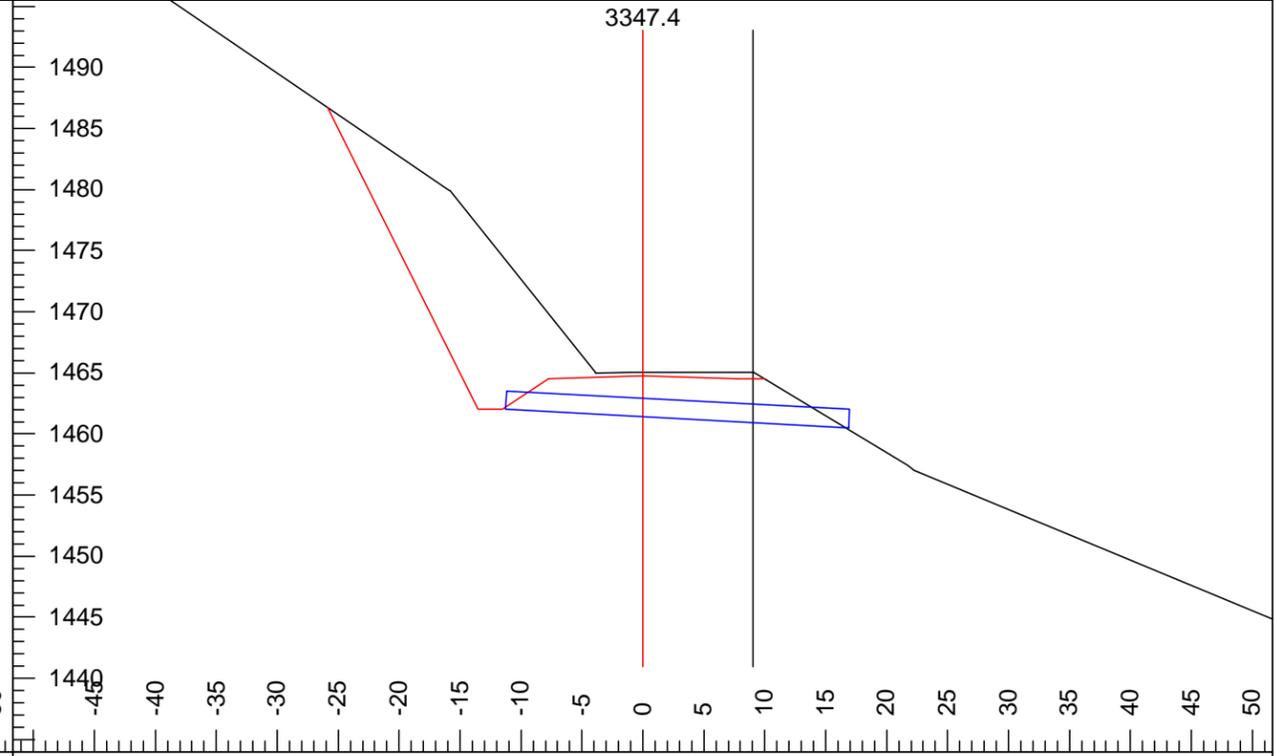
Trav.Cmnt:	pt234	Grd.Lst:	10	Stk R Y:	-0.4
L-Stn:	3200.3	Rd. Wd. R:	11.7	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-3.4	Stk L X:	-23.5	Cul DIA:	
Cut Dp:	3.4	Stk L Y:	27.4	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	32.0	Cul Length:	



Trav.Cmnt:	pt235	Grd.Lst:	10	Stk R Y:	-0.2
L-Stn:	3263.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.2	Stk L X:	-15.1	Cul DIA:	
Cut Dp:	1.2	Stk L Y:	10.4	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	10.4	Cul Length:	



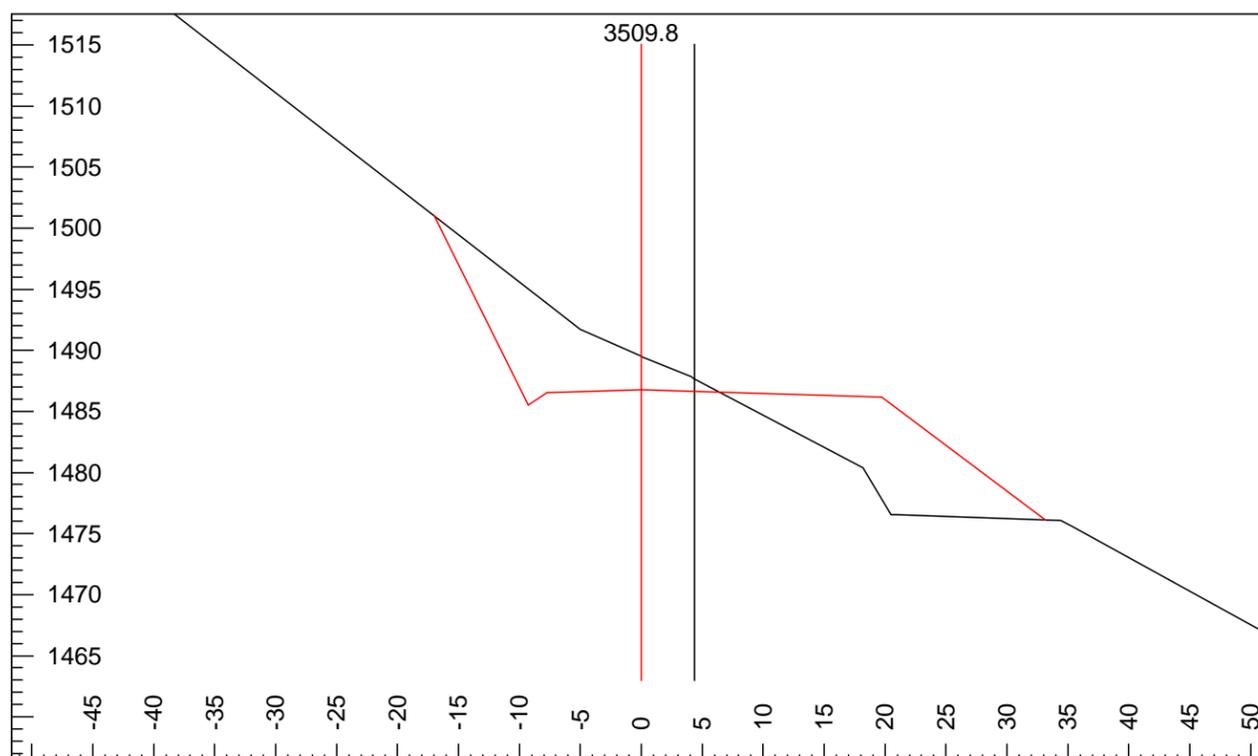
Trav.Cmnt:	pt236	Grd.Lst:	10	Stk R Y:	-0.3
L-Stn:	3301.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-6.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.4	Stk L X:	-14.5	Cul DIA:	
Cut Dp:	1.0	Stk L Y:	9.2	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	7.9	Cul Length:	



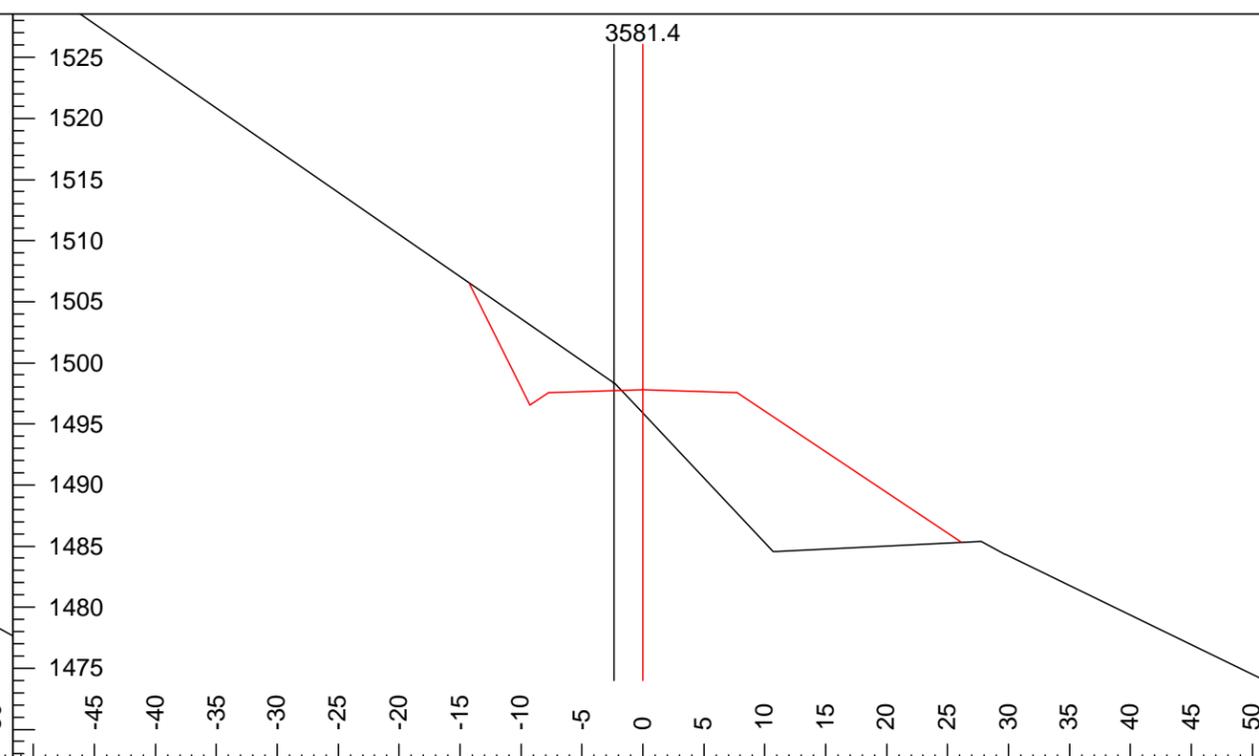
Trav.Cmnt:	pt237	Grd.Lst:	12	Stk R Y:	-0.2
L-Stn:	3347.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.1	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.4	Stk L X:	-25.9	Cul DIA:	18in
Cut Dp:	0.3	Stk L Y:	22.0	Cul Dip %:	5
Grd.Nxt.:	12	Stk R X:	10.0	Cul Length:	30.0

# PA-S-1300 Design Specifications

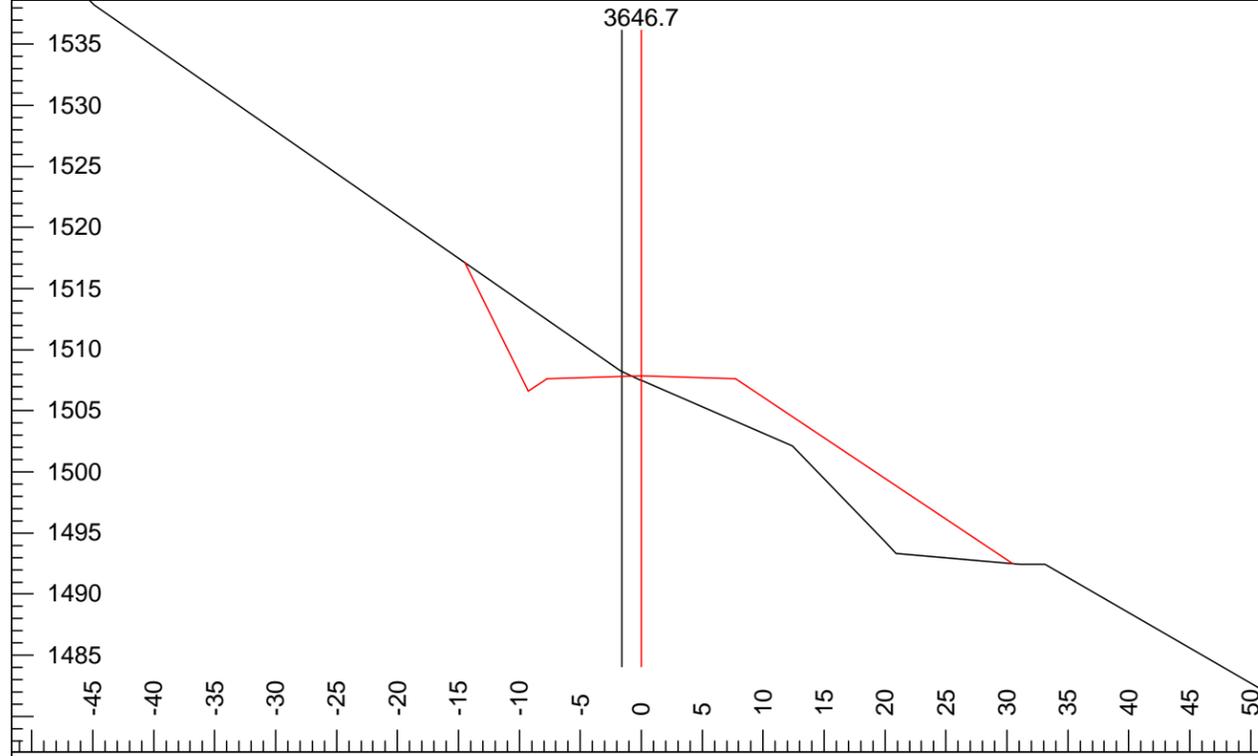
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



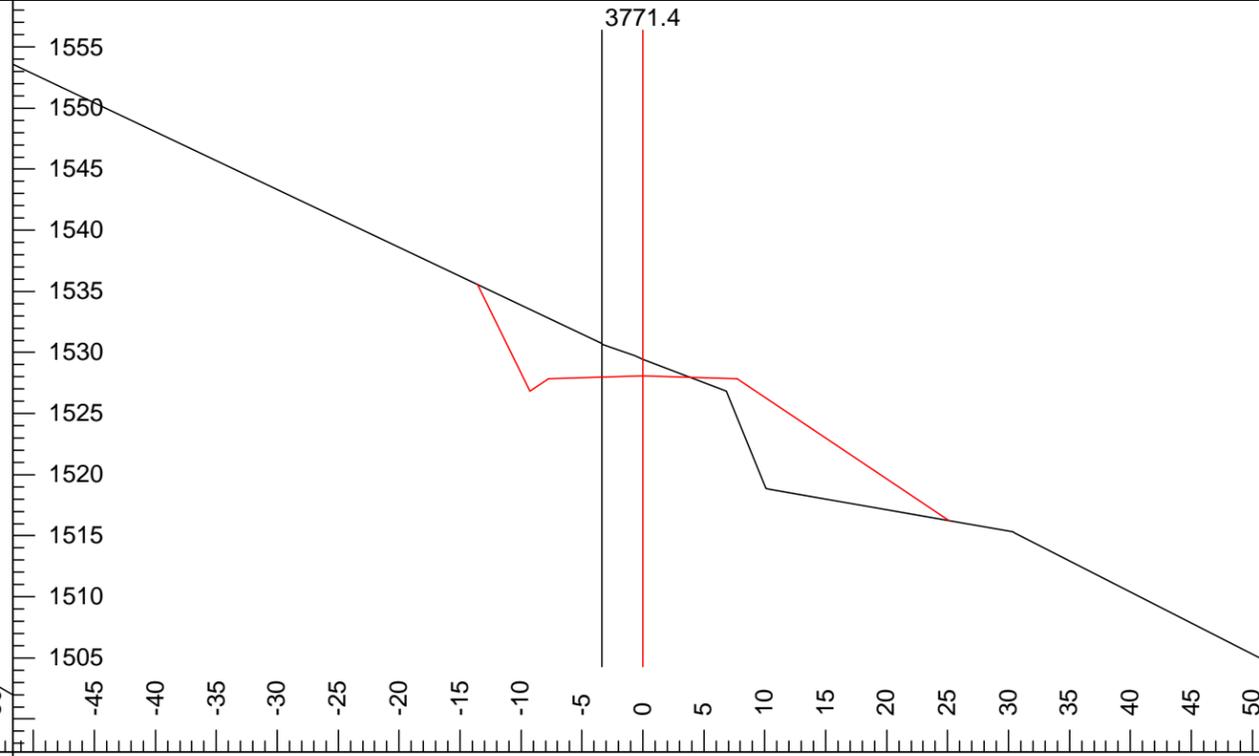
Trav.Cmnt:	pt238	Grd.Lst:	16	Stk R Y:	-10.6
L-Stn:	3509.8	Rd. Wd. R:	19.8	CUT_SLOPE1 (Right):	200
H. Offset:	-4.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-1.1	Stk L X:	-17.0	Cul DIA:	
Cut Dp:	2.7	Stk L Y:	14.3	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	33.1	Cul Length:	



Trav.Cmnt:	pt239	Grd.Lst:	15	Stk R Y:	-12.5
L-Stn:	3581.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.3	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.6	Stk L X:	-14.2	Cul DIA:	
Cut Dp:	-1.9	Stk L Y:	8.7	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	26.1	Cul Length:	



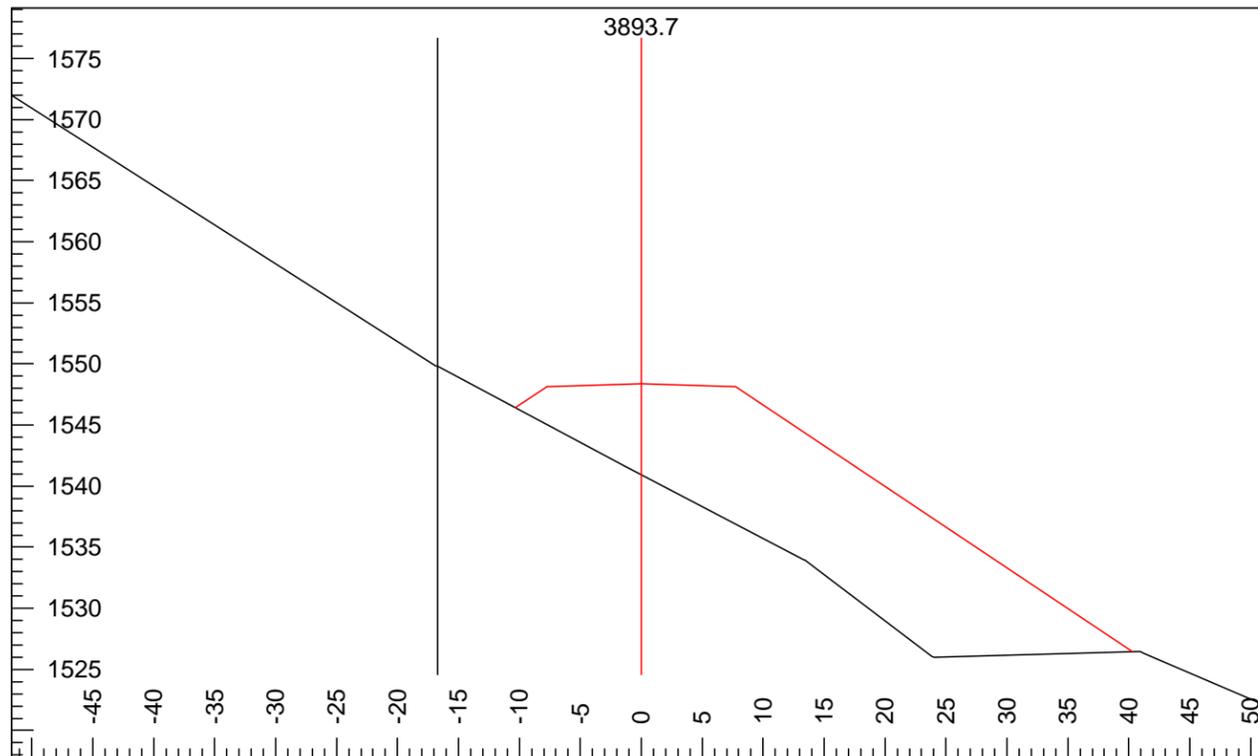
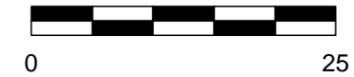
Trav.Cmnt:	pt240	Grd.Lst:	17	Stk R Y:	-15.4
L-Stn:	3646.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.3	Stk L X:	-14.5	Cul DIA:	
Cut Dp:	-0.4	Stk L Y:	9.3	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	30.4	Cul Length:	



Trav.Cmnt:	pt242	Grd.Lst:	16	Stk R Y:	-11.8
L-Stn:	3771.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.6	Stk L X:	-13.6	Cul DIA:	
Cut Dp:	1.4	Stk L Y:	7.5	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	25.2	Cul Length:	

# PA-S-1300 Design Specifications

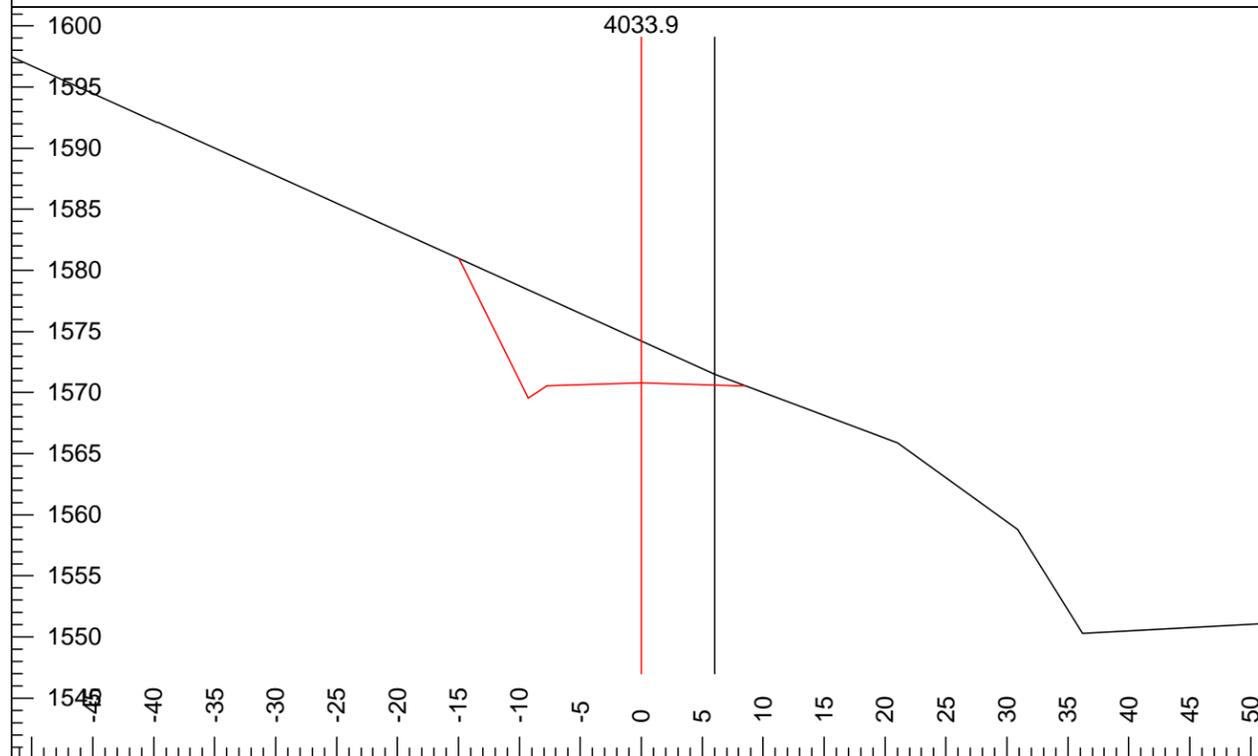
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



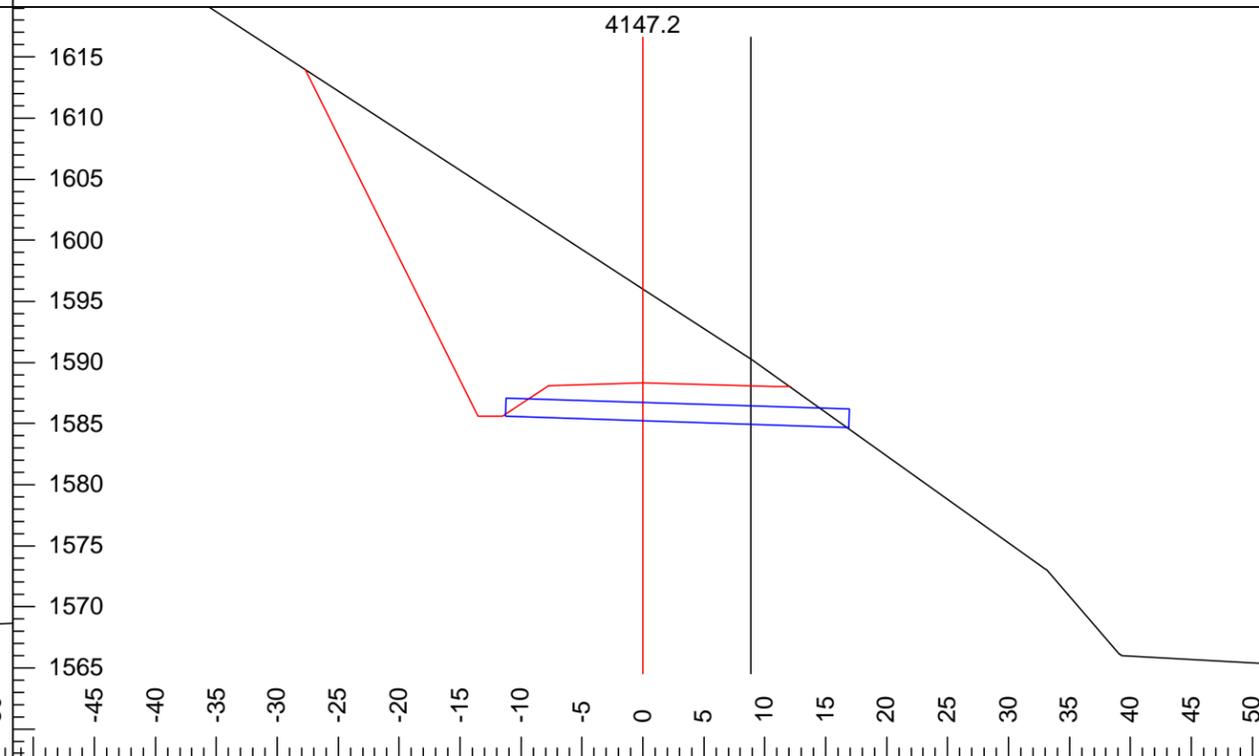
Trav.Cmnt:	pt243	Grd.Lst:	17	Stk R Y:	-21.9
L-Stn:	3893.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	16.9	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-1.3	Stk L X:	-10.3	Cul DIA:	
Cut Dp:	-7.4	Stk L Y:	-2.0	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	40.3	Cul Length:	



Trav.Cmnt:	pt244	Grd.Lst:	17	Stk R Y:	-3.5
L-Stn:	3944.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-1.3	Stk L X:	-12.2	Cul DIA:	
Cut Dp:	0.5	Stk L Y:	4.6	Cul Dip %:	
Grd.Nxt.:	17	Stk R X:	12.7	Cul Length:	



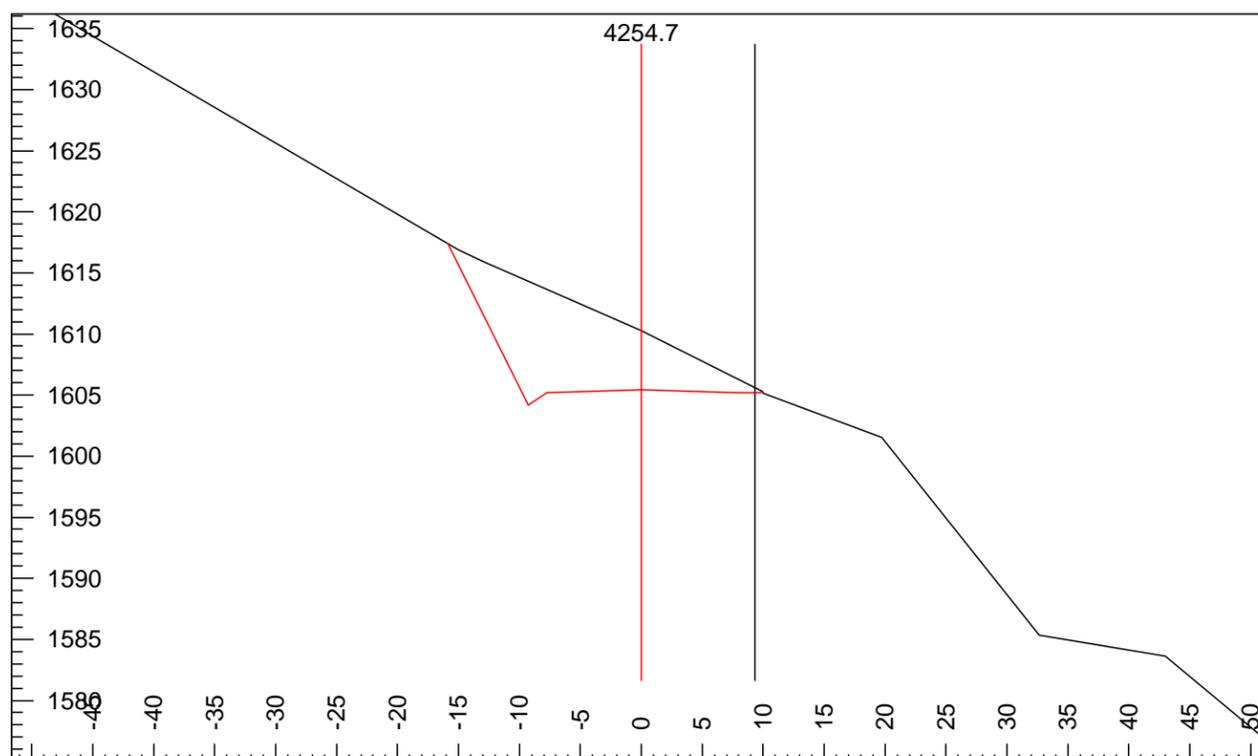
Trav.Cmnt:	pt245	Grd.Lst:	15	Stk R Y:	-0.2
L-Stn:	4033.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-6.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.8	Stk L X:	-14.9	Cul DIA:	
Cut Dp:	3.4	Stk L Y:	10.2	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	8.5	Cul Length:	



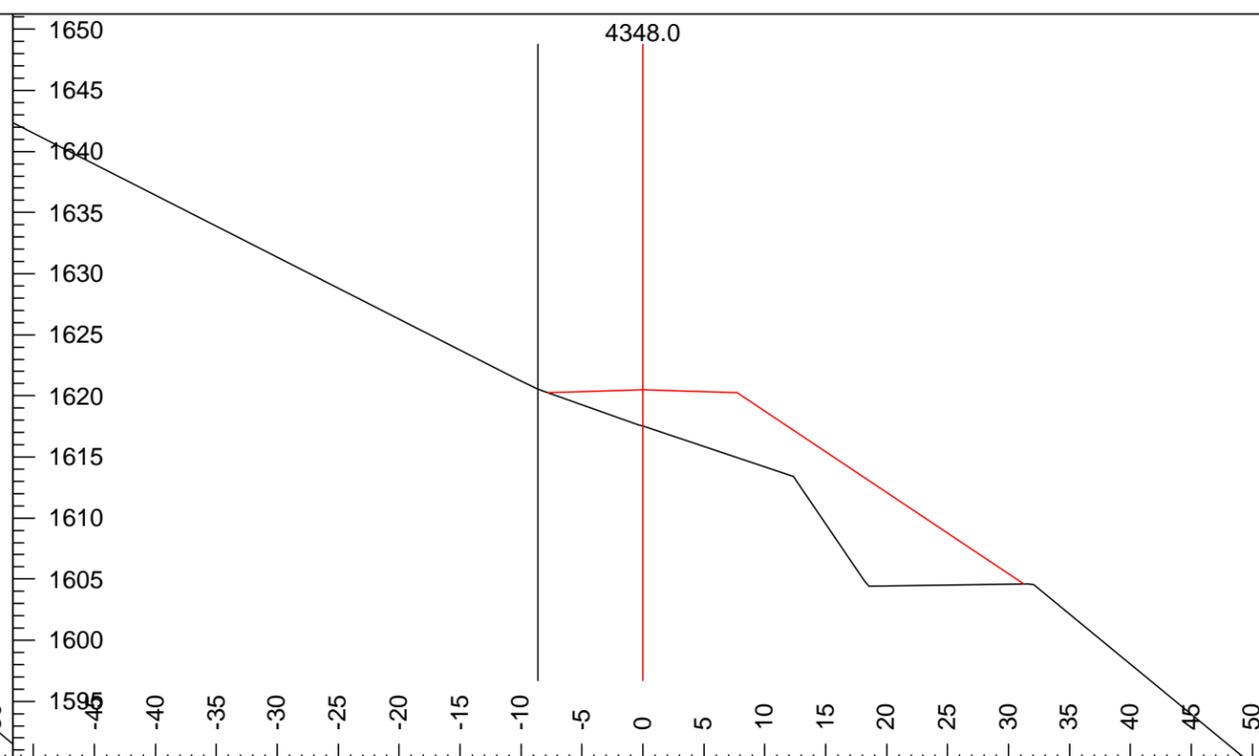
Trav.Cmnt:	pt246	Grd.Lst:	16	Stk R Y:	-0.3
L-Stn:	4147.2	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.0	Stk L X:	-27.7	Cul DIA:	18in
Cut Dp:	7.7	Stk L Y:	25.6	Cul Dip %:	3
Grd.Nxt.:	16	Stk R X:	12.1	Cul Length:	30.0

# PA-S-1300 Design Specifications

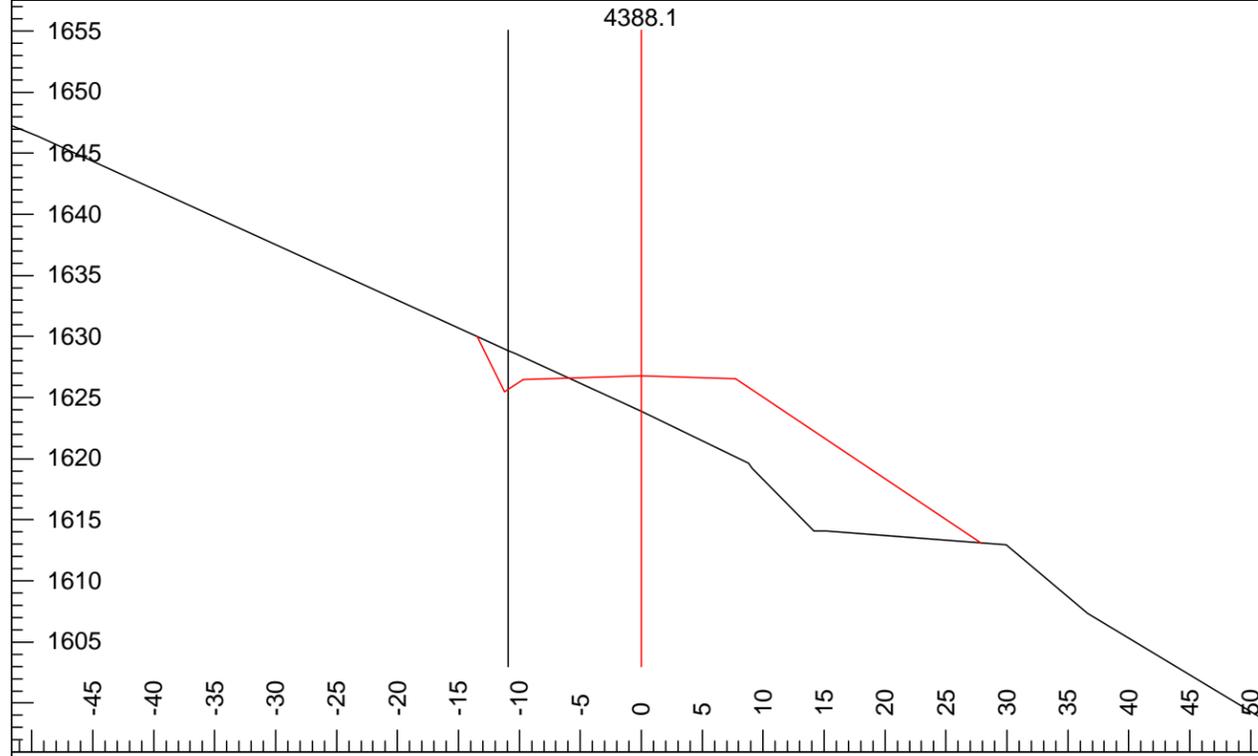
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



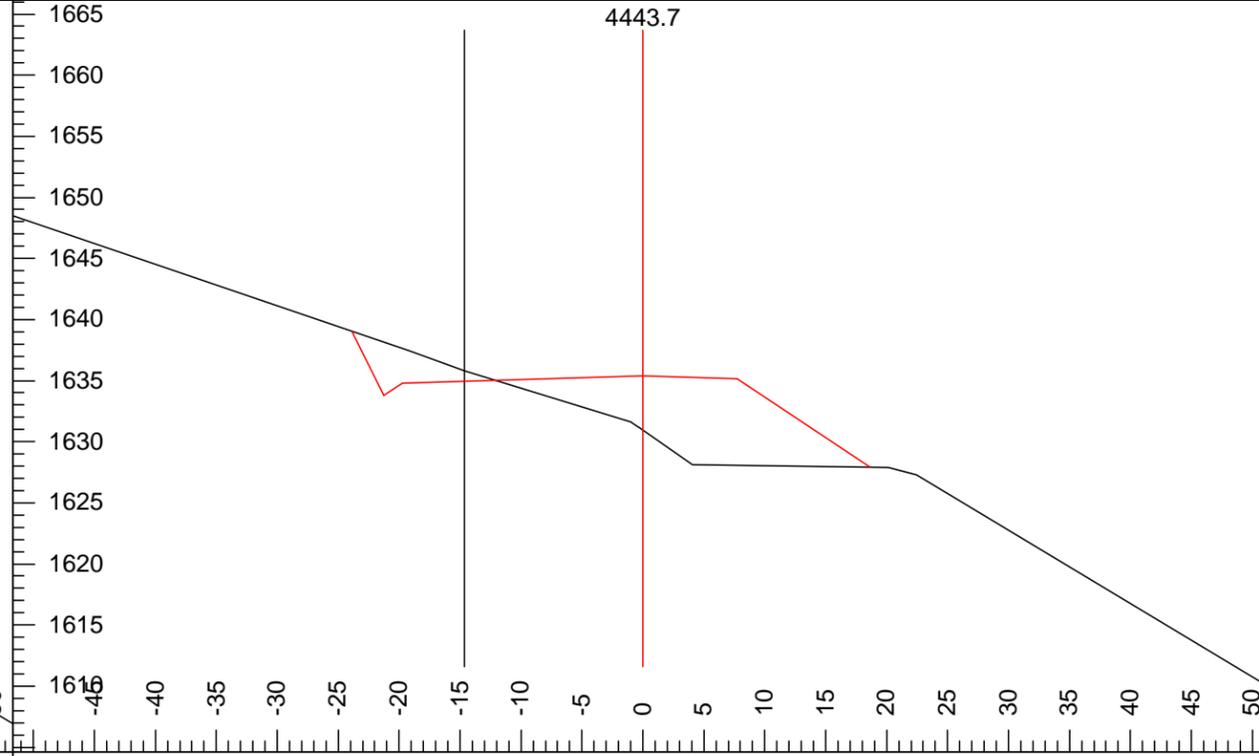
Trav.Cmnt:	pt247	Grd.Lst:	16	Stk R Y:	-0.2
L-Stn:	4254.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.8	Stk L X:	-15.9	Cul DIA:	
Cut Dp:	4.9	Stk L Y:	12.0	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	10.0	Cul Length:	



Trav.Cmnt:	pt248	Grd.Lst:	16	Stk R Y:	-15.9
L-Stn:	4348.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	8.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.2	Stk L X:	-7.8	Cul DIA:	
Cut Dp:	-3.0	Stk L Y:	-0.3	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	31.2	Cul Length:	



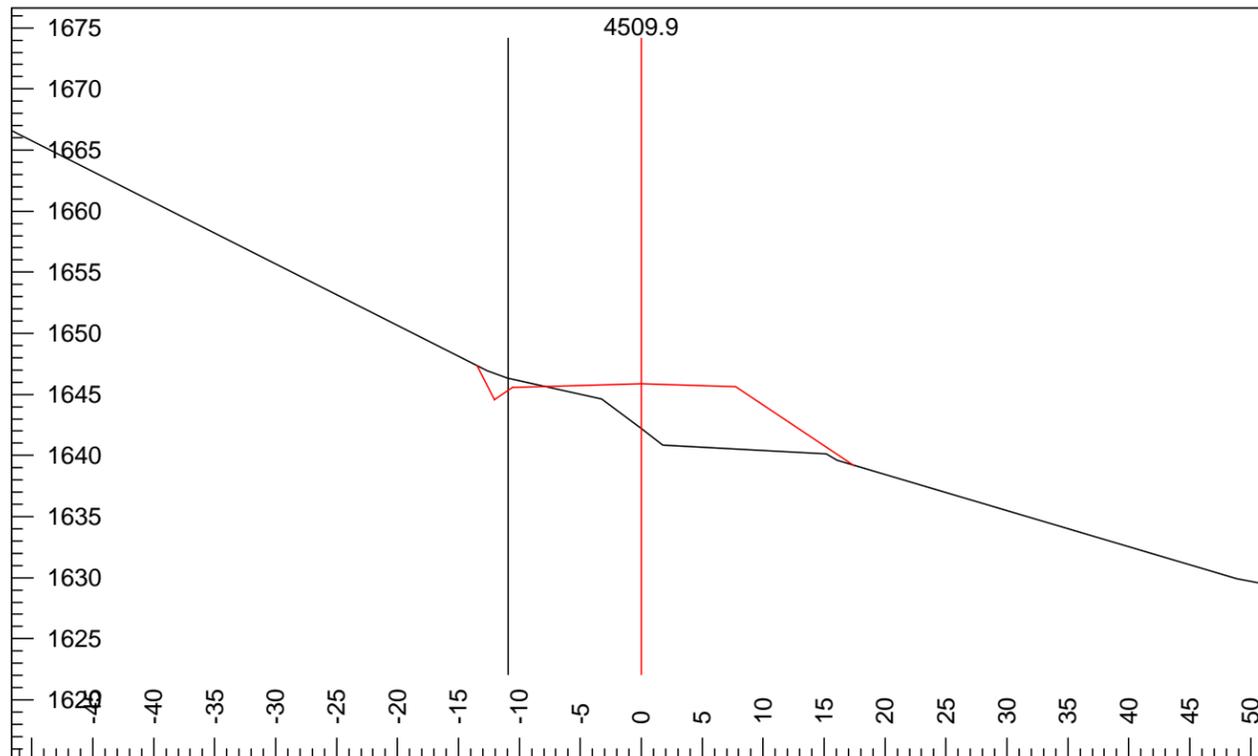
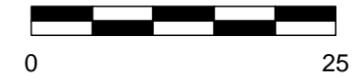
Trav.Cmnt:	pt249	Grd.Lst:	15	Stk R Y:	-13.7
L-Stn:	4388.1	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	10.3	Rd. Wd. L:	9.7	FILL_SLOPE (Right):	67
V.Offset:	-1.7	Stk L X:	-13.5	Cul DIA:	
Cut Dp:	-2.9	Stk L Y:	3.2	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	27.9	Cul Length:	



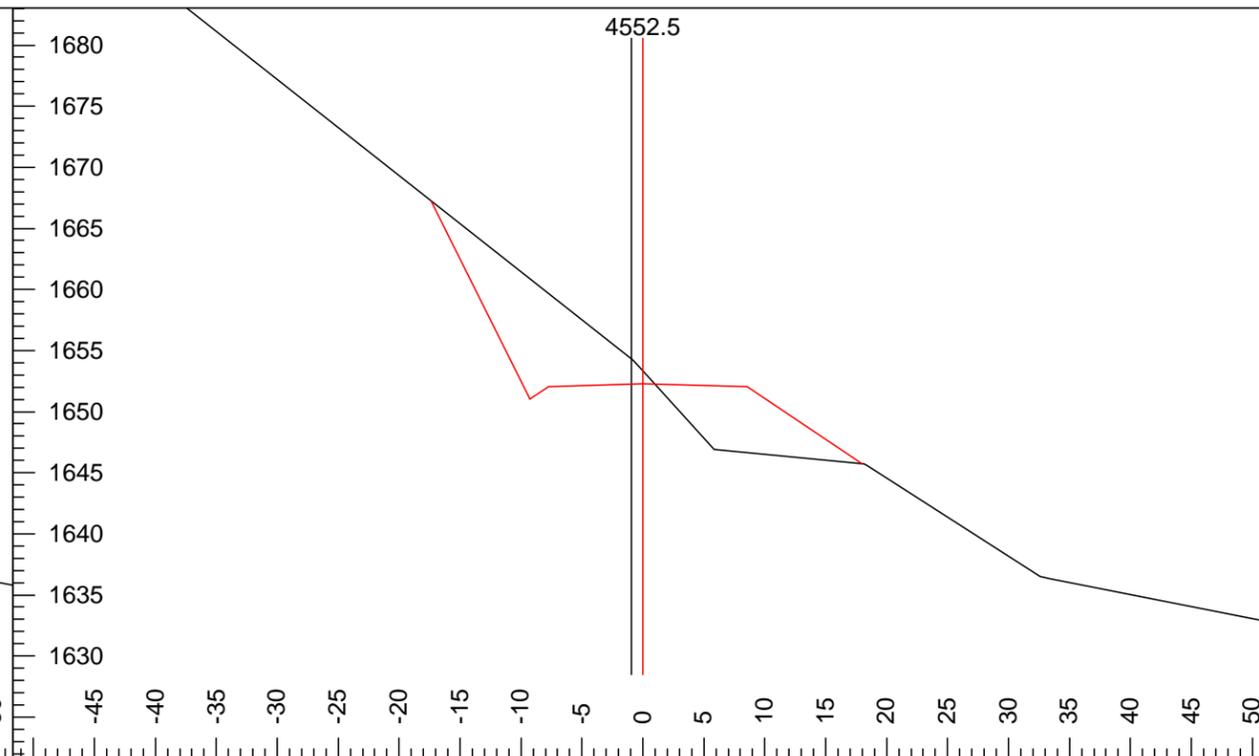
Trav.Cmnt:	pt250	Grd.Lst:	15	Stk R Y:	-7.5
L-Stn:	4443.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	14.0	Rd. Wd. L:	19.8	FILL_SLOPE (Right):	67
V.Offset:	-0.8	Stk L X:	-23.9	Cul DIA:	
Cut Dp:	-4.4	Stk L Y:	3.6	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	18.6	Cul Length:	

# PA-S-1300 Design Specifications

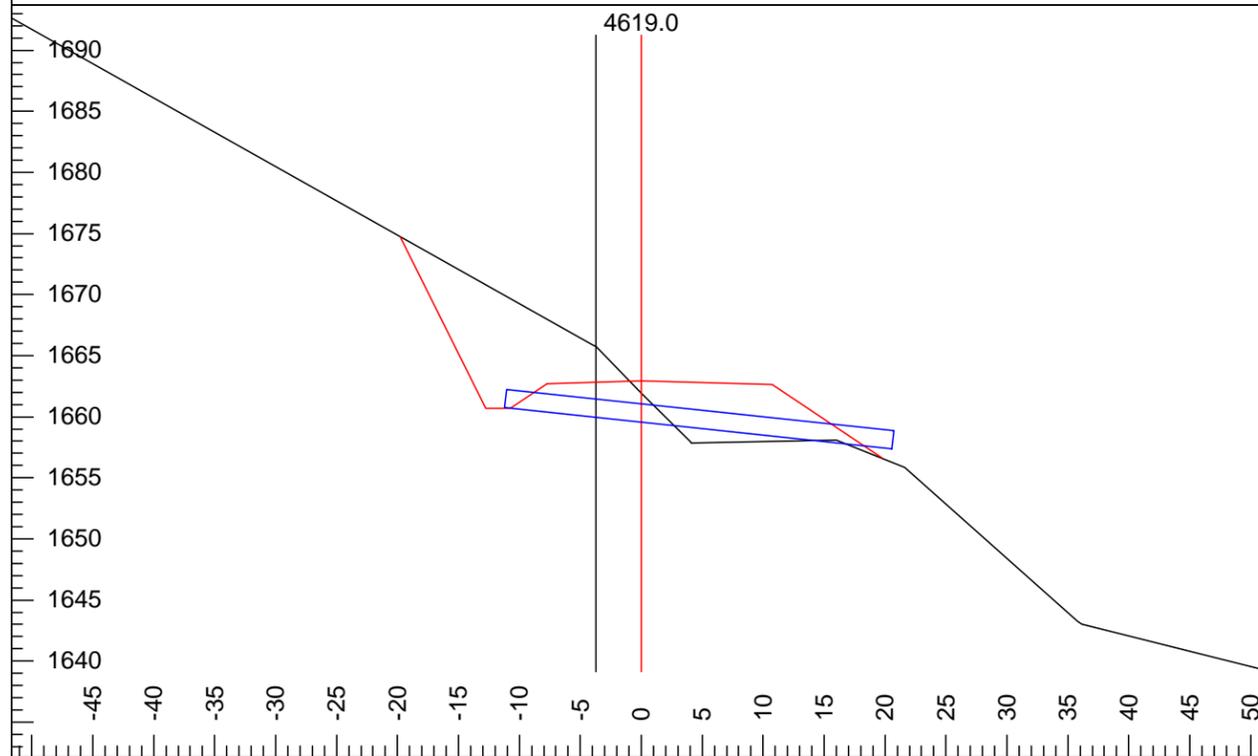
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



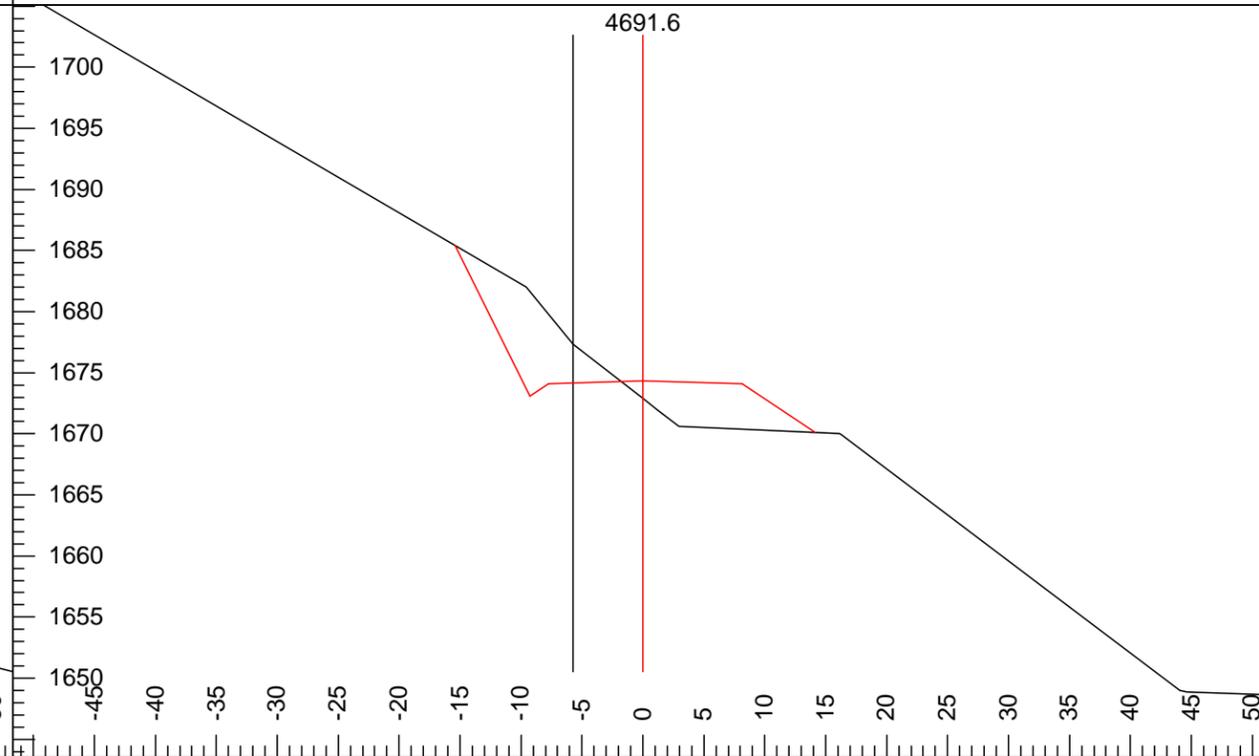
Trav.Cmnt:	pt251	Grd.Lst:	16	Stk R Y:	-6.7
L-Stn:	4509.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	11.0	Rd. Wd. L:	10.6	FILL_SLOPE (Right):	67
V.Offset:	-0.8	Stk L X:	-13.4	Cul DIA:	
Cut Dp:	-3.7	Stk L Y:	1.5	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	17.4	Cul Length:	



Trav.Cmnt:	pt252	Grd.Lst:	15	Stk R Y:	-6.5
L-Stn:	4552.5	Rd. Wd. R:	8.6	CUT_SLOPE1 (Right):	200
H. Offset:	0.9	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.0	Stk L X:	-17.3	Cul DIA:	
Cut Dp:	1.0	Stk L Y:	15.0	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	18.0	Cul Length:	



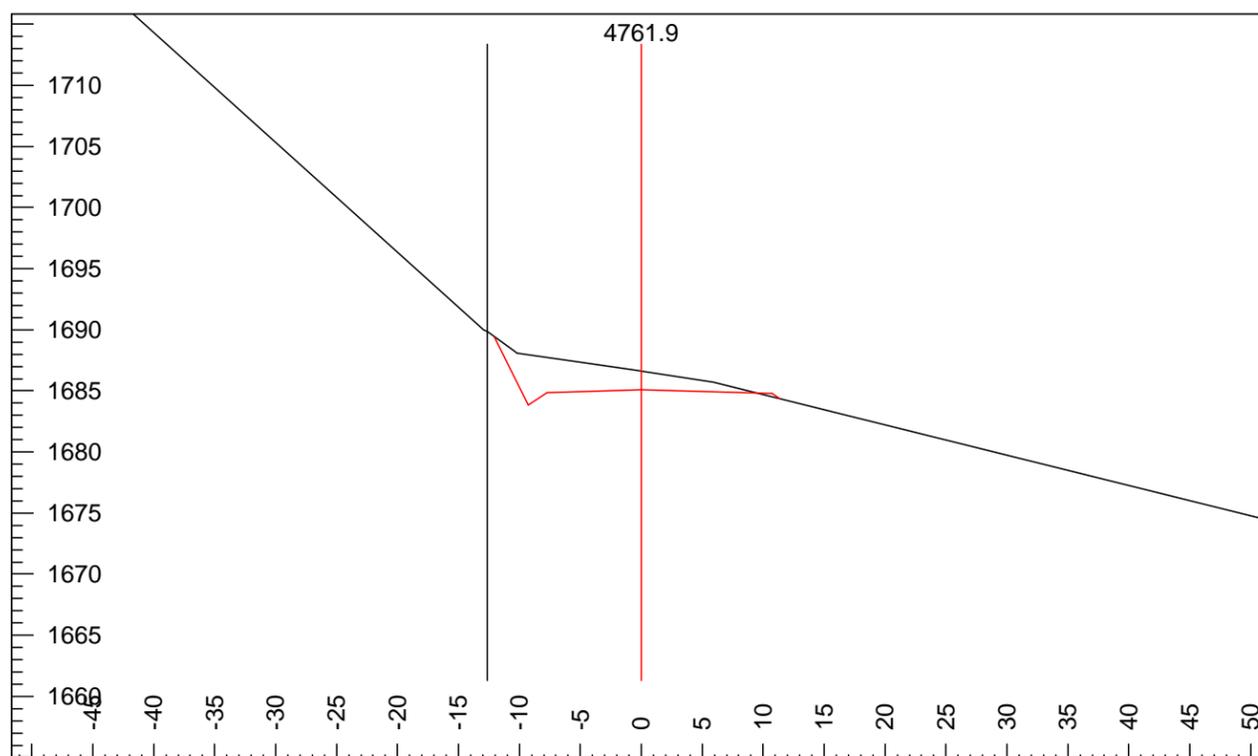
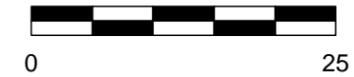
Trav.Cmnt:	pt253	Grd.Lst:	16	Stk R Y:	-6.3
L-Stn:	4619.0	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.7	Stk L X:	-19.8	Cul DIA:	18in
Cut Dp:	-1.0	Stk L Y:	11.8	Cul Dip %:	10
Grd.Nxt.:	16	Stk R X:	19.8	Cul Length:	34.0



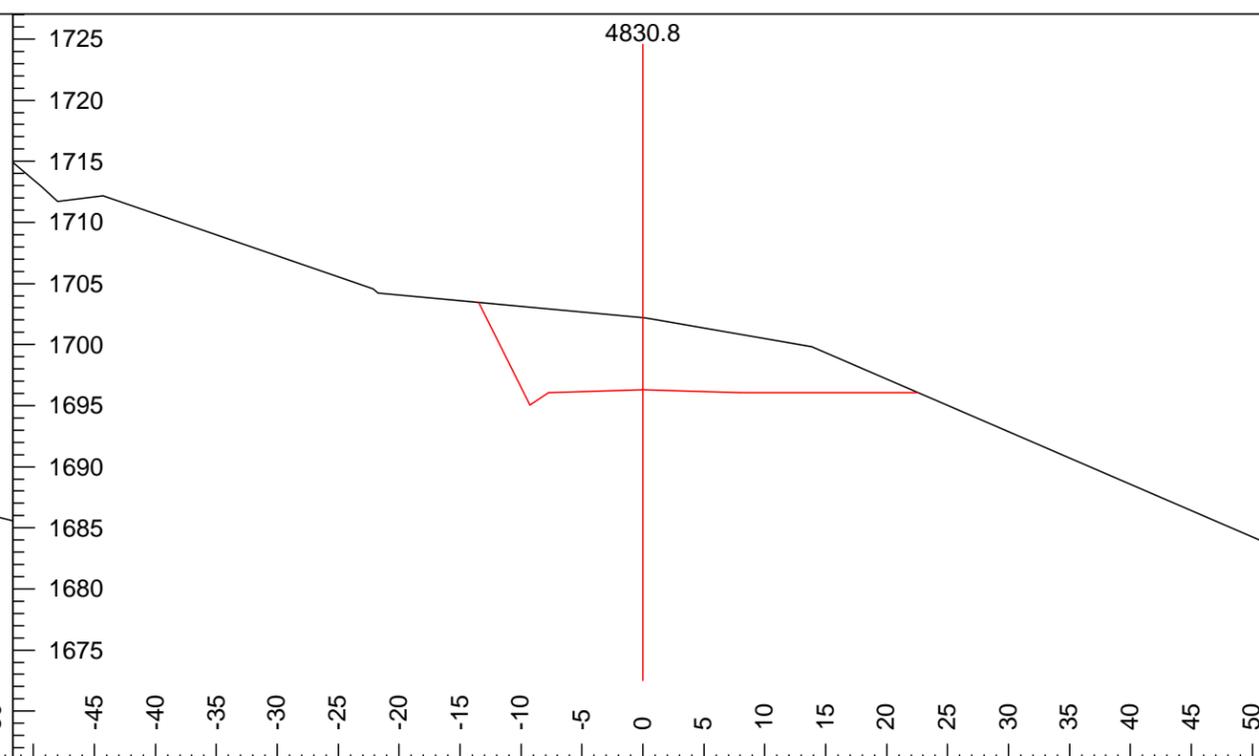
Trav.Cmnt:	pt254	Grd.Lst:	16	Stk R Y:	-4.2
L-Stn:	4691.6	Rd. Wd. R:	8.2	CUT_SLOPE1 (Right):	200
H. Offset:	5.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-3.0	Stk L X:	-15.4	Cul DIA:	
Cut Dp:	-1.4	Stk L Y:	11.1	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	14.1	Cul Length:	

# PA-S-1300 Design Specifications

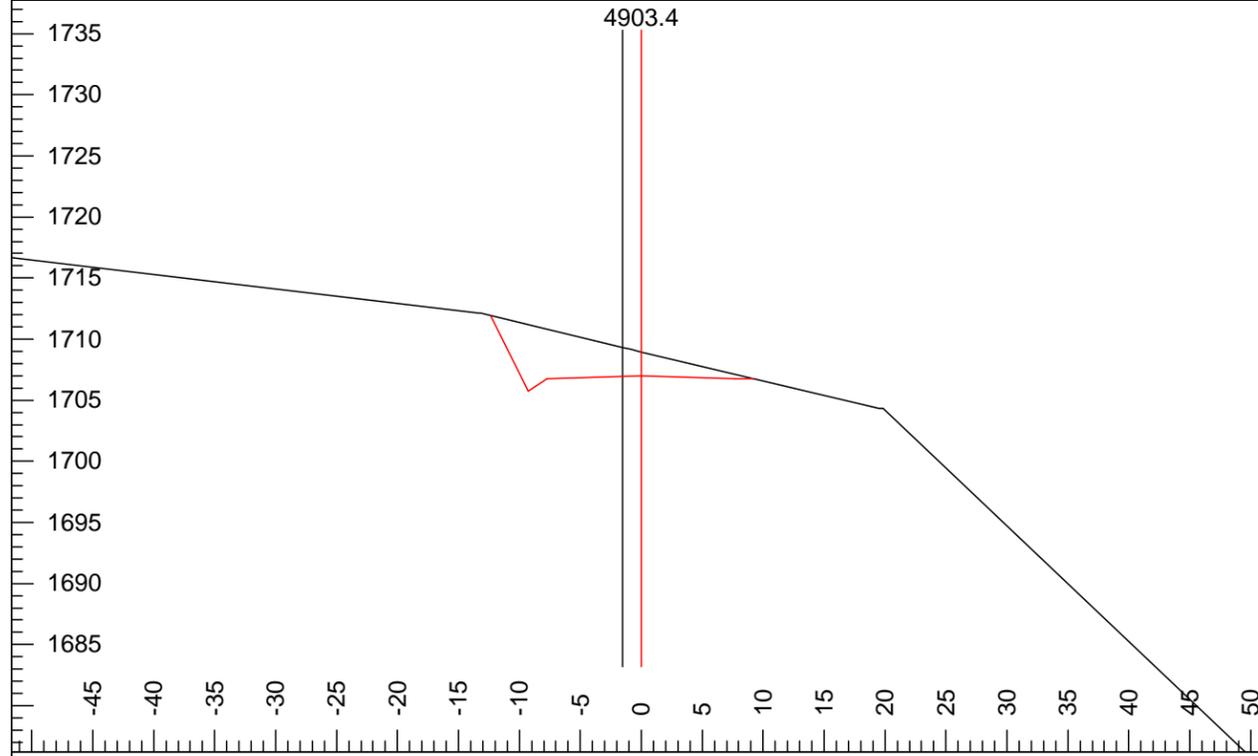
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



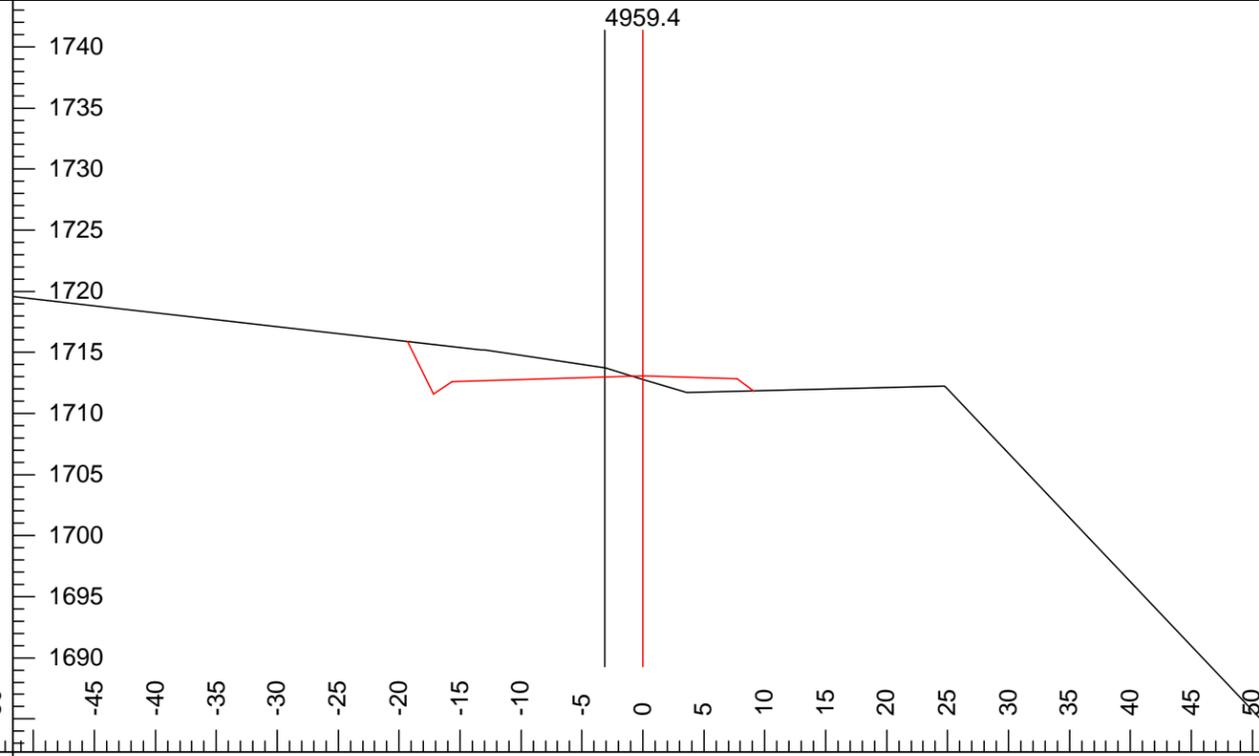
Trav.Cmnt:	pt255	Grd.Lst:	15	Stk R Y:	-0.7
L-Stn:	4761.9	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	12.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-4.8	Stk L X:	-12.0	Cul DIA:	
Cut Dp:	1.5	Stk L Y:	4.3	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	11.3	Cul Length:	



Trav.Cmnt:	pt256	Grd.Lst:	16	Stk R Y:	-0.2
L-Stn:	4830.8	Rd. Wd. R:	8.0	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-5.9	Stk L X:	-13.4	Cul DIA:	
Cut Dp:	5.9	Stk L Y:	7.1	Cul Dip %:	
Grd.Nxt.:	16	Stk R X:	22.6	Cul Length:	



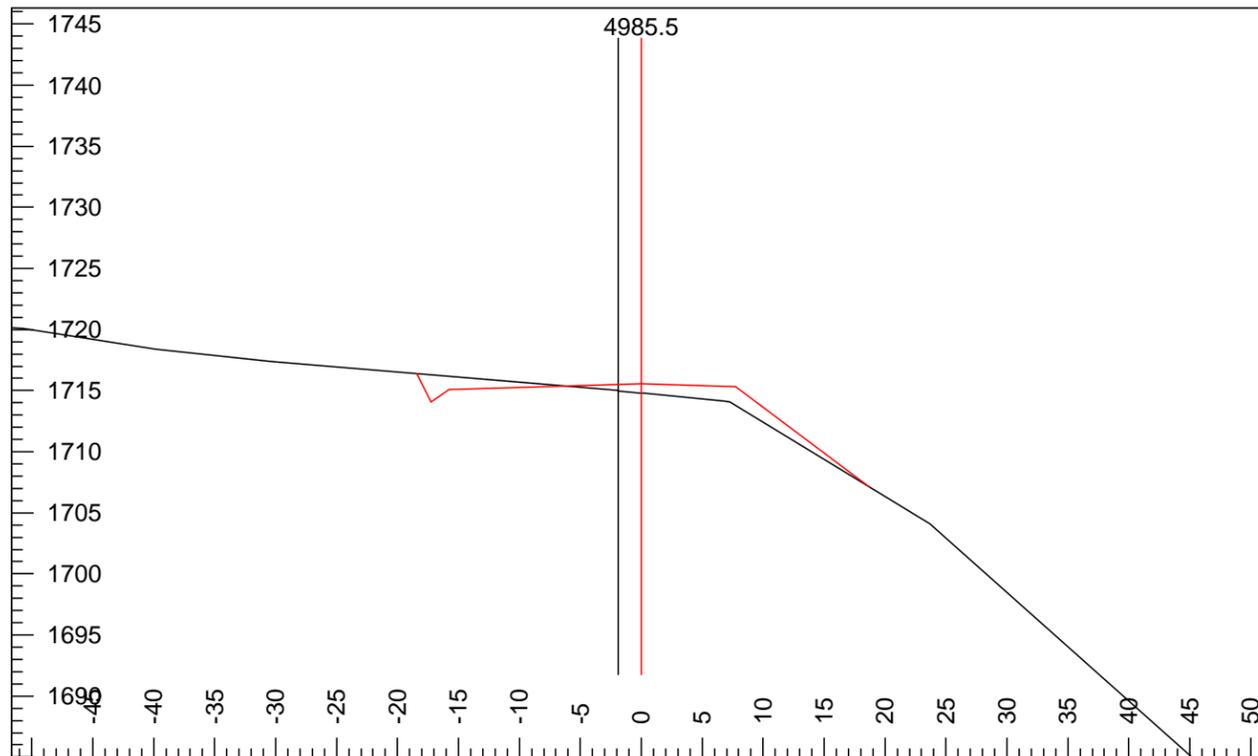
Trav.Cmnt:	pt257	Grd.Lst:	15	Stk R Y:	-0.2
L-Stn:	4903.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	-2.3	Stk L X:	-12.3	Cul DIA:	
Cut Dp:	2.0	Stk L Y:	4.9	Cul Dip %:	
Grd.Nxt.:	15	Stk R X:	9.2	Cul Length:	



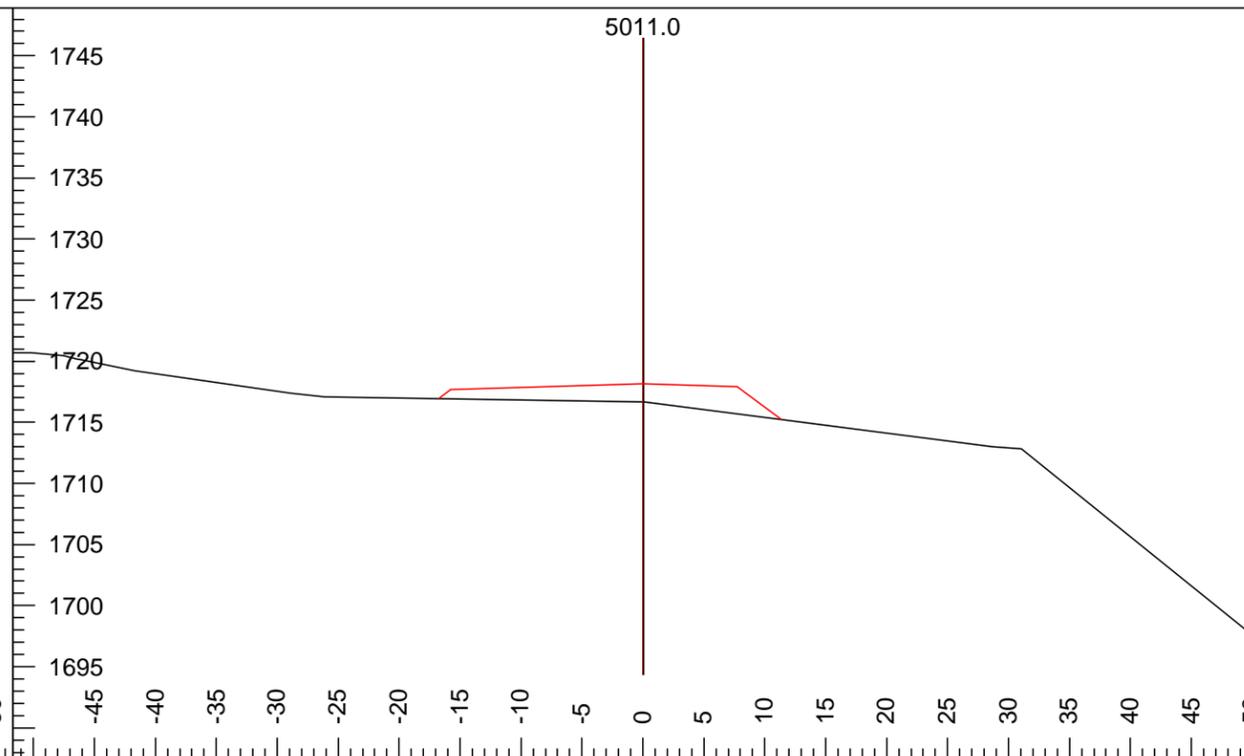
Trav.Cmnt:	pt258	Grd.Lst:	10	Stk R Y:	-1.2
L-Stn:	4959.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.1	Rd. Wd. L:	15.7	FILL_SLOPE (Right):	75
V.Offset:	-0.6	Stk L X:	-19.3	Cul DIA:	
Cut Dp:	-0.3	Stk L Y:	2.8	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	9.1	Cul Length:	

# PA-S-1300 Design Specifications

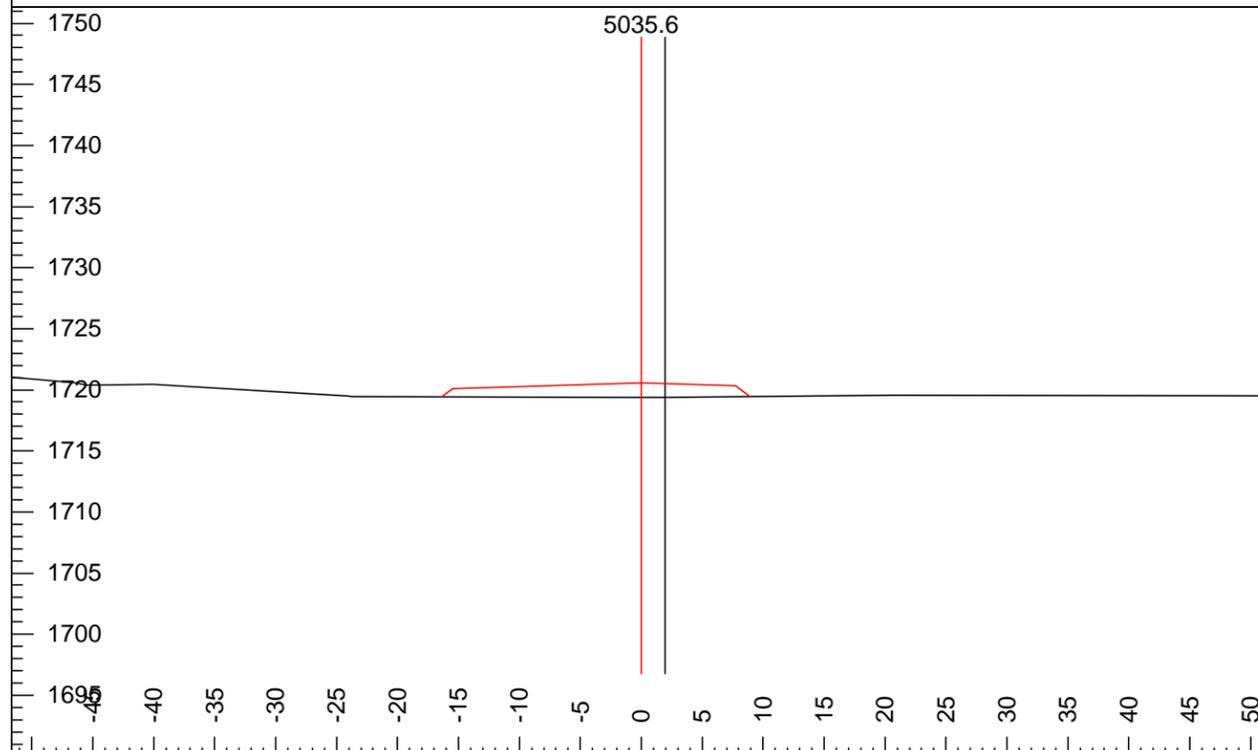
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



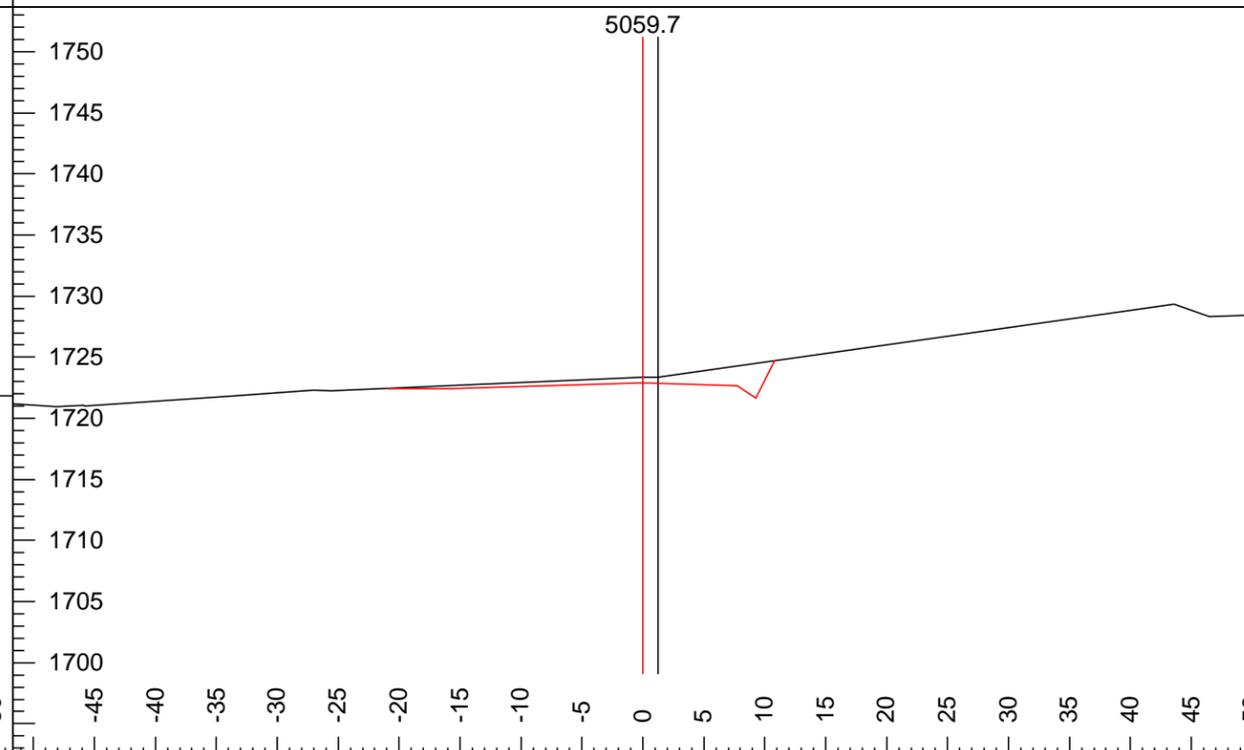
Trav.Cmnt:	pt259	Grd.Lst:	10	Stk R Y:	-8.5
L-Stn:	4985.5	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.9	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	75
V.Offset:	0.6	Stk L X:	-18.4	Cul DIA:	
Cut Dp:	-0.7	Stk L Y:	0.8	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	18.7	Cul Length:	



Trav.Cmnt:	pt260	Grd.Lst:	10	Stk R Y:	-2.9
L-Stn:	5011.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-0.1	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	75
V.Offset:	1.5	Stk L X:	-16.7	Cul DIA:	
Cut Dp:	-1.4	Stk L Y:	-1.2	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	11.3	Cul Length:	



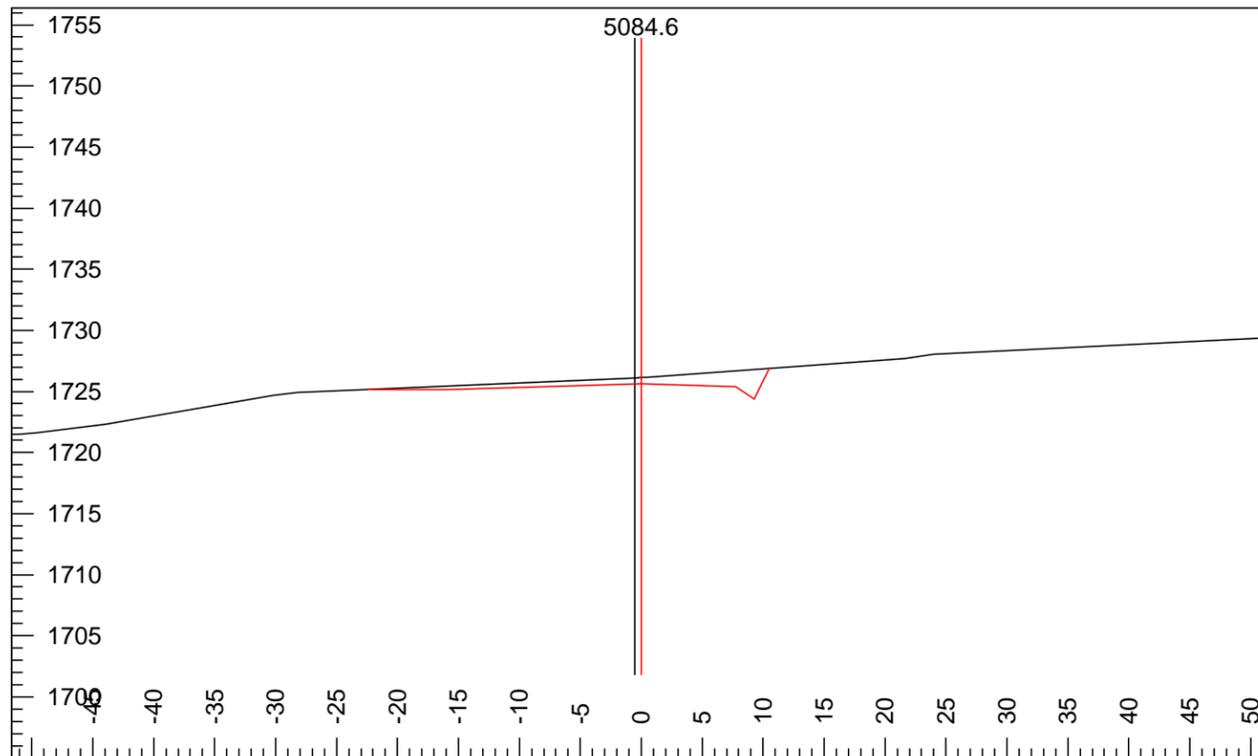
Trav.Cmnt:	pt261	Grd.Lst:	10	Stk R Y:	-1.1
L-Stn:	5035.6	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.0	Rd. Wd. L:	15.5	FILL_SLOPE (Right):	75
V.Offset:	1.1	Stk L X:	-16.4	Cul DIA:	
Cut Dp:	-1.2	Stk L Y:	-1.1	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	8.9	Cul Length:	



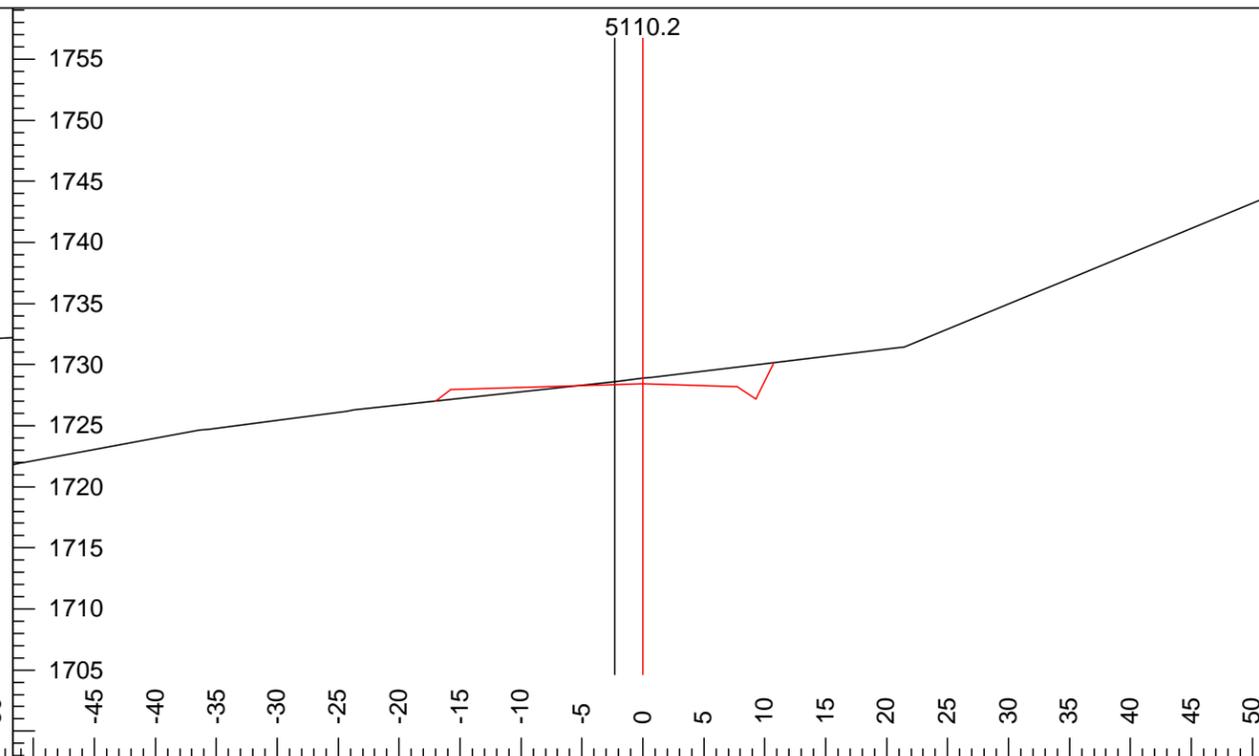
Trav.Cmnt:	pt262	Grd.Lst:	10	Stk R Y:	1.8
L-Stn:	5059.7	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-1.3	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	75
V.Offset:	-0.5	Stk L X:	-20.9	Cul DIA:	
Cut Dp:	0.4	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	10	Stk R X:	10.8	Cul Length:	

# PA-S-1300 Design Specifications

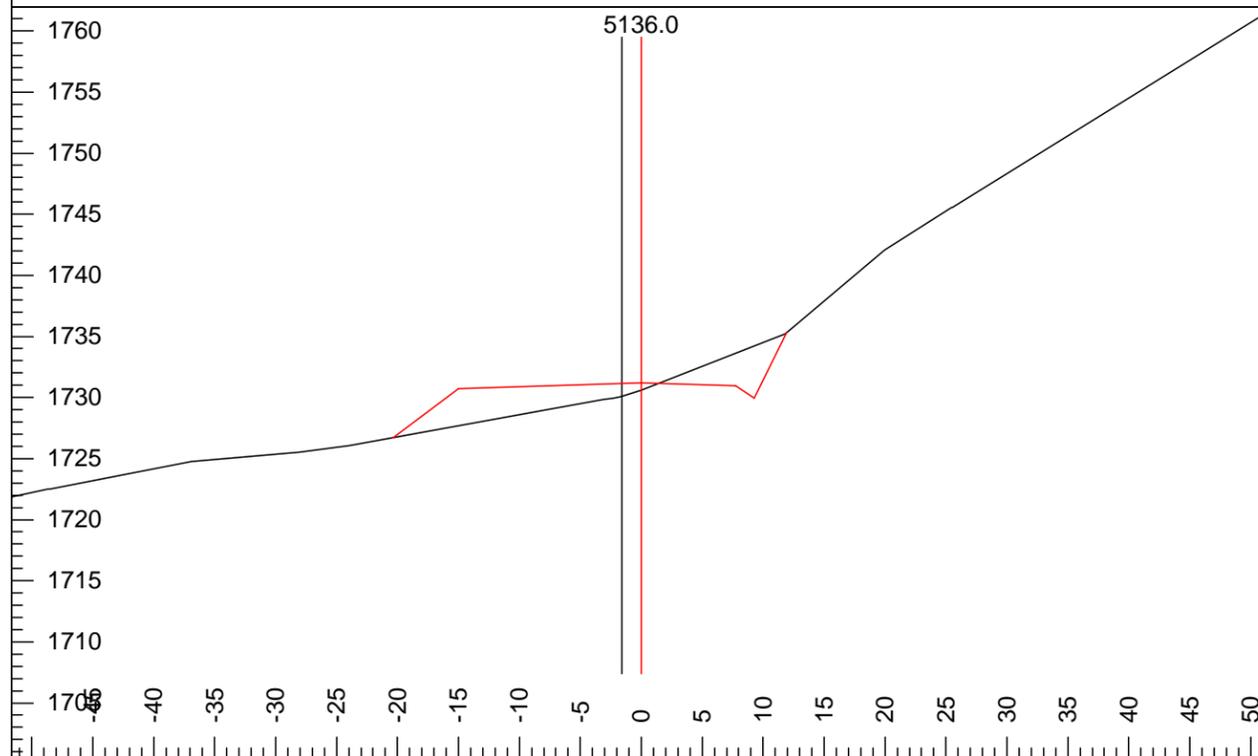
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



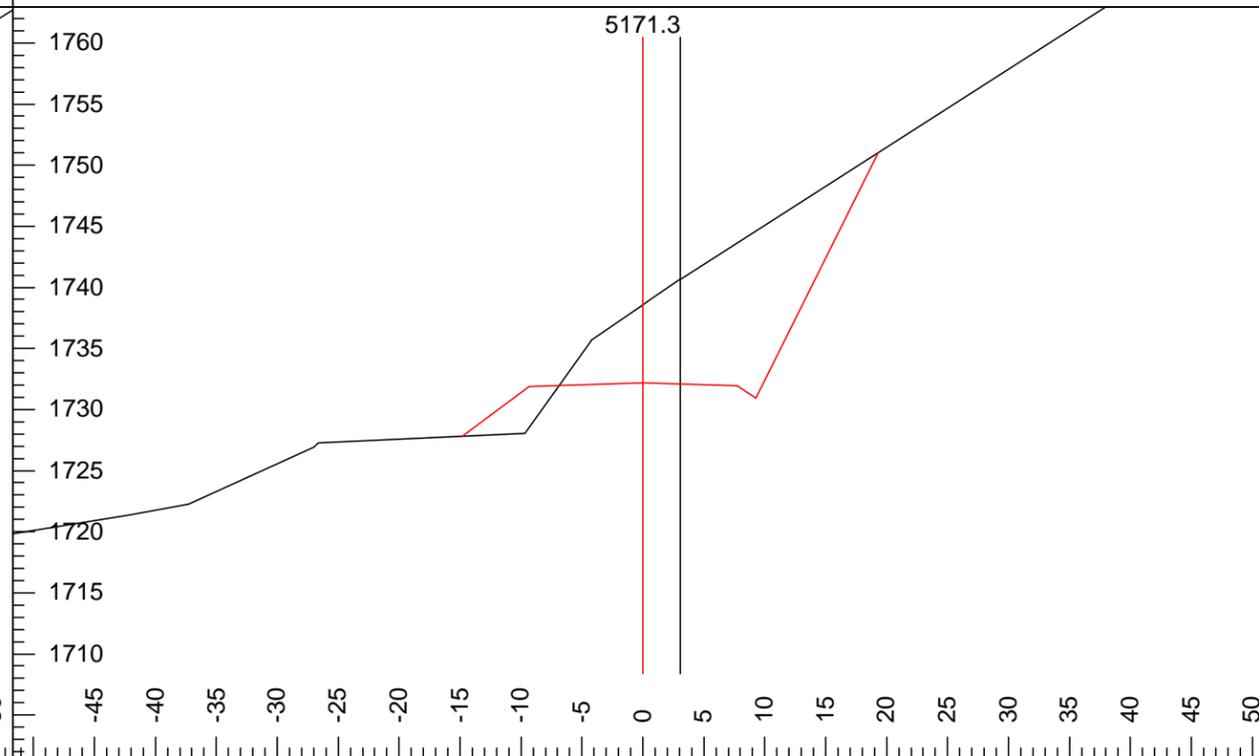
Trav.Cmnt:	pt263	Grd.Lst:	11	Stk R Y:	1.3
L-Stn:	5084.6	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.5	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	75
V.Offset:	-0.5	Stk L X:	-22.4	Cul DIA:	
Cut Dp:	0.5	Stk L Y:	-0.5	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	10.5	Cul Length:	



Trav.Cmnt:	pt264	Grd.Lst:	11	Stk R Y:	1.7
L-Stn:	5110.2	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.3	Rd. Wd. L:	15.8	FILL_SLOPE (Right):	75
V.Offset:	-0.2	Stk L X:	-17.0	Cul DIA:	
Cut Dp:	0.5	Stk L Y:	-1.4	Cul Dip %:	
Grd.Nxt.:	11	Stk R X:	10.7	Cul Length:	

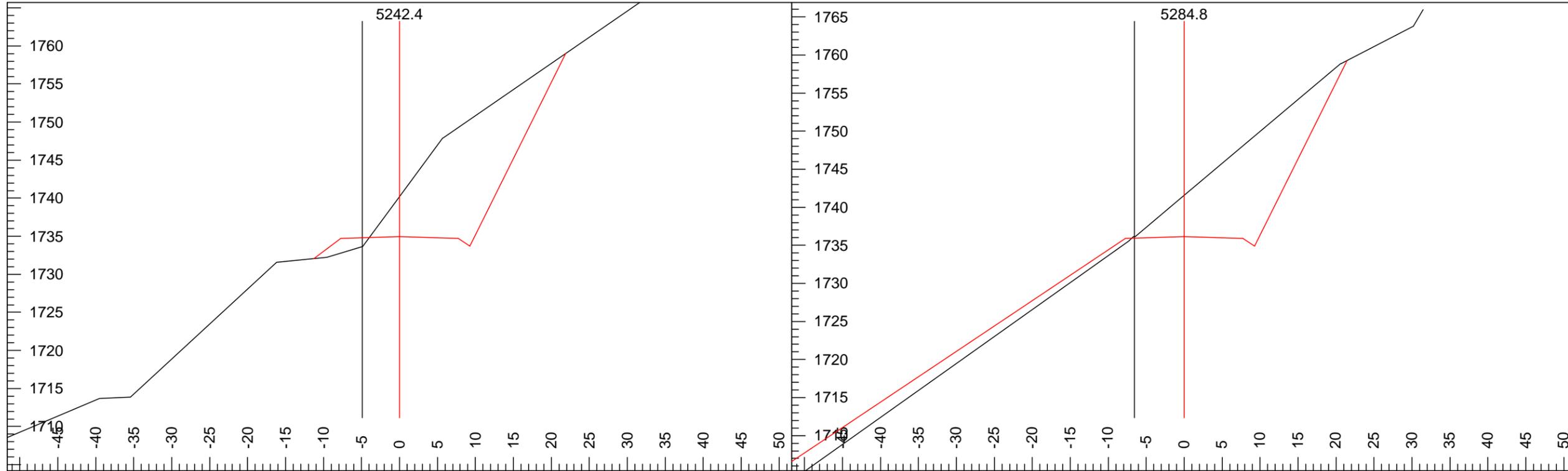


Trav.Cmnt:	pt265	Grd.Lst:	3	Stk R Y:	4.1
L-Stn:	5136.0	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.6	Rd. Wd. L:	15.0	FILL_SLOPE (Right):	75
V.Offset:	1.1	Stk L X:	-20.4	Cul DIA:	
Cut Dp:	-0.6	Stk L Y:	-4.5	Cul Dip %:	
Grd.Nxt.:	3	Stk R X:	11.9	Cul Length:	



Trav.Cmnt:	pt266	Grd.Lst:	3	Stk R Y:	18.9
L-Stn:	5171.3	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-3.1	Rd. Wd. L:	9.3	FILL_SLOPE (Right):	75
V.Offset:	-8.6	Stk L X:	-14.8	Cul DIA:	
Cut Dp:	6.4	Stk L Y:	-4.4	Cul Dip %:	
Grd.Nxt.:	3	Stk R X:	19.3	Cul Length:	

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Trav.Cmnt:	pt267	Grd.Lst:	3	Stk R Y:	24.1
L-Stn:	5242.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.9	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	1.4	Stk L X:	-11.3	Cul DIA:	
Cut Dp:	5.3	Stk L Y:	-2.9	Cul Dip %:	
Grd.Nxt.:	3	Stk R X:	21.9	Cul Length:	

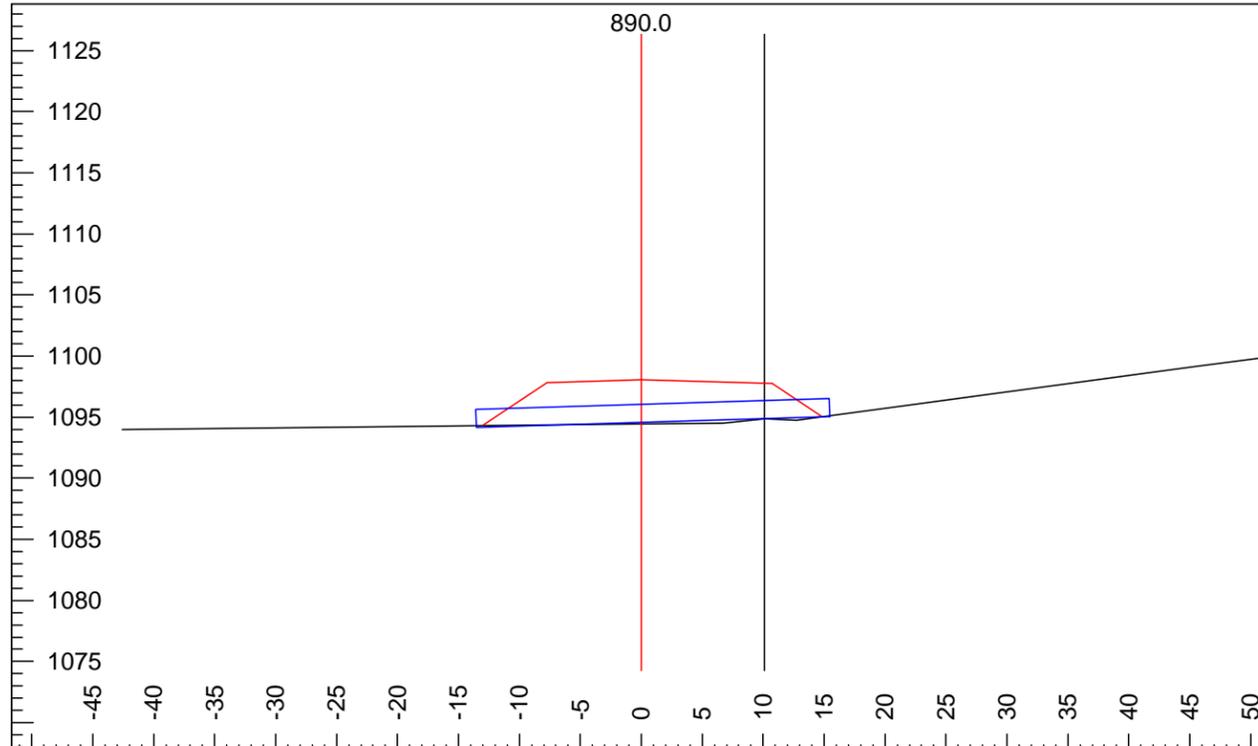
Trav.Cmnt:	pt268 = pt114	Grd.Lst:	3	Stk R Y:	23.1
L-Stn:	5284.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.0	Stk L X:	-68.9	Cul DIA:	
Cut Dp:	5.4	Stk L Y:	-41.0	Cul Dip %:	
Grd.Nxt.:	3	Stk R X:	21.4	Cul Length:	

Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert

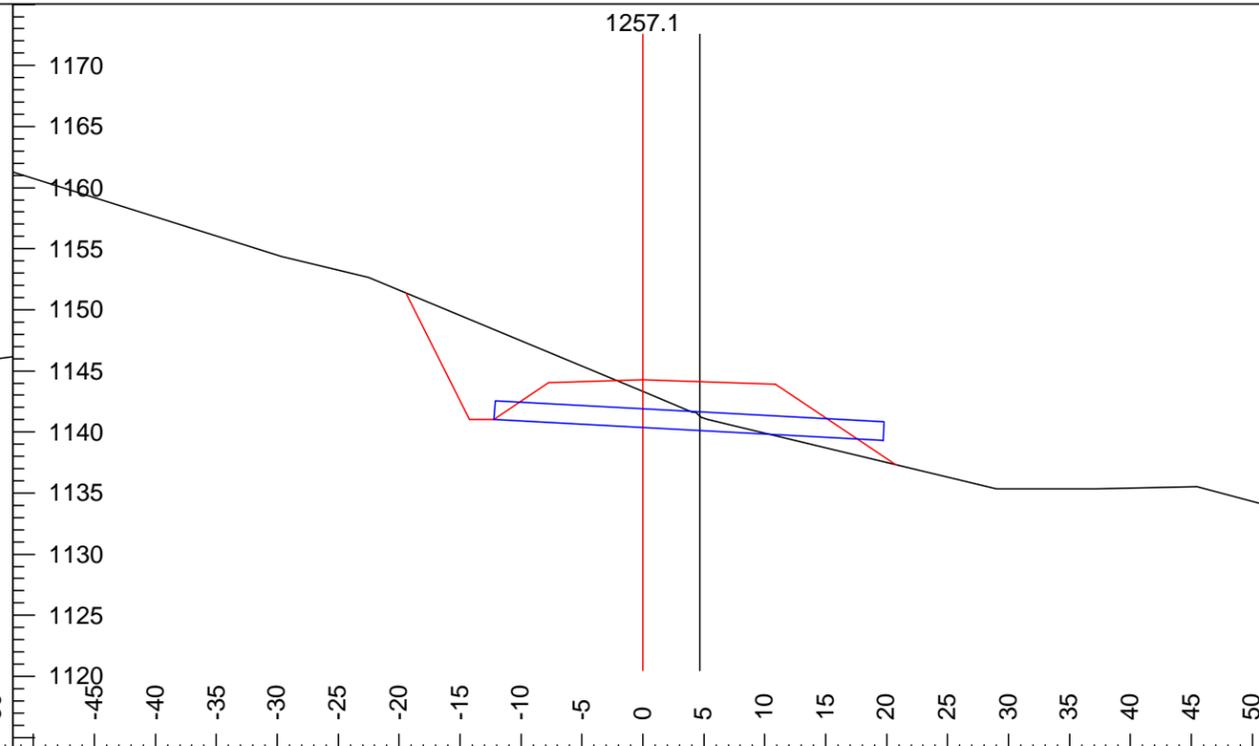


# PA-S-1300 Design Specifications

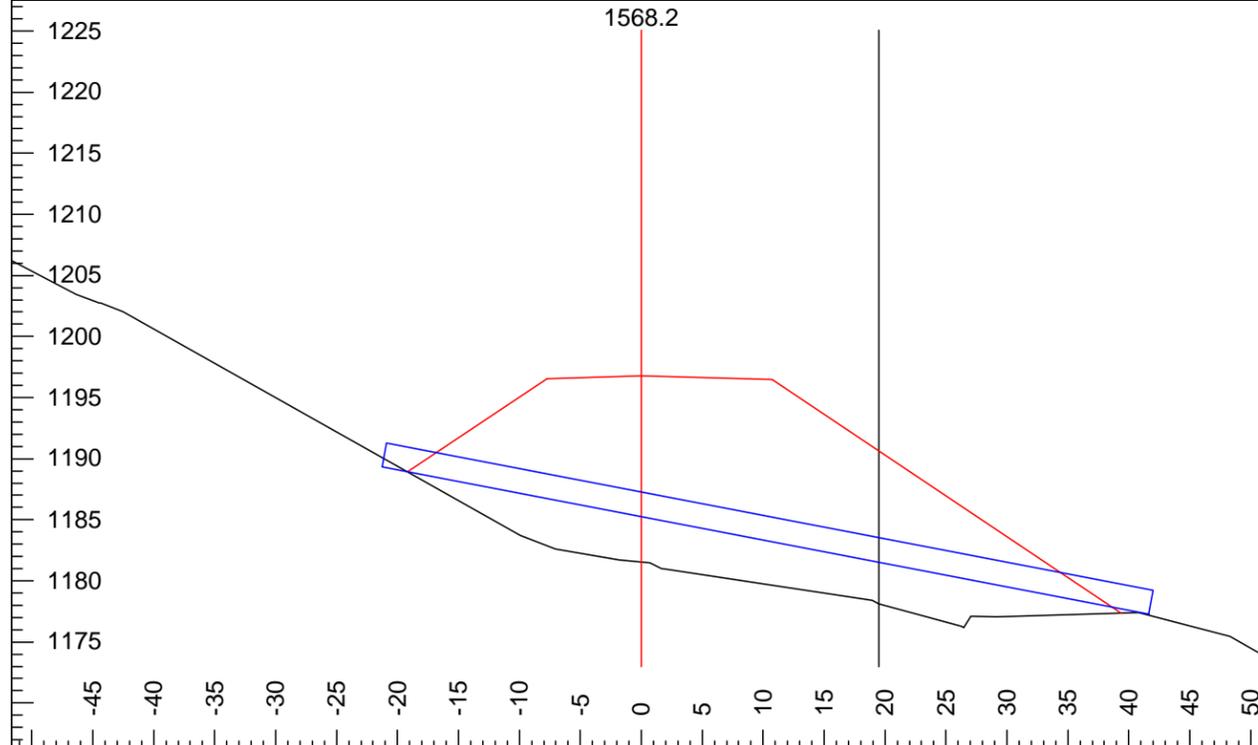
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



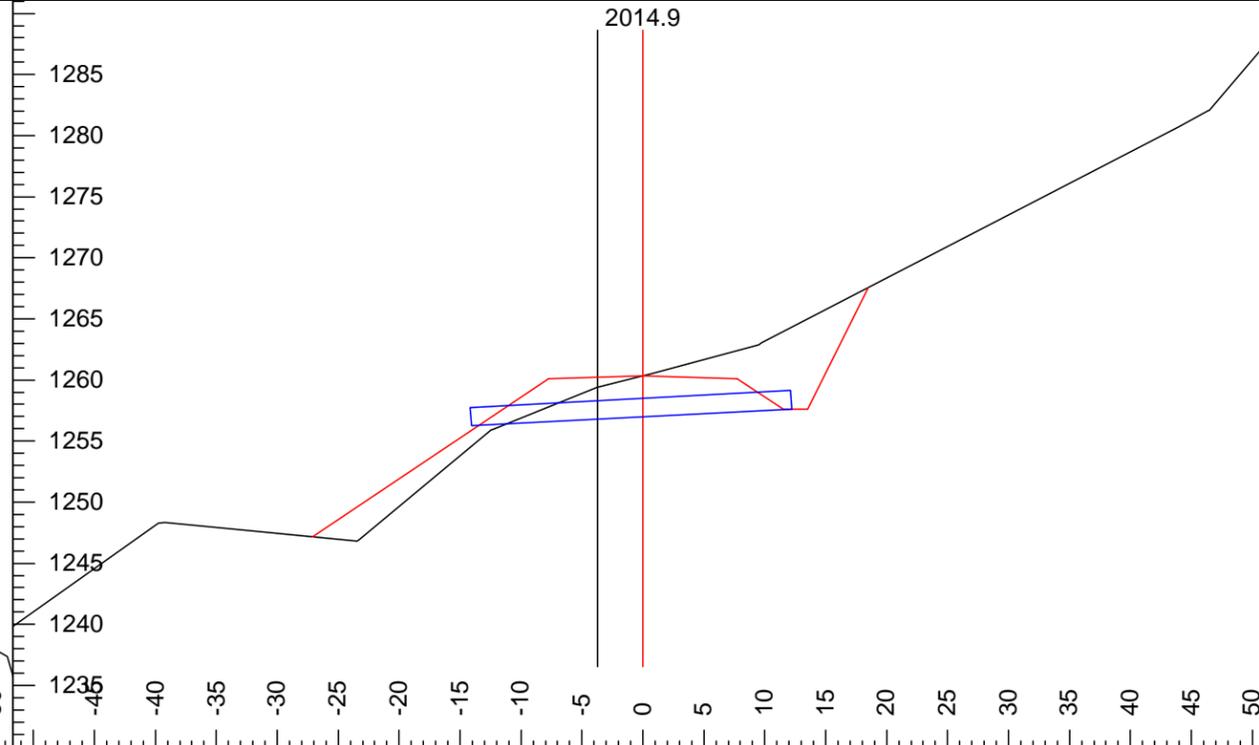
Trav.Cmnt:	n/a	Grd.Lst:	10	Stk R Y:	-3.0
L-Stn:	890.0	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-10.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	2.9	Stk L X:	-13.0	Cul DIA:	18in
Cut Dp:	-3.6	Stk L Y:	-3.7	Cul Dip %:	-3
Grd.Nxt.:	10	Stk R X:	14.8	Cul Length:	30.0



Trav.Cmnt:	12+42	Grd.Lst:	17	Stk R Y:	-7.0
L-Stn:	1257.1	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-4.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	3.1	Stk L X:	-19.4	Cul DIA:	18in
Cut Dp:	-0.9	Stk L Y:	7.1	Cul Dip %:	5
Grd.Nxt.:	17	Stk R X:	20.8	Cul Length:	34.0



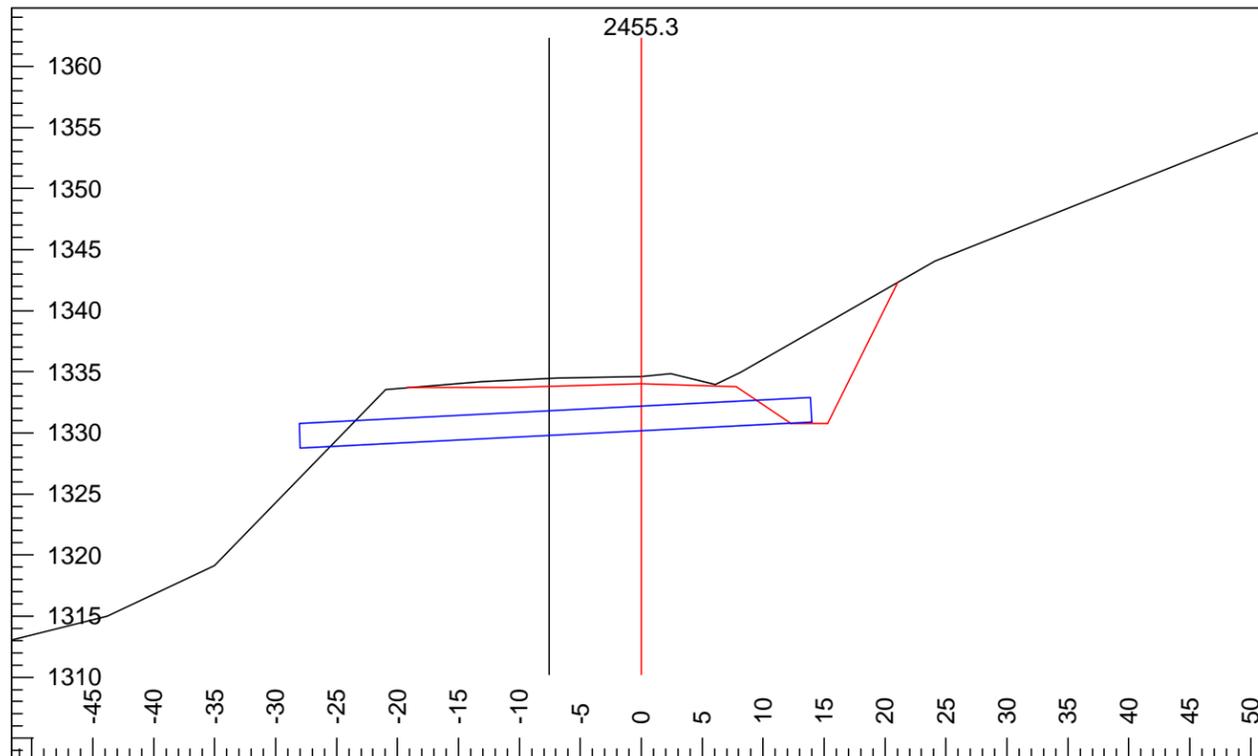
Trav.Cmnt:	n/a	Grd.Lst:	17	Stk R Y:	-19.4
L-Stn:	1568.2	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-19.4	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	18.8	Stk L X:	-19.2	Cul DIA:	24in
Cut Dp:	-15.2	Stk L Y:	-7.9	Cul Dip %:	18
Grd.Nxt.:	17	Stk R X:	39.4	Cul Length:	68.0



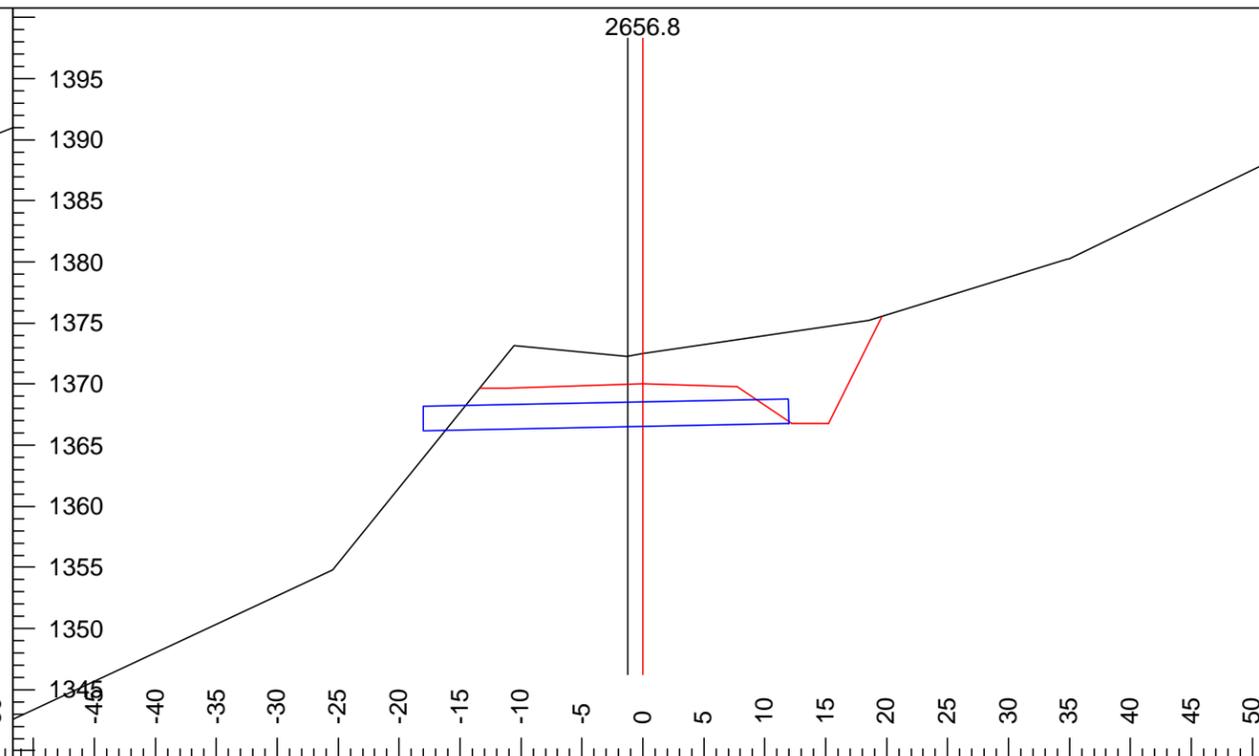
Trav.Cmnt:	pt212	Grd.Lst:	17	Stk R Y:	7.2
L-Stn:	2014.9	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.7	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	0.9	Stk L X:	-27.1	Cul DIA:	18in
Cut Dp:	0.0	Stk L Y:	-13.2	Cul Dip %:	-5
Grd.Nxt.:	17	Stk R X:	18.5	Cul Length:	28.0

# PA-S-1300 Design Specifications

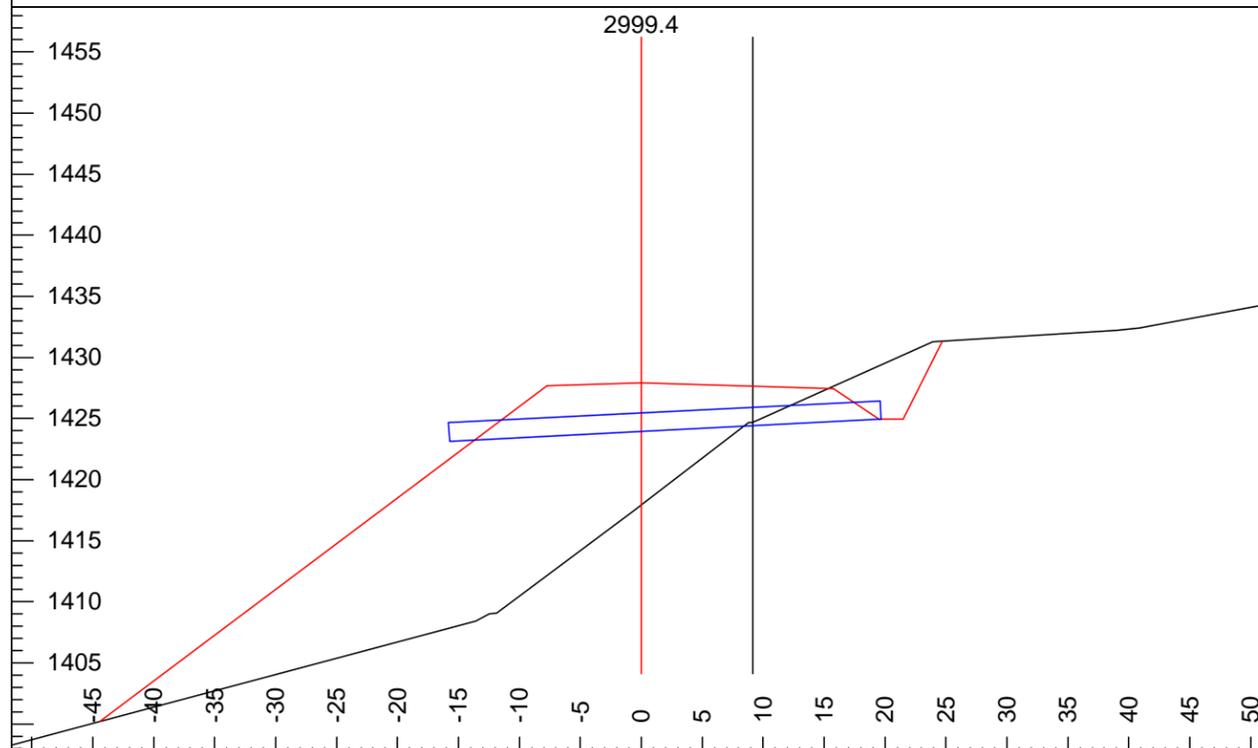
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



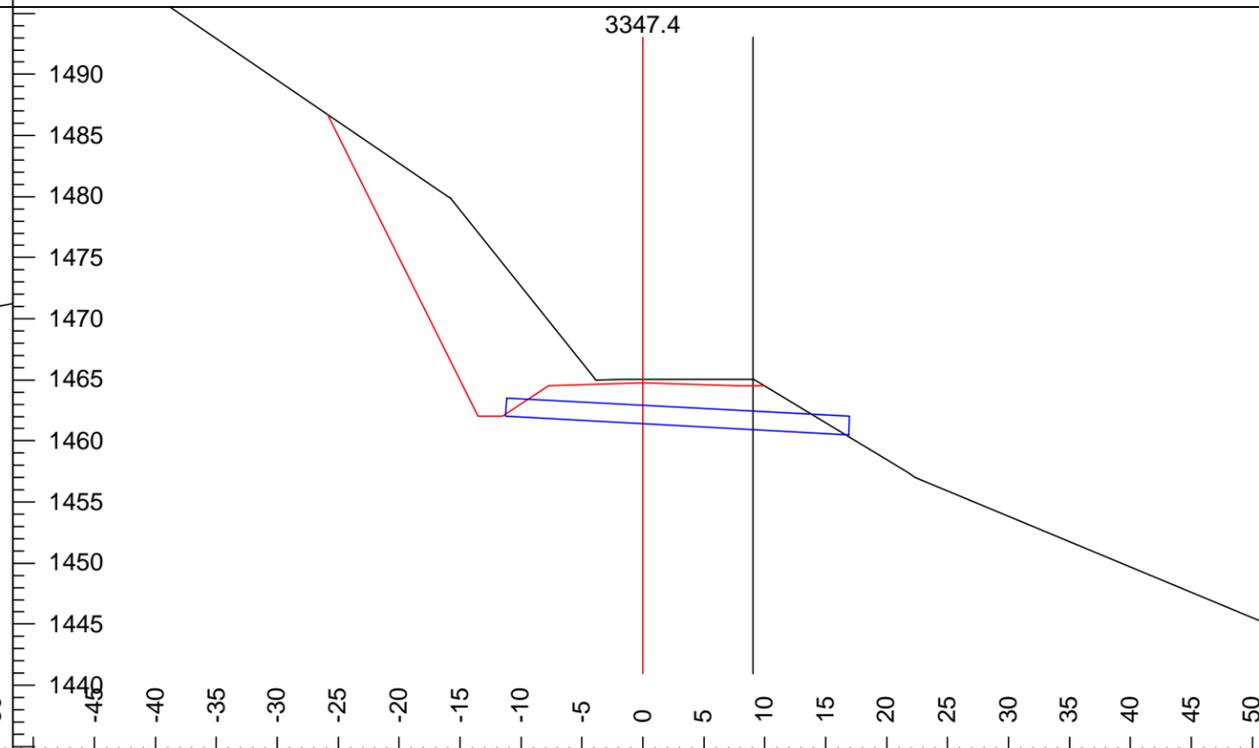
Trav.Cmnt:	pt220	Grd.Lst:	17	Stk R Y:	8.3
L-Stn:	2455.3	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.8	Rd. Wd. L:	10.8	FILL_SLOPE (Right):	75
V.Offset:	-0.1	Stk L X:	-19.2	Cul DIA:	24in
Cut Dp:	0.6	Stk L Y:	-0.3	Cul Dip %:	-5
Grd.Nxt.:	17	Stk R X:	21.0	Cul Length:	42.0



Trav.Cmnt:	pt222	Grd.Lst:	17	Stk R Y:	5.5
L-Stn:	2656.8	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.2	Rd. Wd. L:	11.2	FILL_SLOPE (Right):	75
V.Offset:	-2.2	Stk L X:	-13.3	Cul DIA:	24in
Cut Dp:	2.5	Stk L Y:	-0.3	Cul Dip %:	-2
Grd.Nxt.:	17	Stk R X:	19.6	Cul Length:	30.0



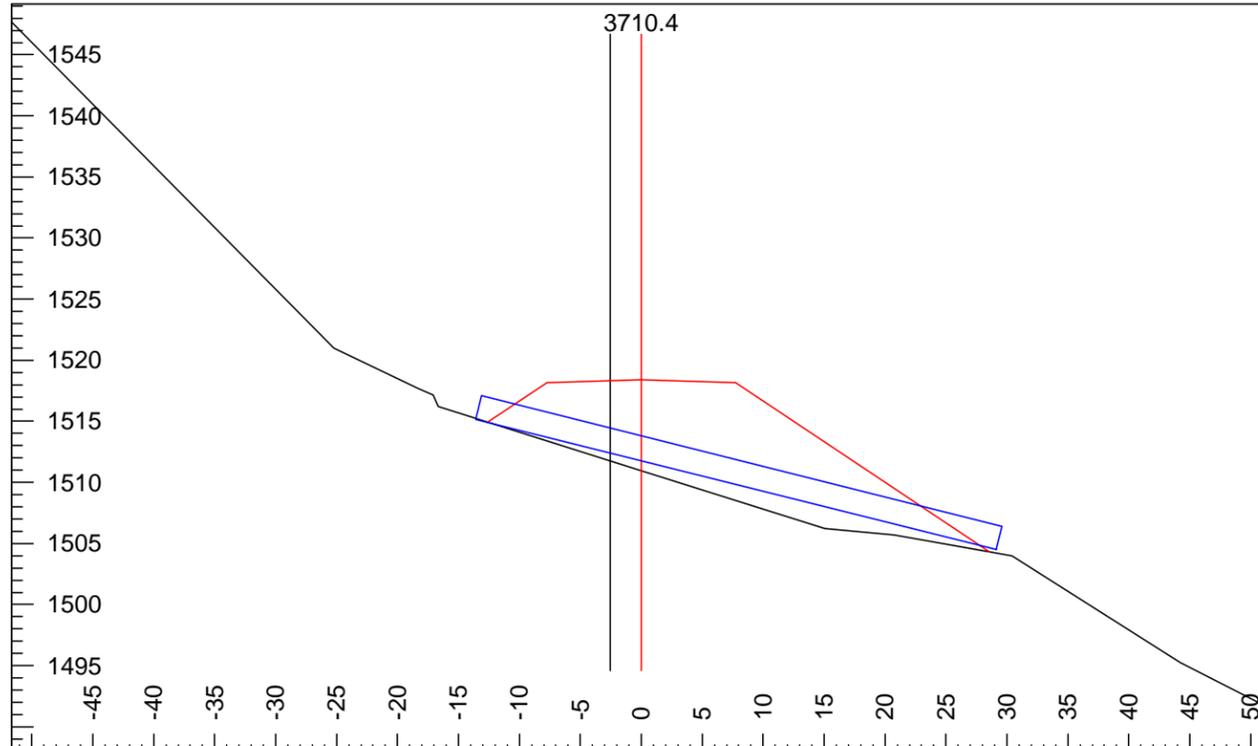
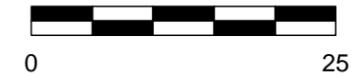
Trav.Cmnt:	pt226	Grd.Lst:	16	Stk R Y:	3.4
L-Stn:	2999.4	Rd. Wd. R:	15.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.0	Stk L X:	-44.4	Cul DIA:	18in
Cut Dp:	-10.0	Stk L Y:	-27.7	Cul Dip %:	-5
Grd.Nxt.:	16	Stk R X:	24.7	Cul Length:	36.0



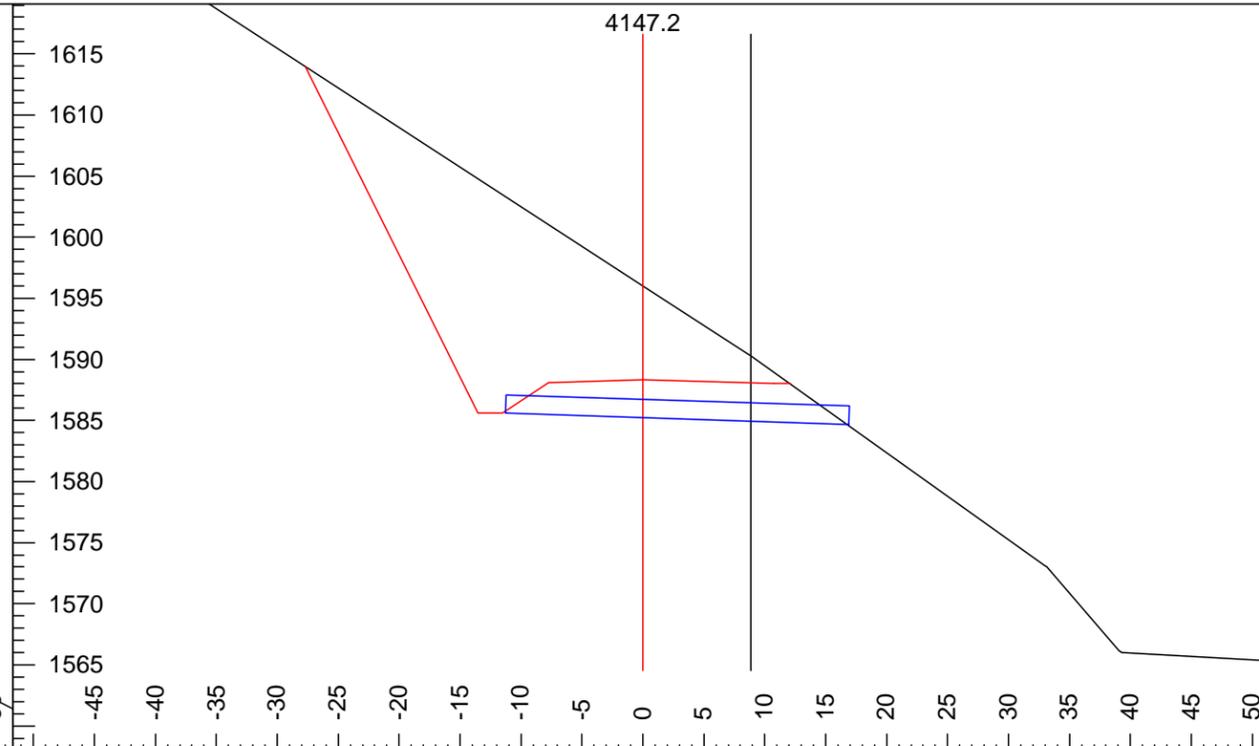
Trav.Cmnt:	pt237	Grd.Lst:	12	Stk R Y:	-0.2
L-Stn:	3347.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-9.0	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-0.2	Stk L X:	-25.9	Cul DIA:	18in
Cut Dp:	0.3	Stk L Y:	22.0	Cul Dip %:	5
Grd.Nxt.:	12	Stk R X:	10.0	Cul Length:	30.0

# PA-S-1300 Design Specifications

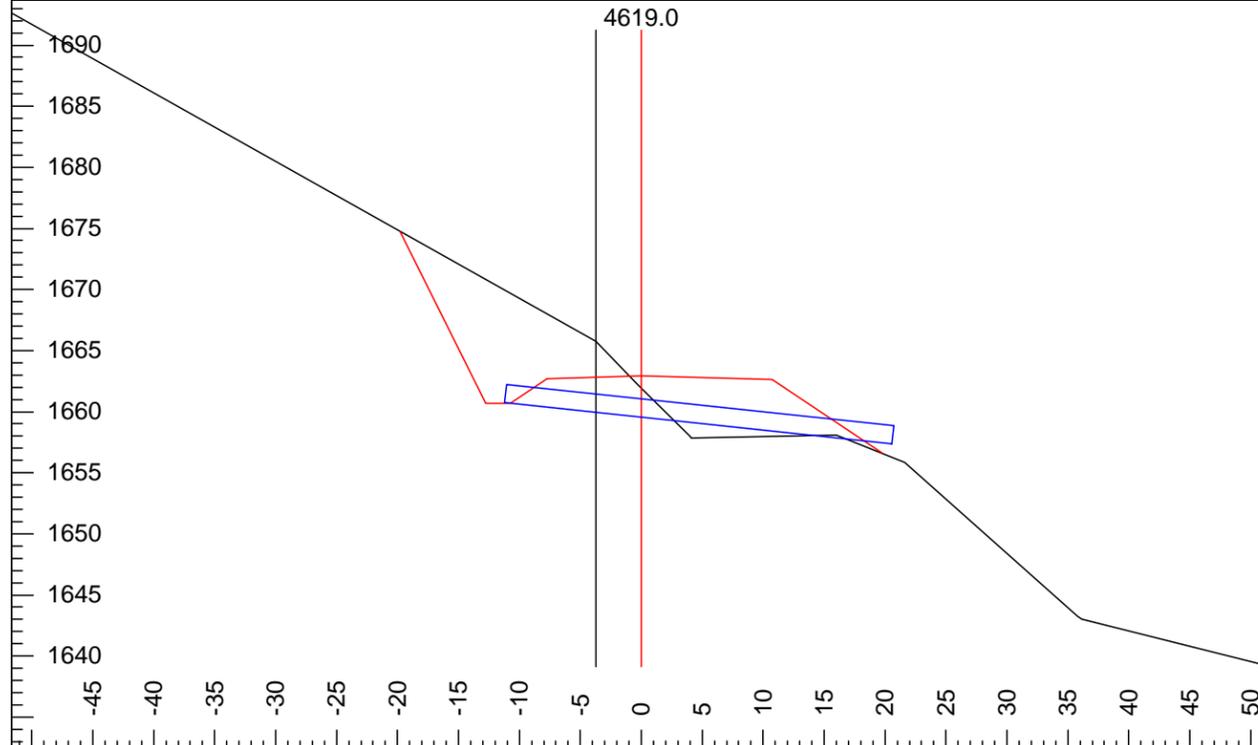
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



Trav.Cmnt:	n/a	Grd.Lst:	17	Stk R Y:	-14.1
L-Stn:	3710.4	Rd. Wd. R:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.5	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-1.3	Stk L X:	-12.6	Cul DIA:	24in
Cut Dp:	-7.4	Stk L Y:	-3.5	Cul Dip %:	25
Grd.Nxt.:	17	Stk R X:	28.5	Cul Length:	44.0



Trav.Cmnt:	pt246	Grd.Lst:	16	Stk R Y:	-0.3
L-Stn:	4147.2	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	-8.8	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.0	Stk L X:	-27.7	Cul DIA:	18in
Cut Dp:	7.7	Stk L Y:	25.6	Cul Dip %:	3
Grd.Nxt.:	16	Stk R X:	12.1	Cul Length:	30.0

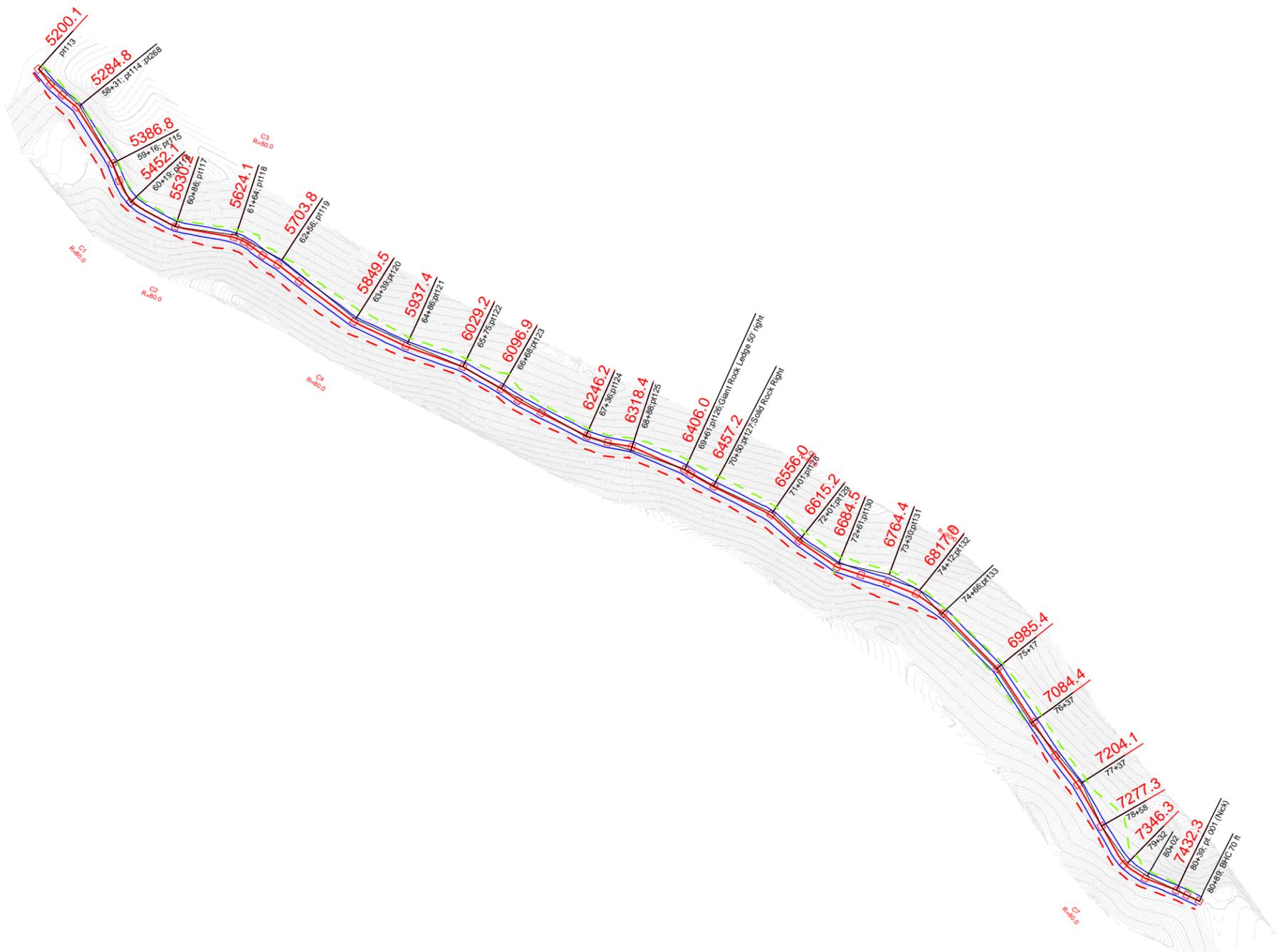


Trav.Cmnt:	pt253	Grd.Lst:	16	Stk R Y:	-6.3
L-Stn:	4619.0	Rd. Wd. R:	10.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.6	Rd. Wd. L:	7.8	FILL_SLOPE (Right):	67
V.Offset:	-2.6	Stk L X:	-19.8	Cul DIA:	18in
Cut Dp:	-1.0	Stk L Y:	11.8	Cul Dip %:	10
Grd.Nxt.:	16	Stk R X:	19.8	Cul Length:	34.0

# PA-S-1300 Design Specifications

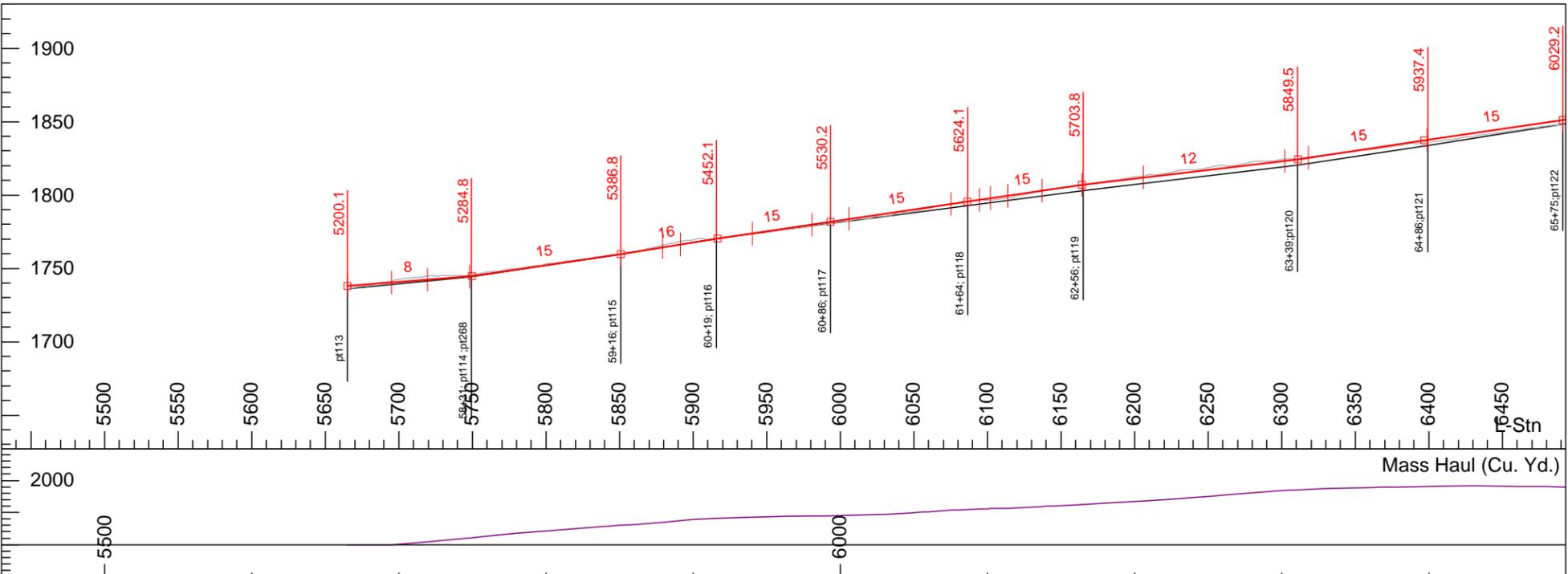


Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		



# PA-S-1300 Design Specifications

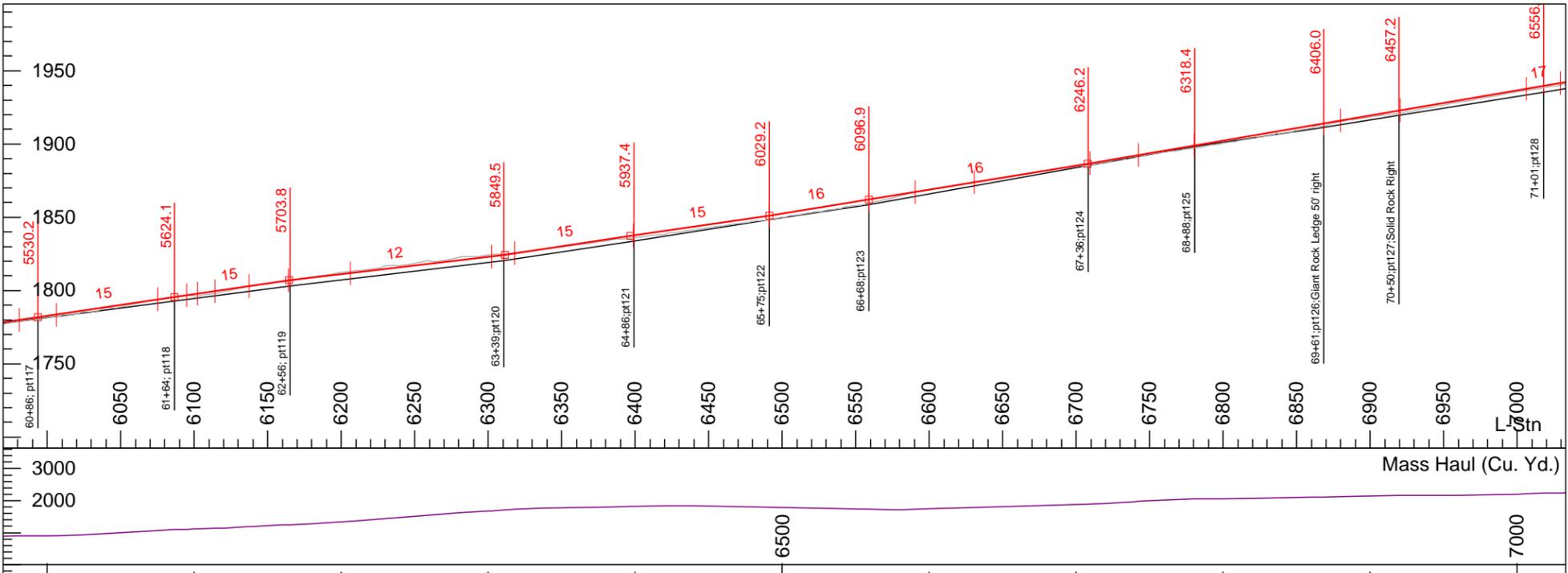
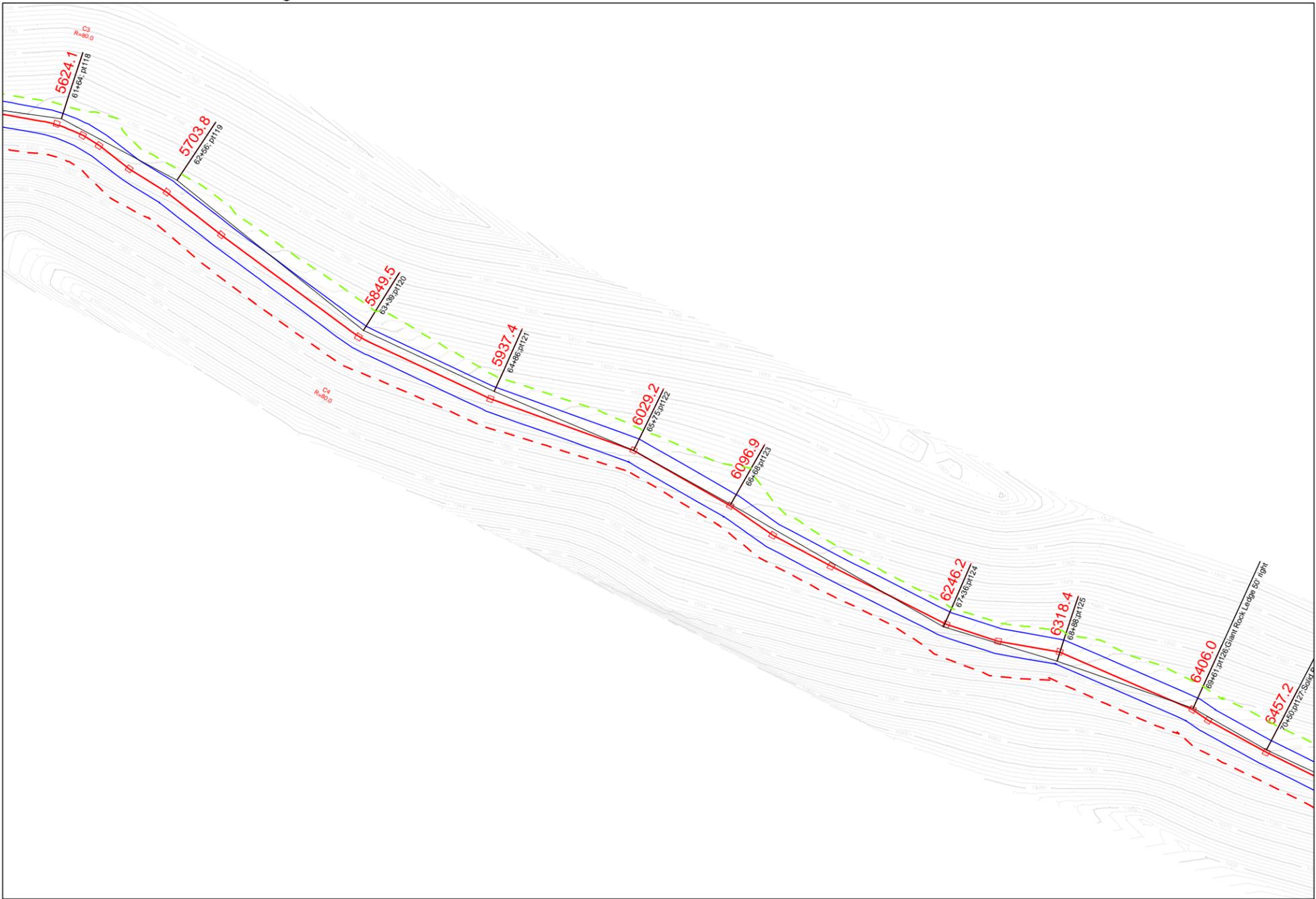
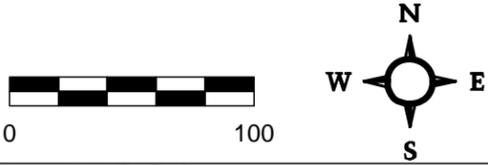
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
5200.1	0.0	2.0	-2.0	-7.8	-0.3	9.8	-0.1	pt113	7.8	7.8	200	75
5284.8	4.6	0.0	0.8	-7.9	-0.4	19.5	19.3	58+31; pt114	7.8	7.8	200	75
5386.8	0.0	0.0	0.0	-8.7	-0.8	19.4	19.0	59+16; pt115	7.9	7.8	200	75
5452.1	-2.7	0.0	-0.4	-13.3	-3.6	15.7	11.7	60+19; pt116	8.8	7.8	200	75
5530.2	-1.0	1.2	-1.3	-9.5	-1.5	14.2	8.7	60+86; pt117	7.8	7.8	200	75
5624.1	4.4	3.0	0.2	-12.5	-3.8	18.8	17.8	61+64; pt118	7.8	7.8	200	75
5703.8	9.7	4.1	-0.5	-14.2	-5.1	19.0	18.3	62+56; pt119	7.8	7.8	200	75

# PA-S-1300 Design Specifications

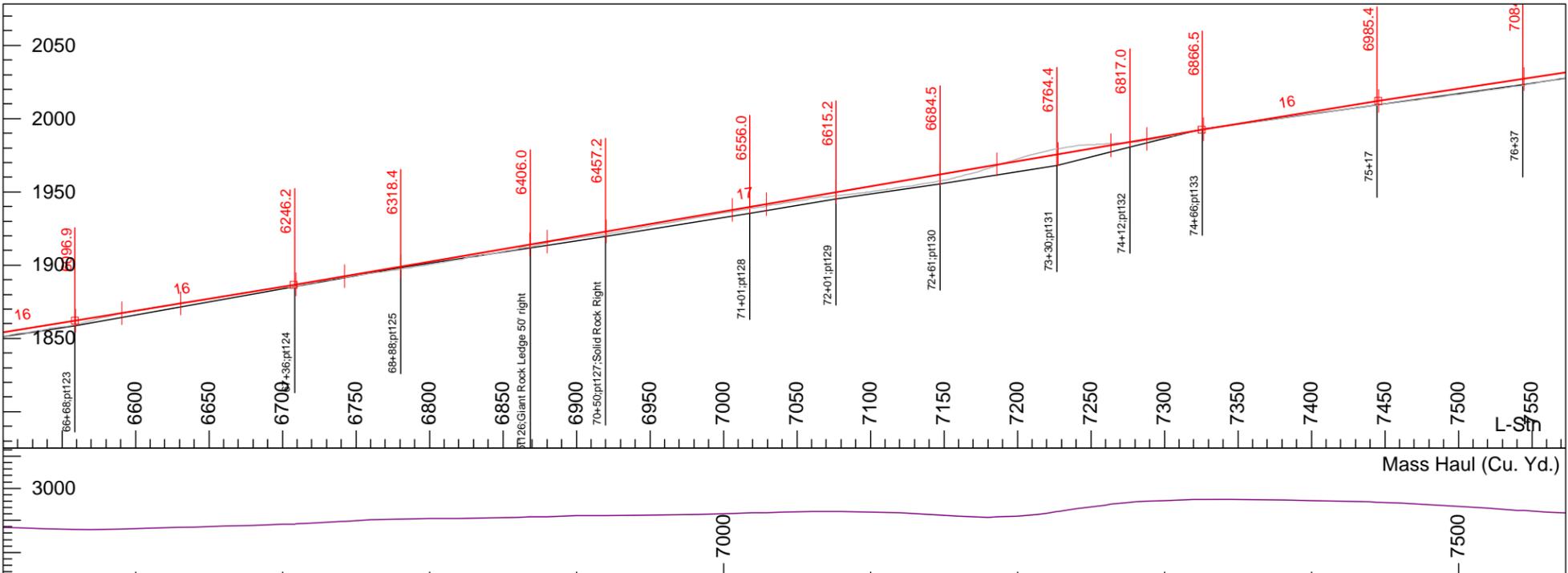
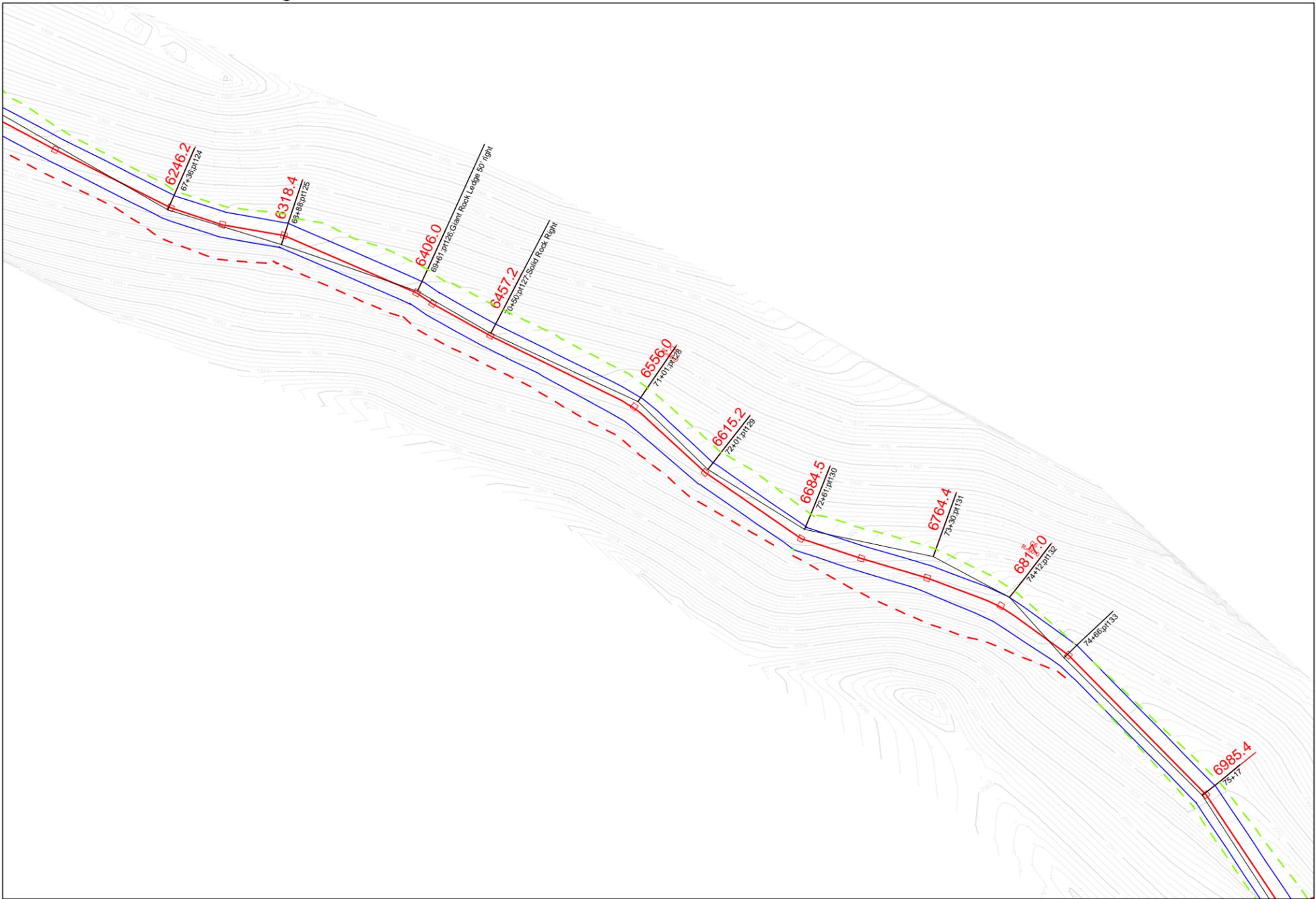
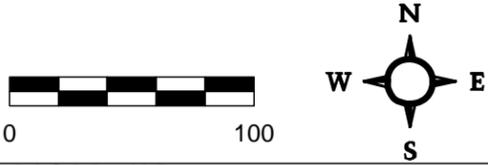
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
5849.5	4.5	3.7	0.6	-18.2	-8.1	20.0	20.4	63+39;pt120	7.8	7.8	200	75
5937.4	5.1	4.0	-1.5	-14.1	-5.0	17.4	15.0	64+86;pt121	7.8	7.8	200	75
6029.2	0.0	2.7	-2.7	-13.2	-4.4	13.2	6.7	65+75;pt122	7.8	7.8	200	75
6096.9	1.0	3.6	-2.8	-26.2	-14.1	13.8	7.8	66+68;pt123	7.8	7.8	200	75
6246.2	-1.9	1.2	-1.3	-10.1	-2.0	18.7	17.7	67+36;pt124	7.8	7.8	200	75
6318.4	-5.9	0.6	-1.8	-11.5	-3.0	17.1	14.5	68+88;pt125	7.8	7.8	200	75

# PA-S-1300 Design Specifications

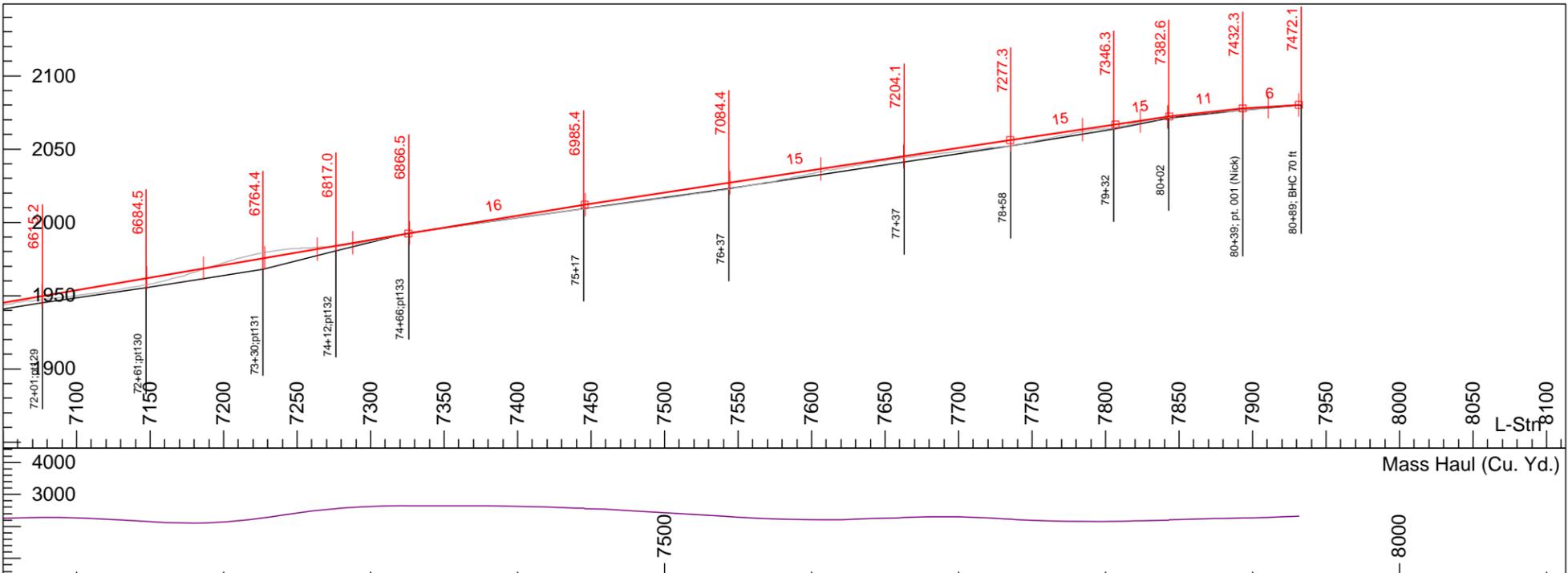
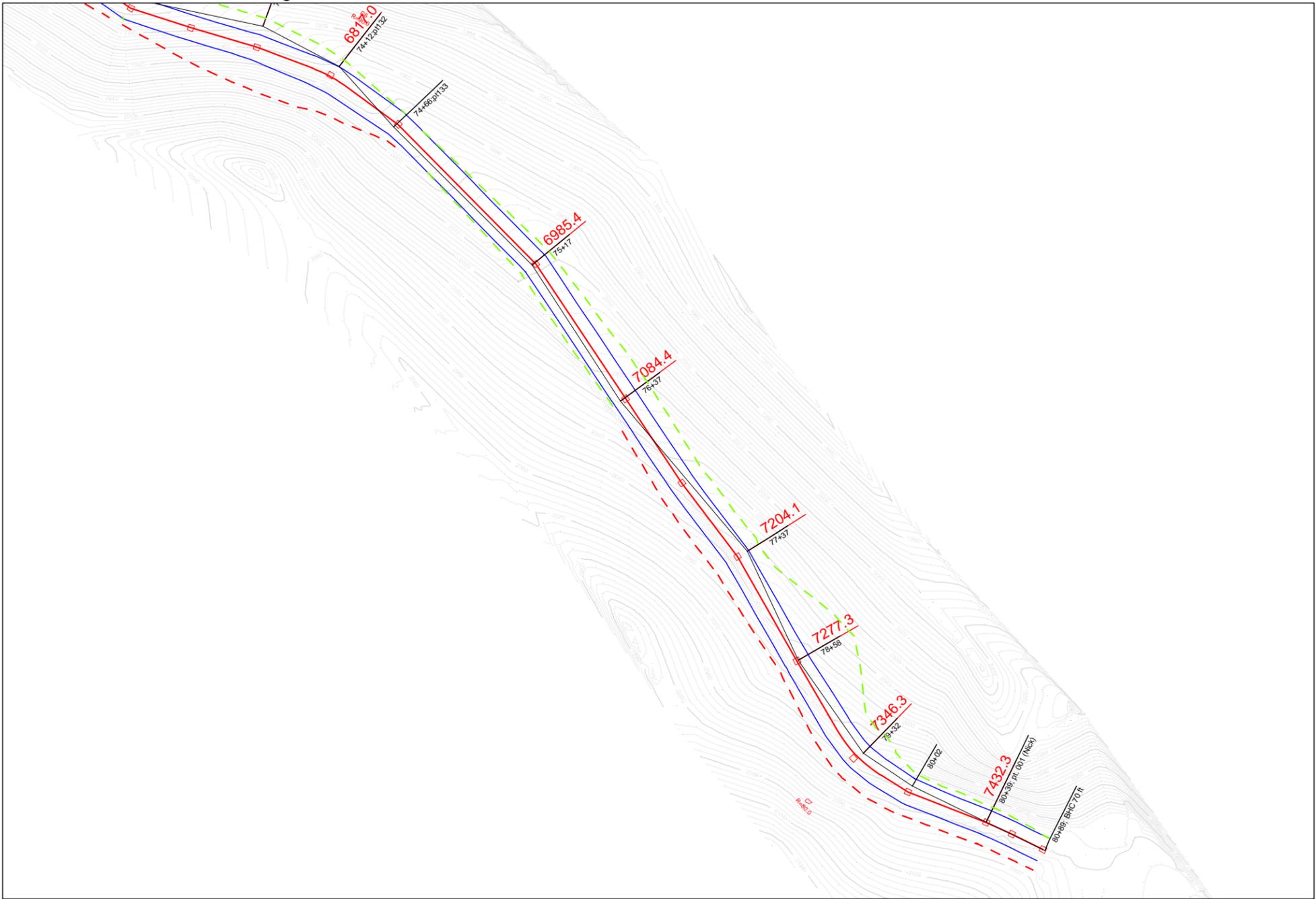
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
6318.4	-5.9	0.6	-1.8	-11.5	-3.0	17.1	14.5	68+88;pt125	7.8	7.8	200	75
6406.0	1.1	2.6	-1.7	-15.2	-5.8	16.5	13.4	69+61;pt126;	7.8	7.8	200	75
6457.2	1.3	3.2	-2.0	-17.4	-7.5	17.0	14.2	70+50;pt127;	7.8	7.8	200	75
6556.0	4.5	4.2	-1.2	-14.9	-5.6	19.6	15.4	71+01;pt128	7.8	9.8	200	75
6615.2	2.5	4.9	-2.4	-16.3	-6.6	17.5	15.1	72+01;pt129	7.8	7.9	200	75
6684.5	6.0	6.6	-4.7	-15.8	-6.3	7.8	-0.3	72+61;pt130	7.8	7.8	200	75
6764.4	13.4	7.5	3.7	-18.6	-8.4	25.3	29.8	73+30;pt131	7.8	8.3	200	75
6817.0	8.0	3.4	0.0	-13.0	-4.2	23.2	22.6	74+12;pt132	7.8	9.8	200	75
6866.5	-3.0	-0.1	0.0	-7.9	-0.3	12.1	3.6	74+66;pt133	7.8	8.2	200	75

# PA-S-1300 Design Specifications

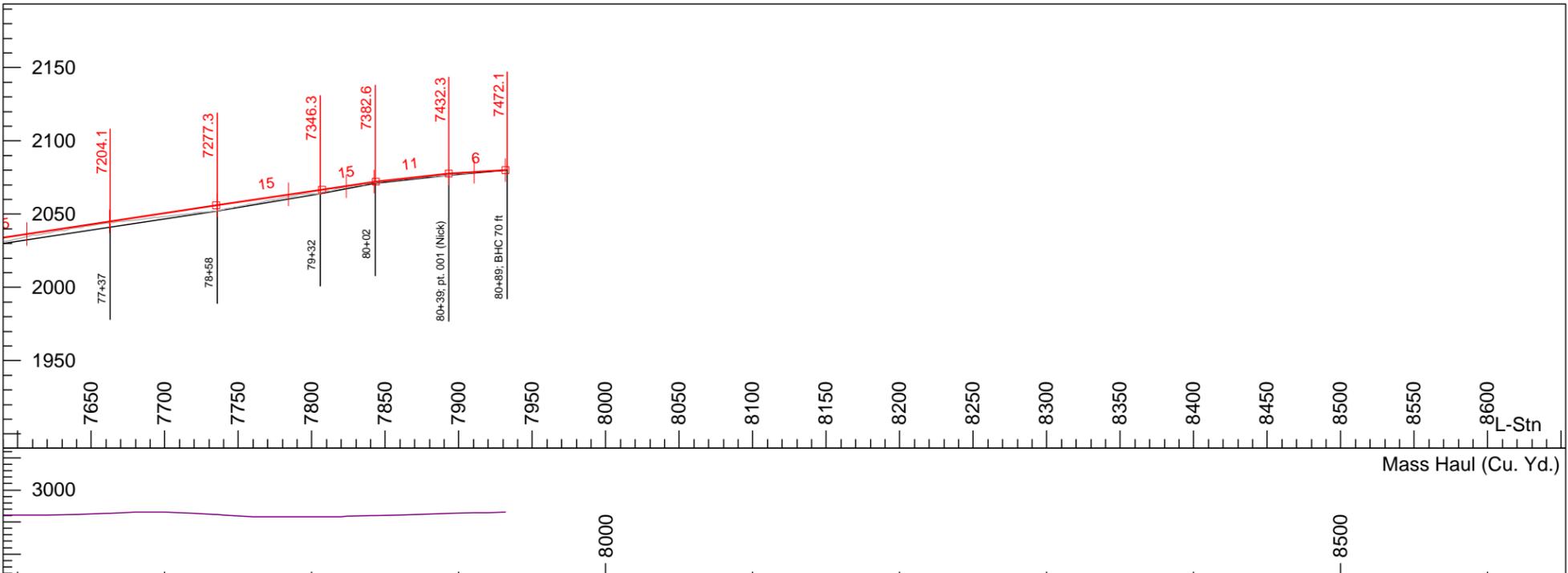
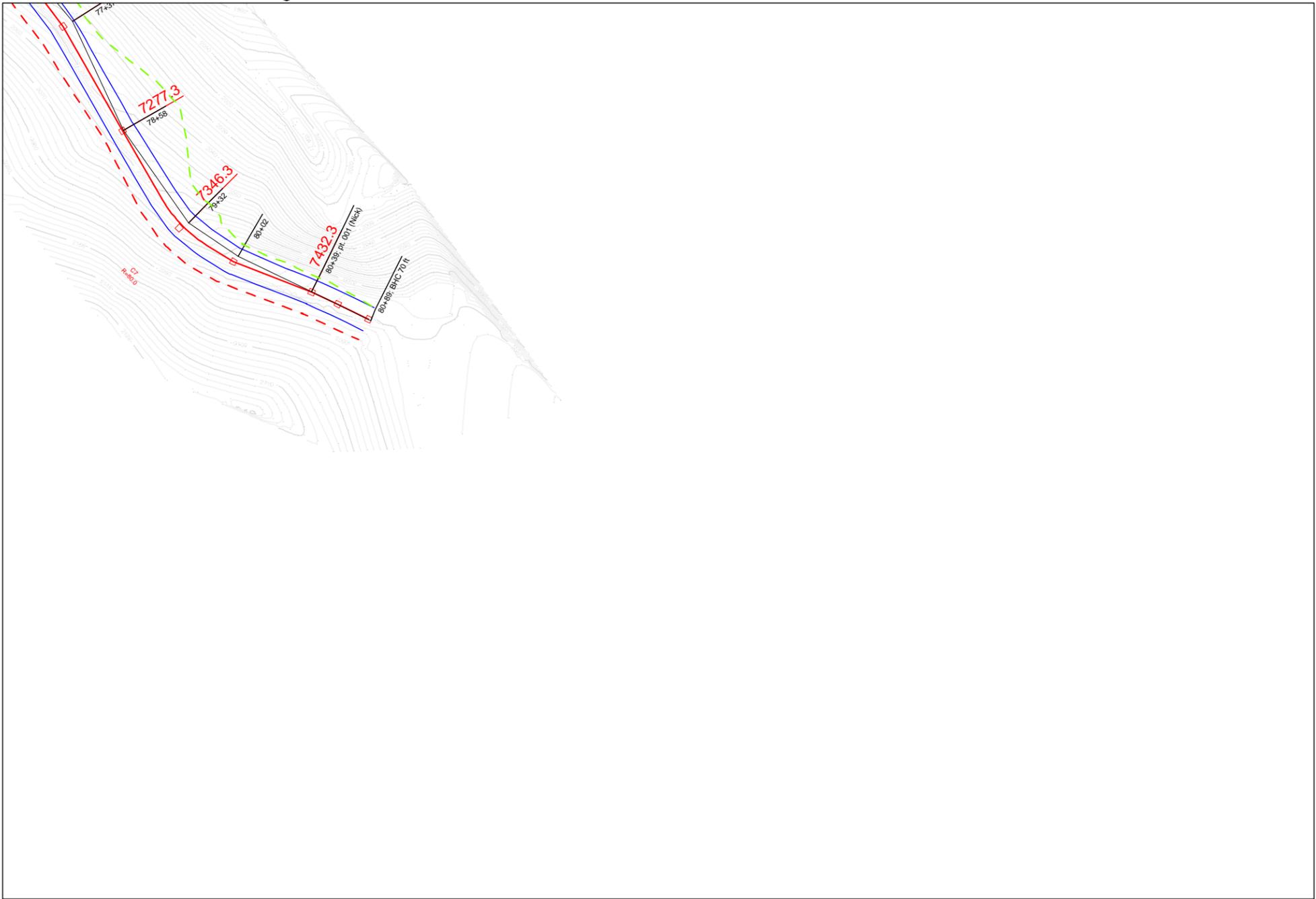
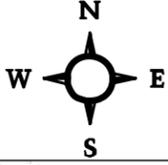
Legend			
	Preliminary(P) line		Toe of fill
	Location(L) line		Top of cut
	Left and right edge subgrade		Cumulative excavation and fill volume



P-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
6866.5	-3.0	-0.1	0.0	-7.9	-0.3	12.1	3.6	74+66;pt133	7.8	8.2	200	75
6985.4	-2.1	2.6	-2.7	-11.4	-2.9	10.5	-2.3	75+17	7.8	7.8	200	75
7084.4	-3.3	3.9	-4.3	-16.5	-6.8	8.9	-1.1	76+37	7.8	7.8	200	75
7204.1	6.7	4.1	-1.1	-14.3	-5.1	15.9	12.0	77+37	7.8	7.8	200	75
7277.3	0.7	4.1	-3.9	-36.4	-21.7	12.2	4.6	78+58	7.8	7.8	200	75
7346.3	3.9	2.7	-2.5	-21.0	-8.7	15.8	11.9	79+32	9.8	7.8	200	75
7382.6	4.3	1.1	-0.7	-12.3	-2.8	14.8	9.8	80+02	9.0	7.8	200	75

# PA-S-1300 Design Specifications

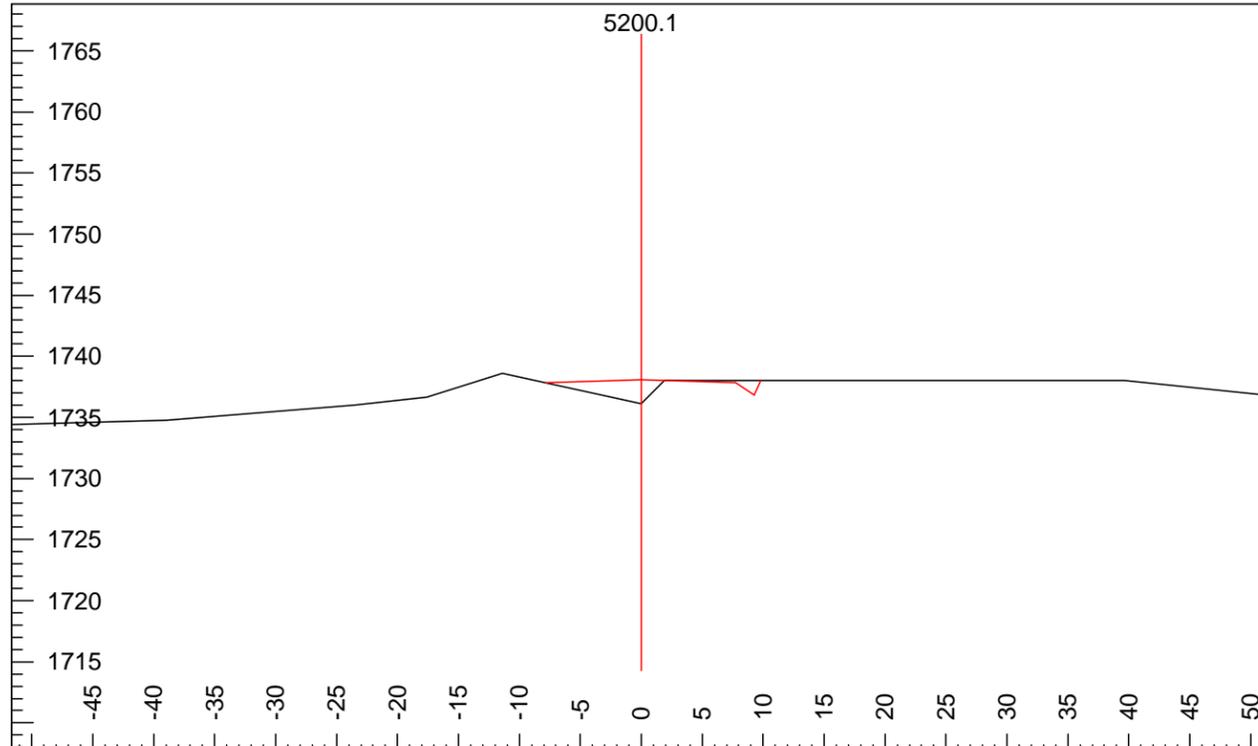
Legend	
	Preliminary(P) line
	Location(L) line
	Left and right edge subgrade
	Toe of fill
	Top of cut
	Cumulative excavation and fill volume



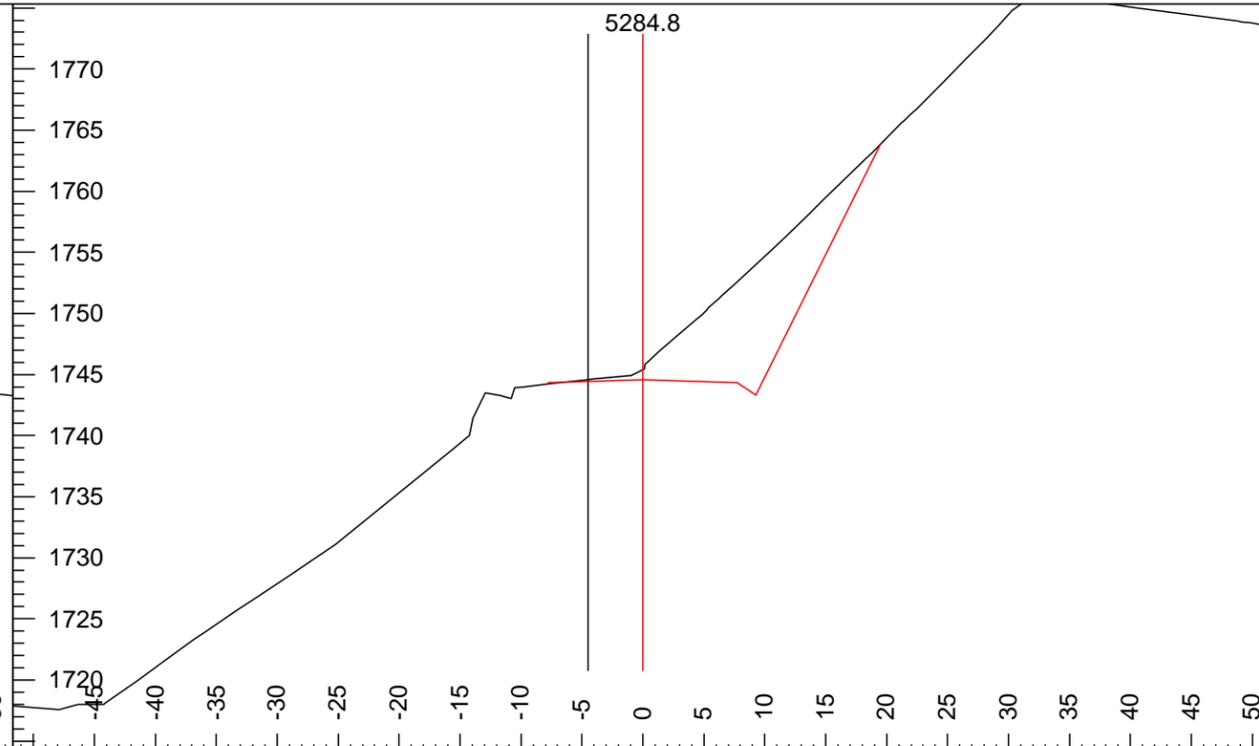
P-Stn ft.	H.Offset ft.	V.Offset ft.	Cut Dp. ft.	Stk L X ft.	Stk L Y ft.	Stk R X ft.	Stk R Y ft.	Comment	Rd. Wd. L ft.	Rd. Wd. R ft.	CUT_SLOPE %	FILL_SLOPE %
7382.6	4.3	1.1	-0.7	-12.3	-2.8	14.8	9.8	80+02	9.0	7.8	200	75
7432.3	0.2	1.2	-1.1	-9.9	-1.9	14.2	8.6	80+39; pt. 0	7.8	7.8	200	75

# PA-S-1300 Design Specifications

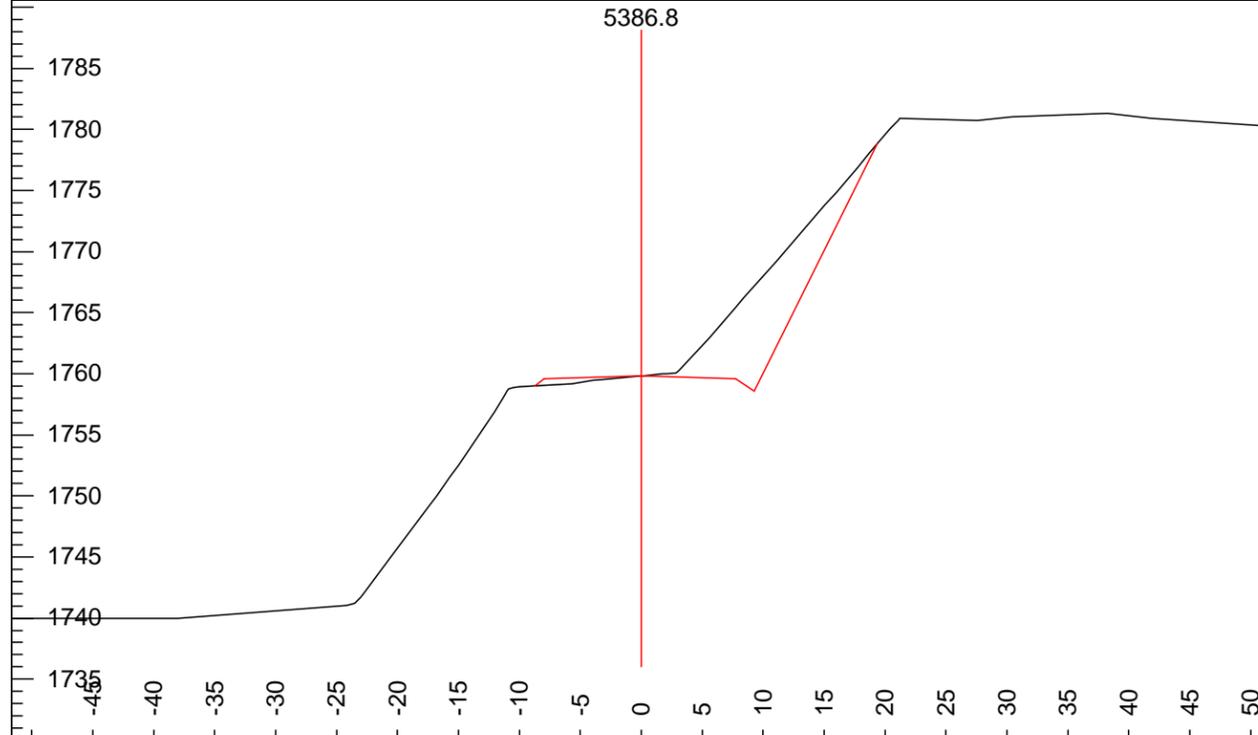
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



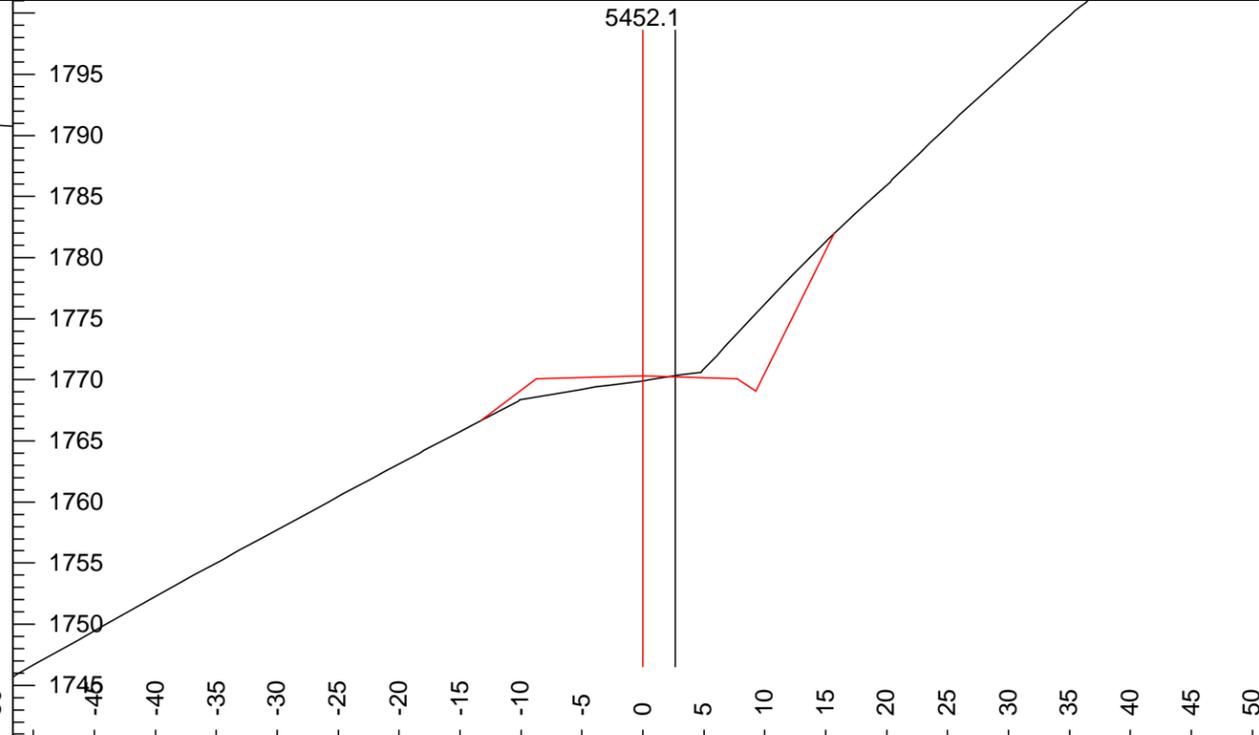
Trav.Cmnt:	pt113	Grd.Lst:	n/a	Stk R Y:	-0.1
P-Stn:	5200.1	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	2.0	Stk L X:	-7.8	Cul DIA:	
Cut Dp:	-2.0	Stk L Y:	-0.3	Cul Length:	
Grd.Nxt.:	8	Stk R X:	9.8	Cul Dip %:	



Trav.Cmnt:	58+31; pt114 ;pt268	Grd.Lst:	8	Stk R Y:	19.3
P-Stn:	5284.8	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.6	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	0.0	Stk L X:	-7.9	Cul DIA:	
Cut Dp:	0.8	Stk L Y:	-0.4	Cul Length:	
Grd.Nxt.:	8	Stk R X:	19.5	Cul Dip %:	



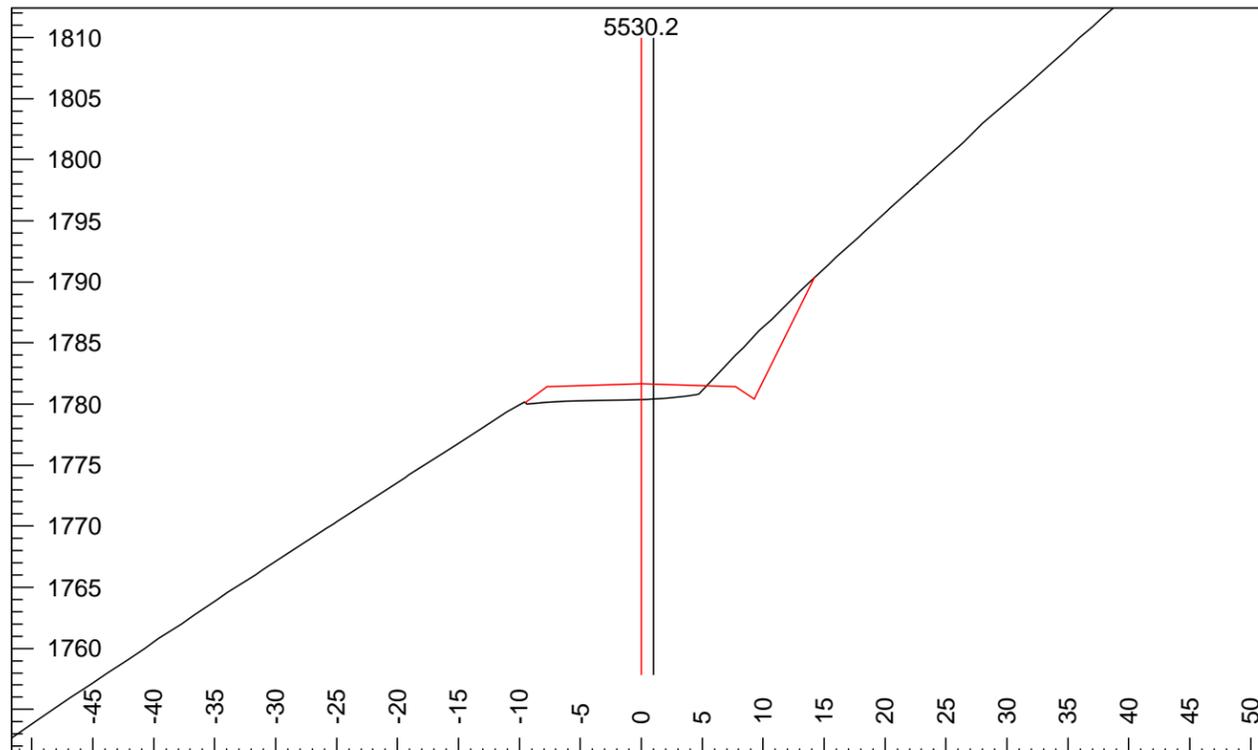
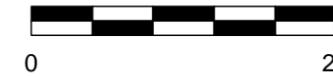
Trav.Cmnt:	59+16; pt115	Grd.Lst:	16	Stk R Y:	19.0
P-Stn:	5386.8	Rd. Wd. L:	7.9	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	0.0	Stk L X:	-8.7	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	-0.8	Cul Length:	
Grd.Nxt.:	16	Stk R X:	19.4	Cul Dip %:	



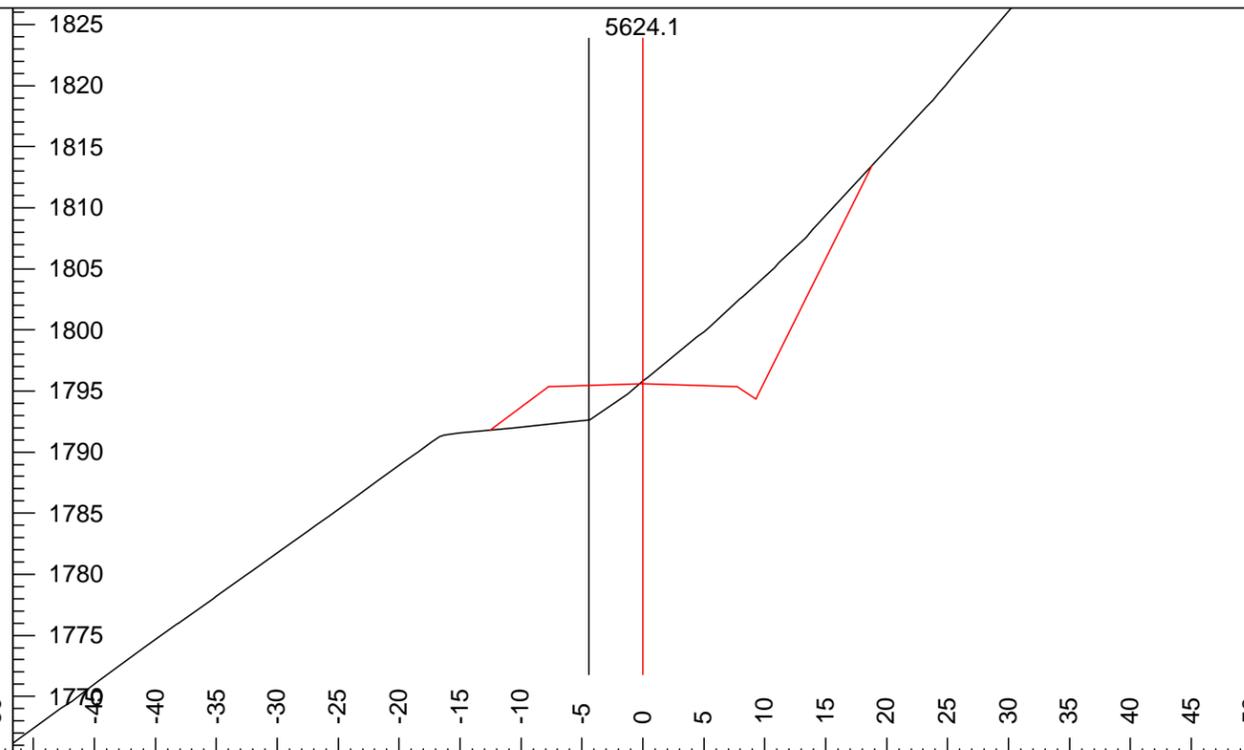
Trav.Cmnt:	60+19; pt116	Grd.Lst:	16	Stk R Y:	11.7
P-Stn:	5452.1	Rd. Wd. L:	8.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.7	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	0.0	Stk L X:	-13.3	Cul DIA:	
Cut Dp:	-0.4	Stk L Y:	-3.6	Cul Length:	
Grd.Nxt.:	16	Stk R X:	15.7	Cul Dip %:	

# PA-S-1300 Design Specifications

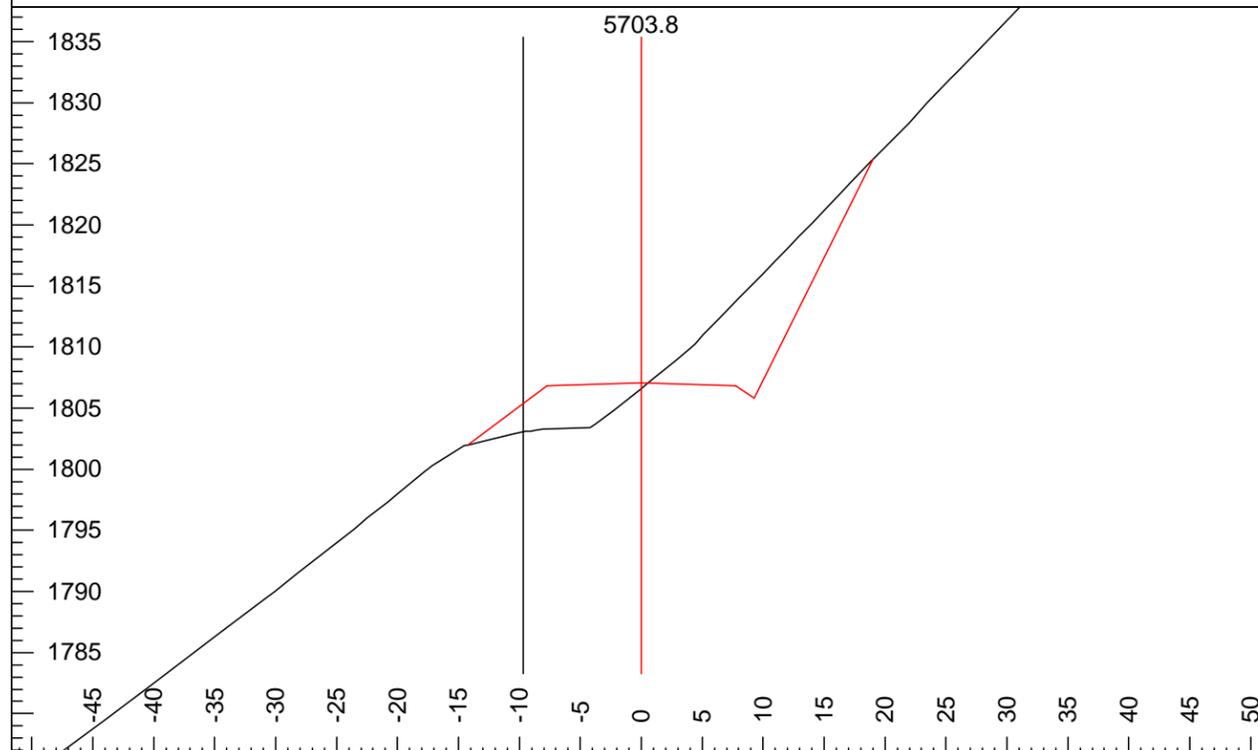
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



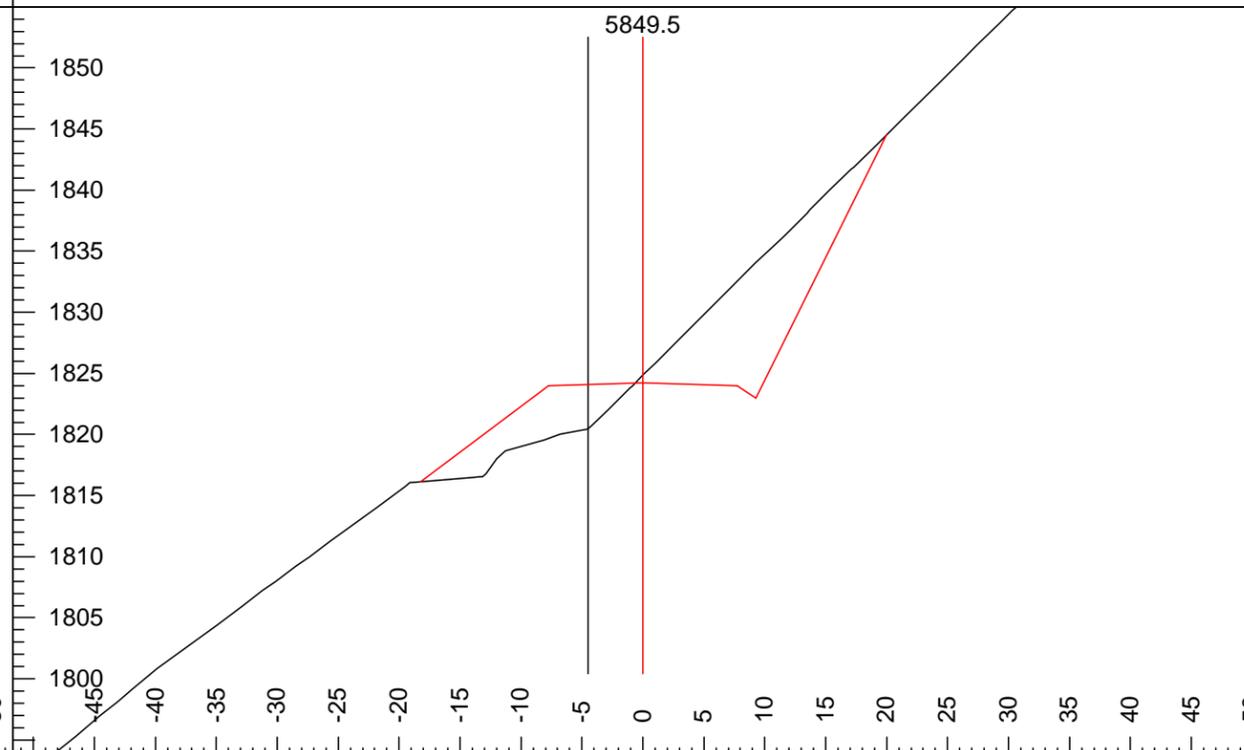
Trav.Cmnt:	60+86; pt117	Grd.Lst:	15	Stk R Y:	8.7
P-Stn:	5530.2	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-1.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	1.2	Stk L X:	-9.5	Cul DIA:	
Cut Dp:	-1.3	Stk L Y:	-1.5	Cul Length:	
Grd.Nxt.:	15	Stk R X:	14.2	Cul Dip %:	



Trav.Cmnt:	61+64; pt118	Grd.Lst:	15	Stk R Y:	17.8
P-Stn:	5624.1	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.4	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.0	Stk L X:	-12.5	Cul DIA:	
Cut Dp:	0.2	Stk L Y:	-3.8	Cul Length:	
Grd.Nxt.:	15	Stk R X:	18.8	Cul Dip %:	



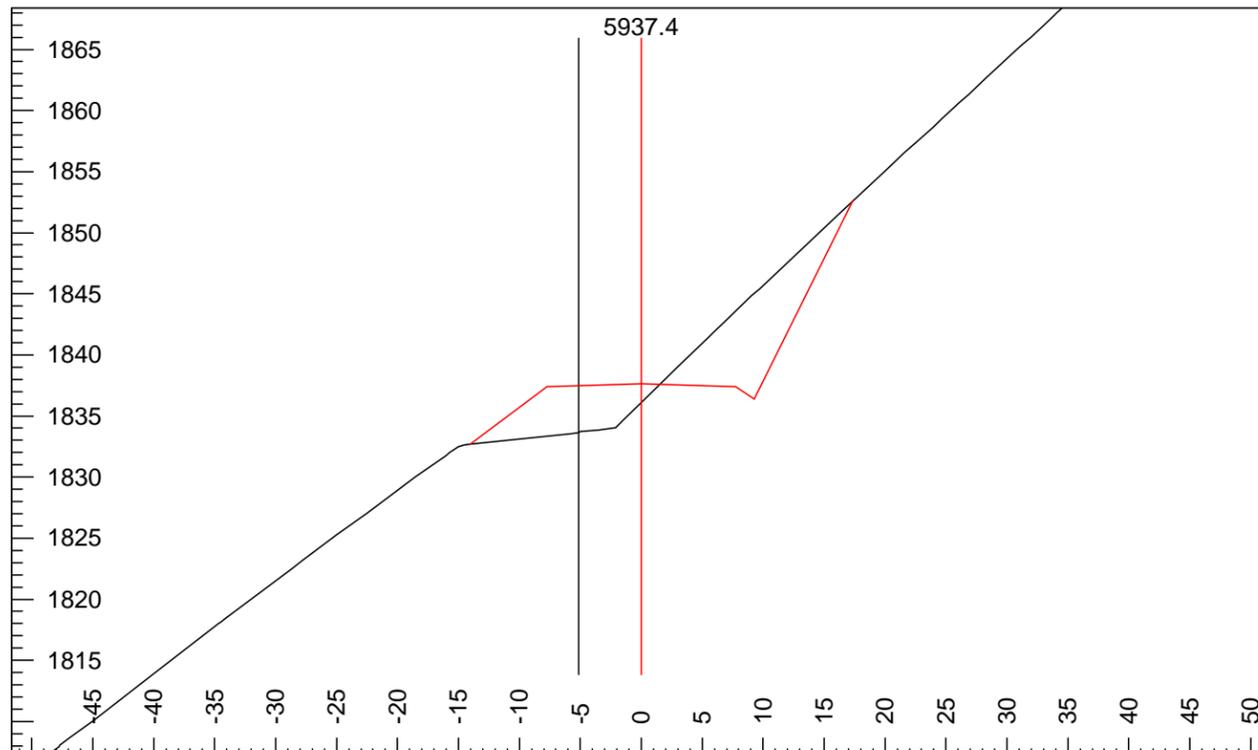
Trav.Cmnt:	62+56; pt119	Grd.Lst:	12	Stk R Y:	18.3
P-Stn:	5703.8	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	9.7	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	4.1	Stk L X:	-14.2	Cul DIA:	
Cut Dp:	-0.5	Stk L Y:	-5.1	Cul Length:	
Grd.Nxt.:	12	Stk R X:	19.0	Cul Dip %:	



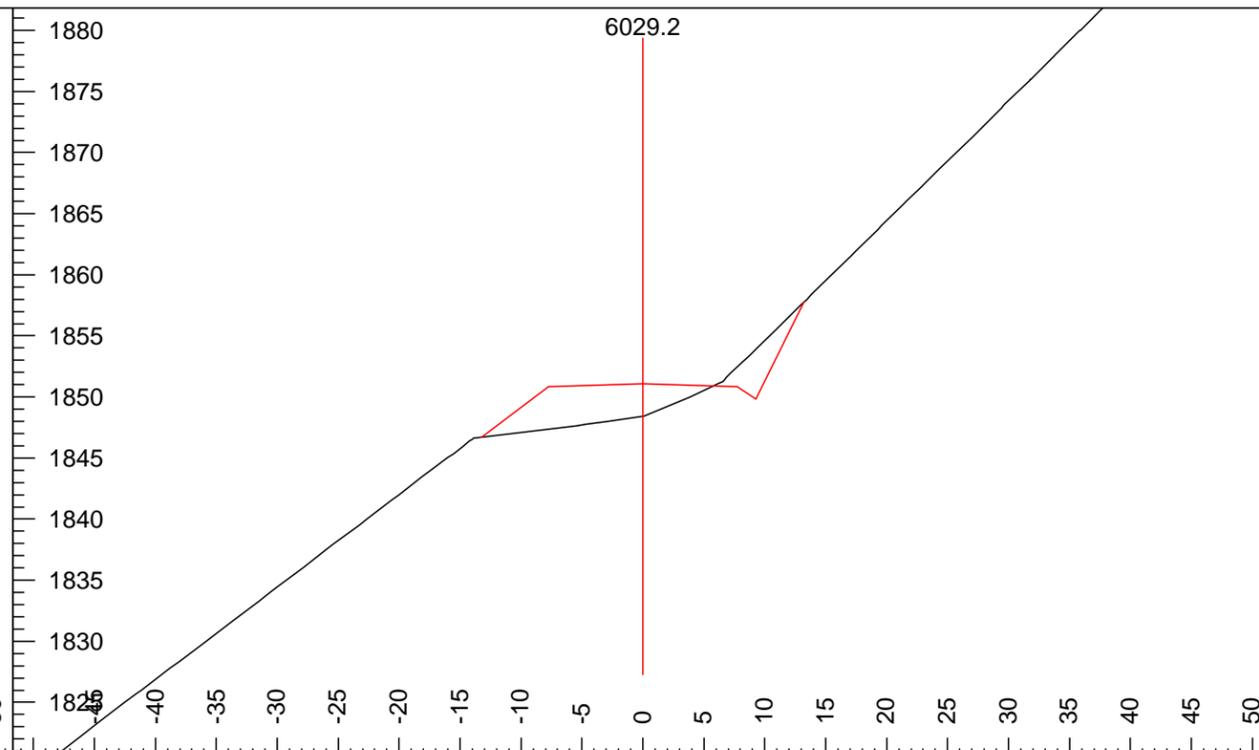
Trav.Cmnt:	63+39; pt120	Grd.Lst:	12	Stk R Y:	20.4
P-Stn:	5849.5	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.5	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.7	Stk L X:	-18.2	Cul DIA:	
Cut Dp:	0.6	Stk L Y:	-8.1	Cul Length:	
Grd.Nxt.:	12	Stk R X:	20.0	Cul Dip %:	

# PA-S-1300 Design Specifications

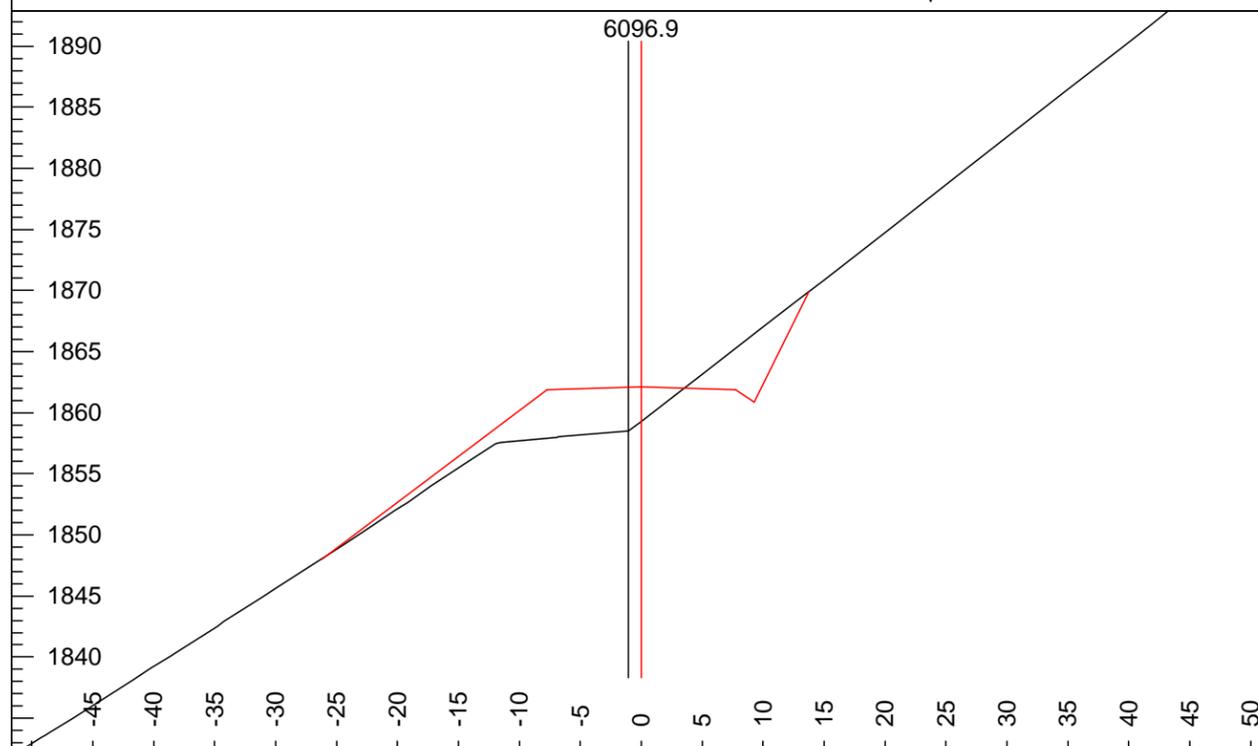
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



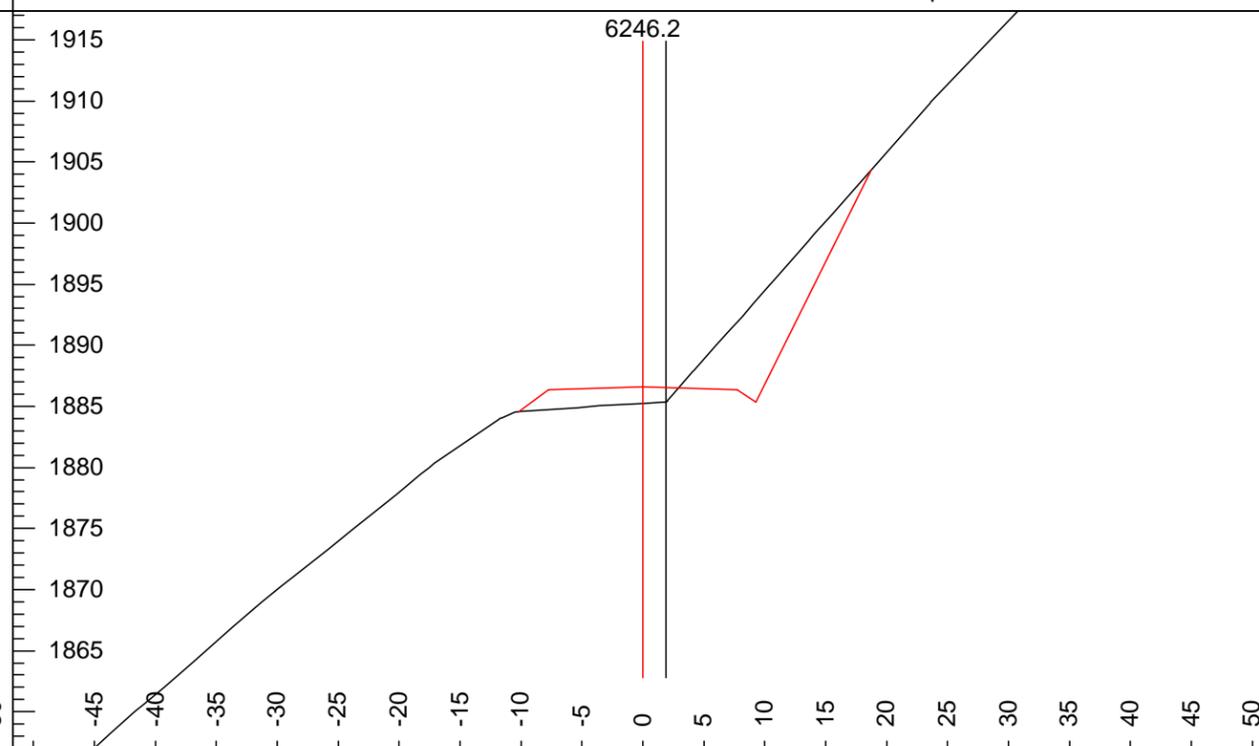
Trav.Cmnt:	64+86;pt121	Grd.Lst:	15	Stk R Y:	15.0
P-Stn:	5937.4	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	5.1	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	4.0	Stk L X:	-14.1	Cul DIA:	
Cut Dp:	-1.5	Stk L Y:	-5.0	Cul Length:	
Grd.Nxt.:	15	Stk R X:	17.4	Cul Dip %:	



Trav.Cmnt:	65+75;pt122	Grd.Lst:	16	Stk R Y:	6.7
P-Stn:	6029.2	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	2.7	Stk L X:	-13.2	Cul DIA:	
Cut Dp:	-2.7	Stk L Y:	-4.4	Cul Length:	
Grd.Nxt.:	16	Stk R X:	13.2	Cul Dip %:	



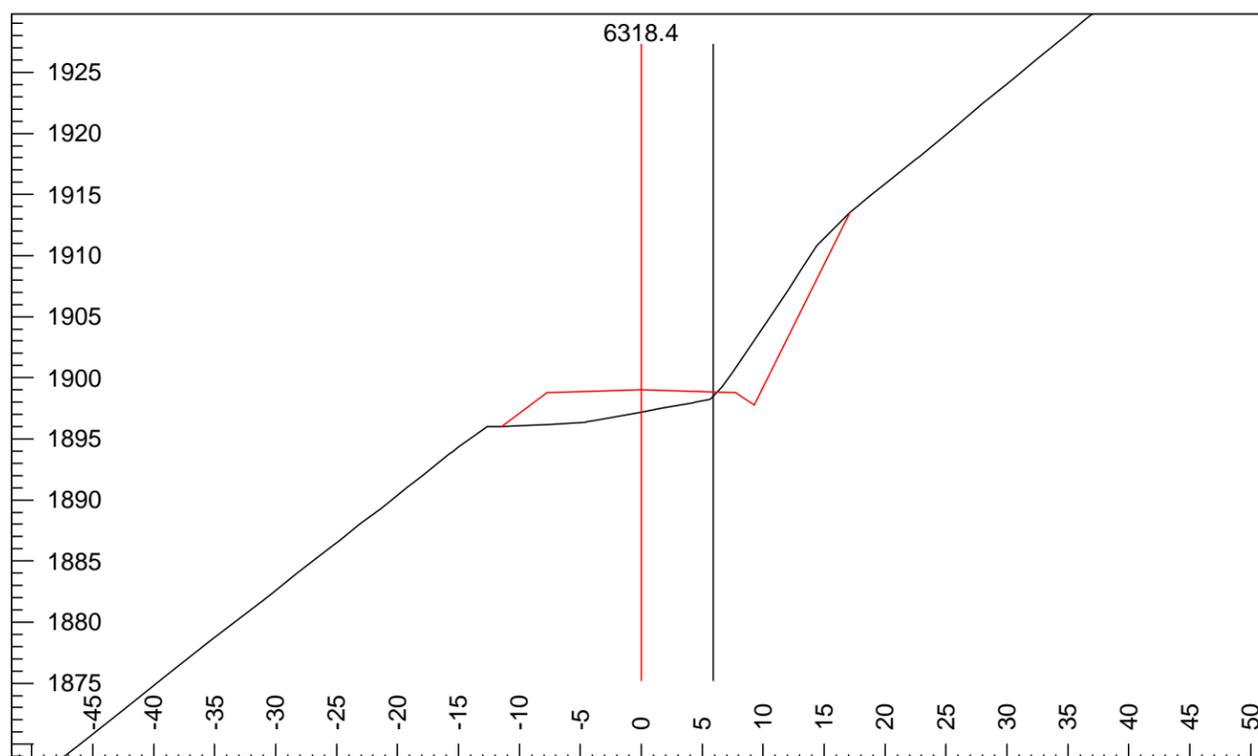
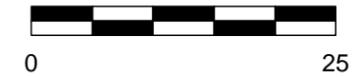
Trav.Cmnt:	66+68;pt123	Grd.Lst:	16	Stk R Y:	7.8
P-Stn:	6096.9	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.6	Stk L X:	-26.2	Cul DIA:	
Cut Dp:	-2.8	Stk L Y:	-14.1	Cul Length:	
Grd.Nxt.:	16	Stk R X:	13.8	Cul Dip %:	



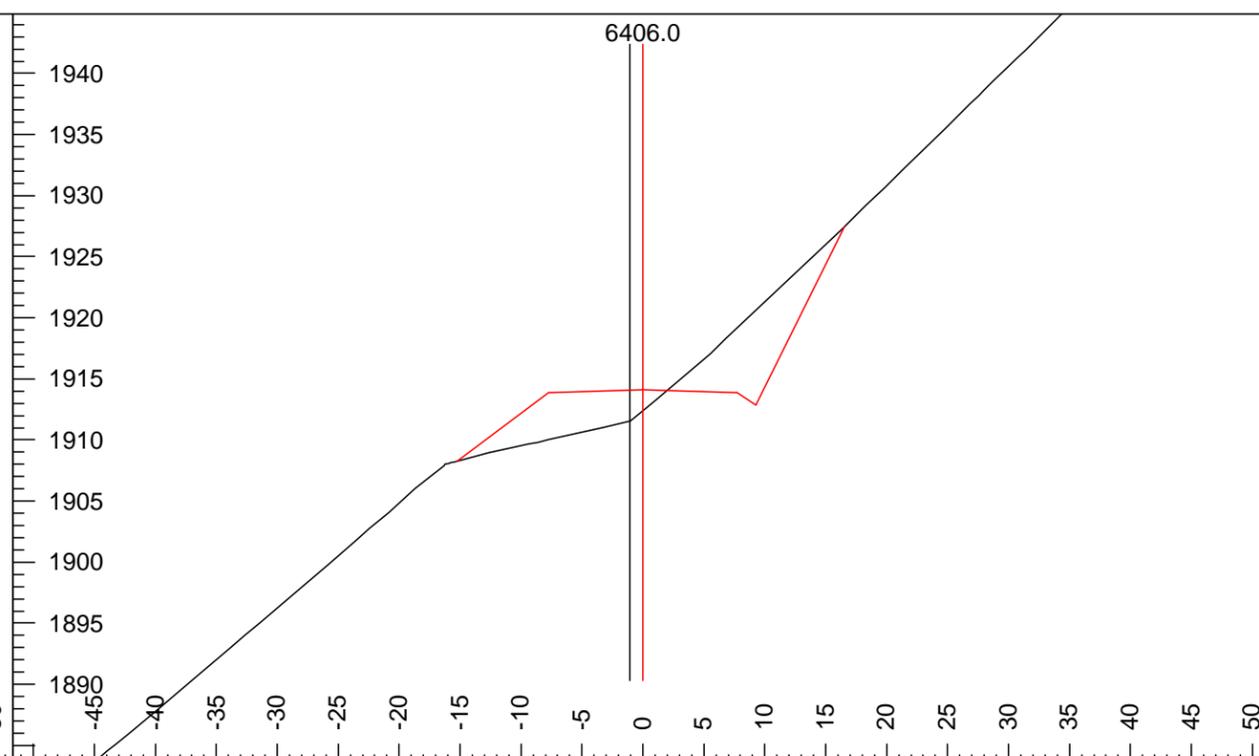
Trav.Cmnt:	67+36;pt124	Grd.Lst:	17	Stk R Y:	17.7
P-Stn:	6246.2	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-1.9	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	1.2	Stk L X:	-10.1	Cul DIA:	
Cut Dp:	-1.3	Stk L Y:	-2.0	Cul Length:	
Grd.Nxt.:	17	Stk R X:	18.7	Cul Dip %:	

# PA-S-1300 Design Specifications

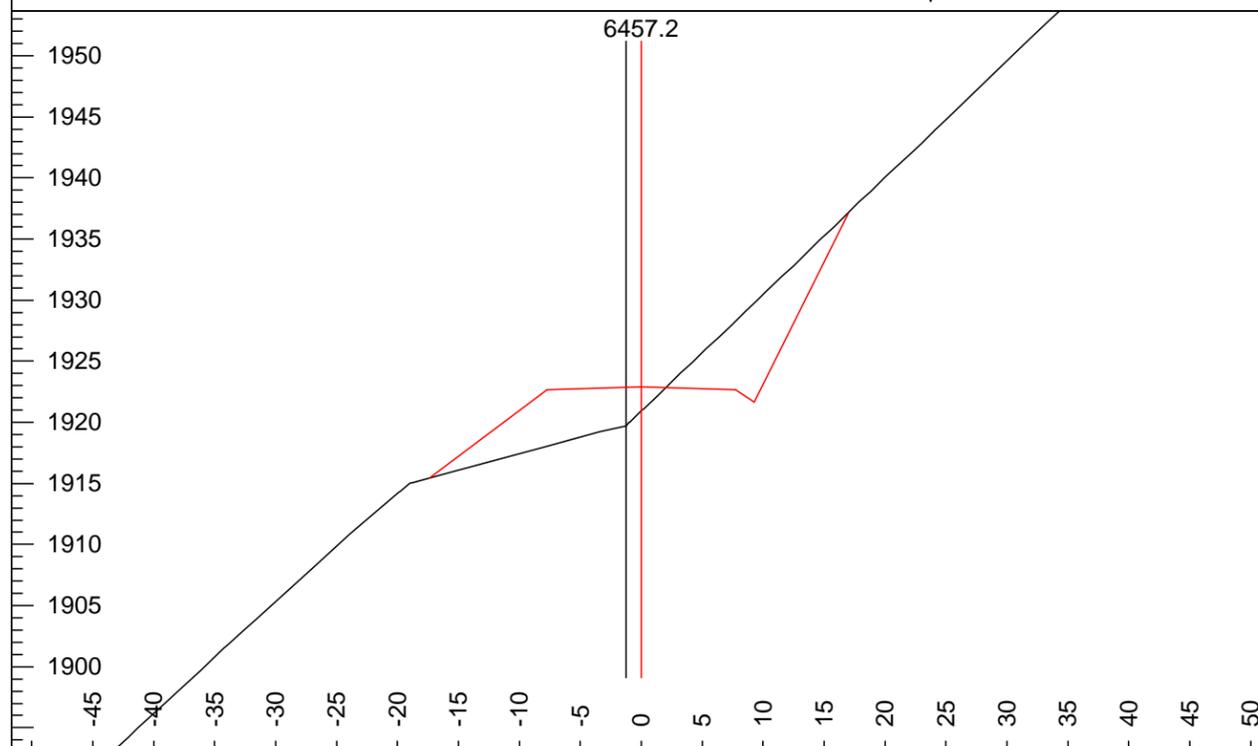
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



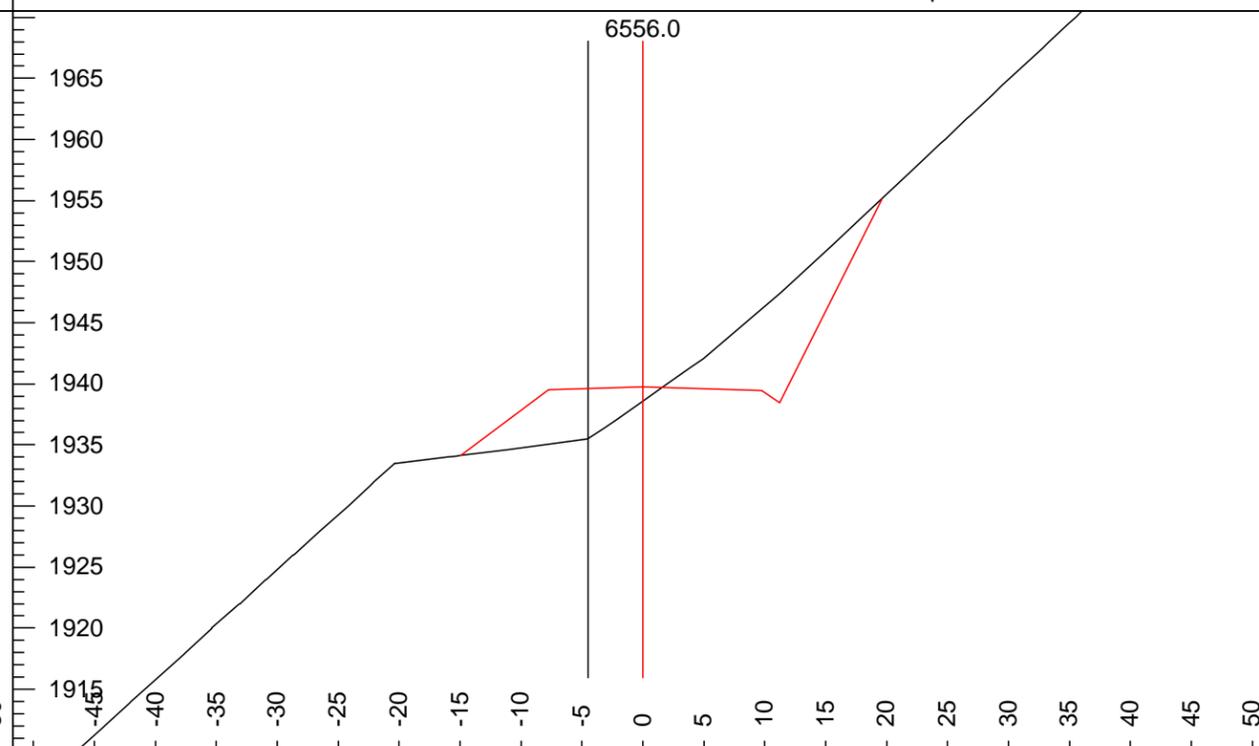
Trav.Cmnt:	68+88;pt125	Grd.Lst:	17	Stk R Y:	14.69
P-Stn:	6318.4	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-5.9	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	0.6	Stk L X:	-11.5	Cul DIA:	
Cut Dp:	-1.8	Stk L Y:	-3.0	Cul Length:	
Grd.Nxt.:	17	Stk R X:	17.1	Cul Dip %:	



Trav.Cmnt:	61;pt126;Giant Rock Ledge 50' right	Grd.Lst:	17	Stk R Y:	13.4
P-Stn:	6406.0	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.1	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	2.6	Stk L X:	-15.2	Cul DIA:	
Cut Dp:	-1.7	Stk L Y:	-5.8	Cul Length:	
Grd.Nxt.:	17	Stk R X:	16.5	Cul Dip %:	



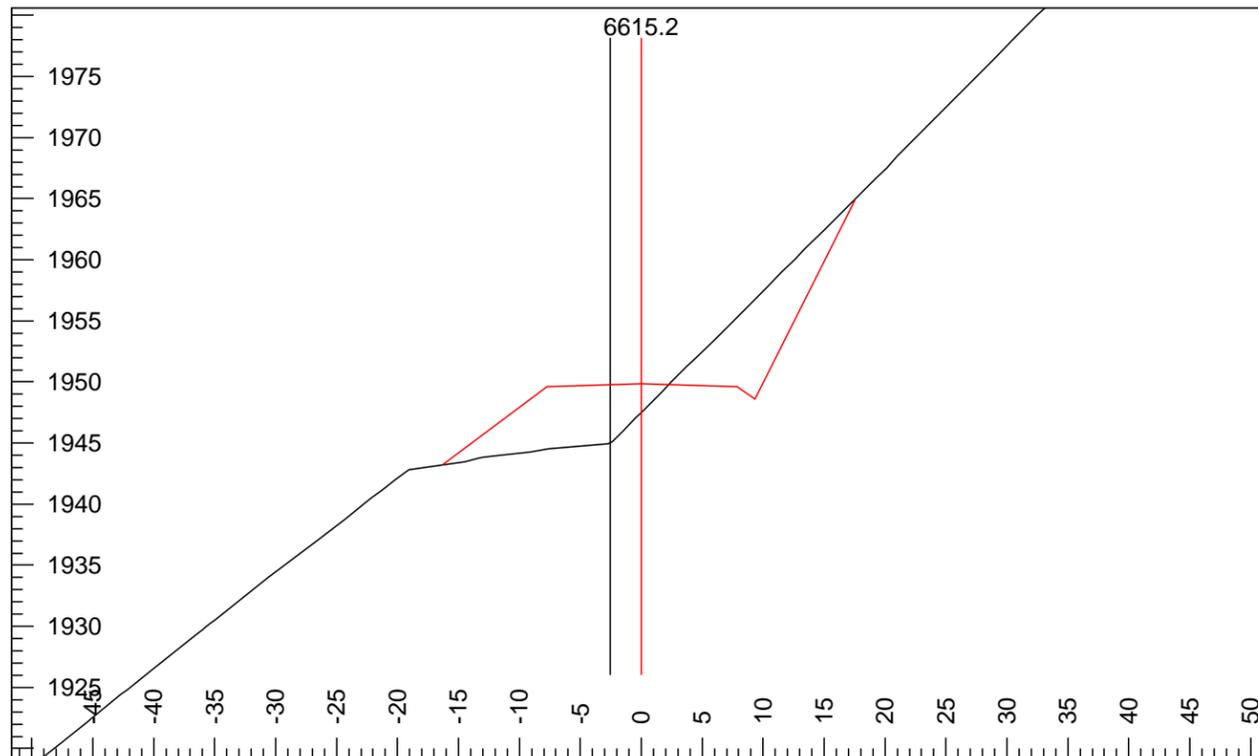
Trav.Cmnt:	70+50;pt127;Solid Rock Right	Grd.Lst:	17	Stk R Y:	14.2
P-Stn:	6457.2	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	1.3	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.2	Stk L X:	-17.4	Cul DIA:	
Cut Dp:	-2.0	Stk L Y:	-7.5	Cul Length:	
Grd.Nxt.:	17	Stk R X:	17.0	Cul Dip %:	



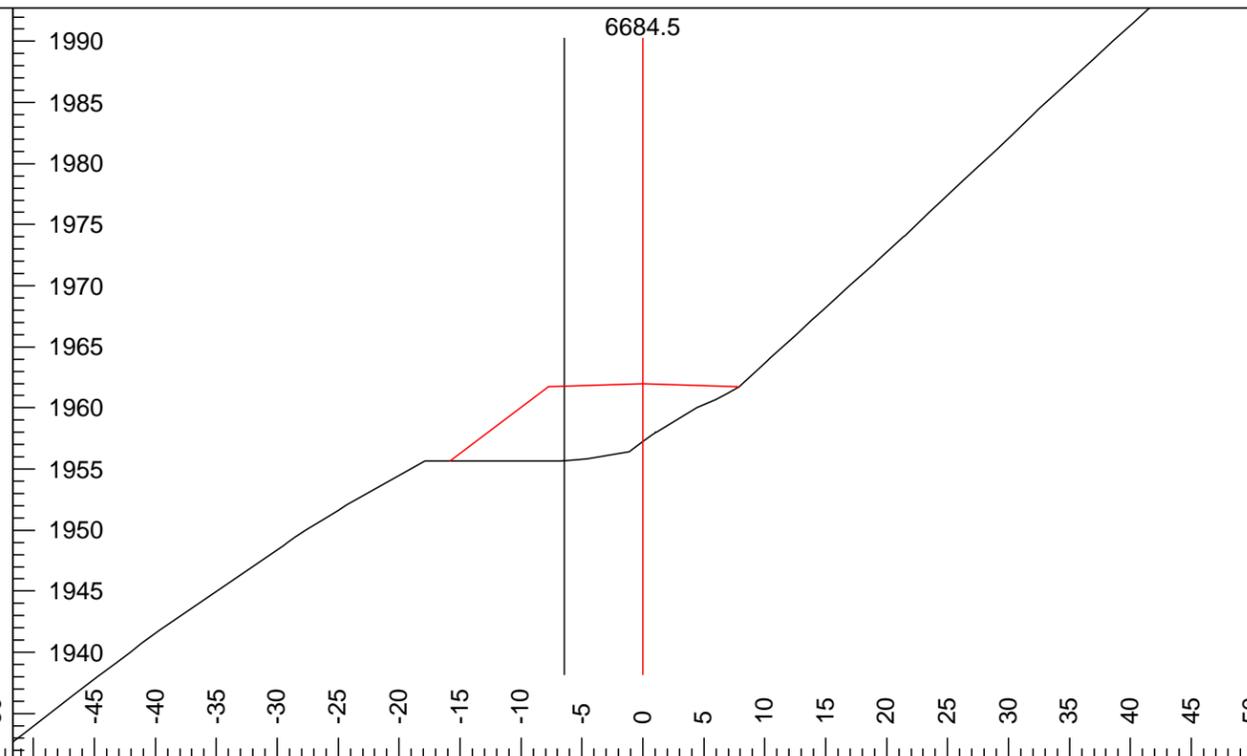
Trav.Cmnt:	71+01;pt128	Grd.Lst:	17	Stk R Y:	15.4
P-Stn:	6556.0	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	4.5	Rd. Wd. R:	9.8	FILL_SLOPE (Right):	75
V.Offset:	4.2	Stk L X:	-14.9	Cul DIA:	
Cut Dp:	-1.2	Stk L Y:	-5.6	Cul Length:	
Grd.Nxt.:	17	Stk R X:	19.6	Cul Dip %:	

# PA-S-1300 Design Specifications

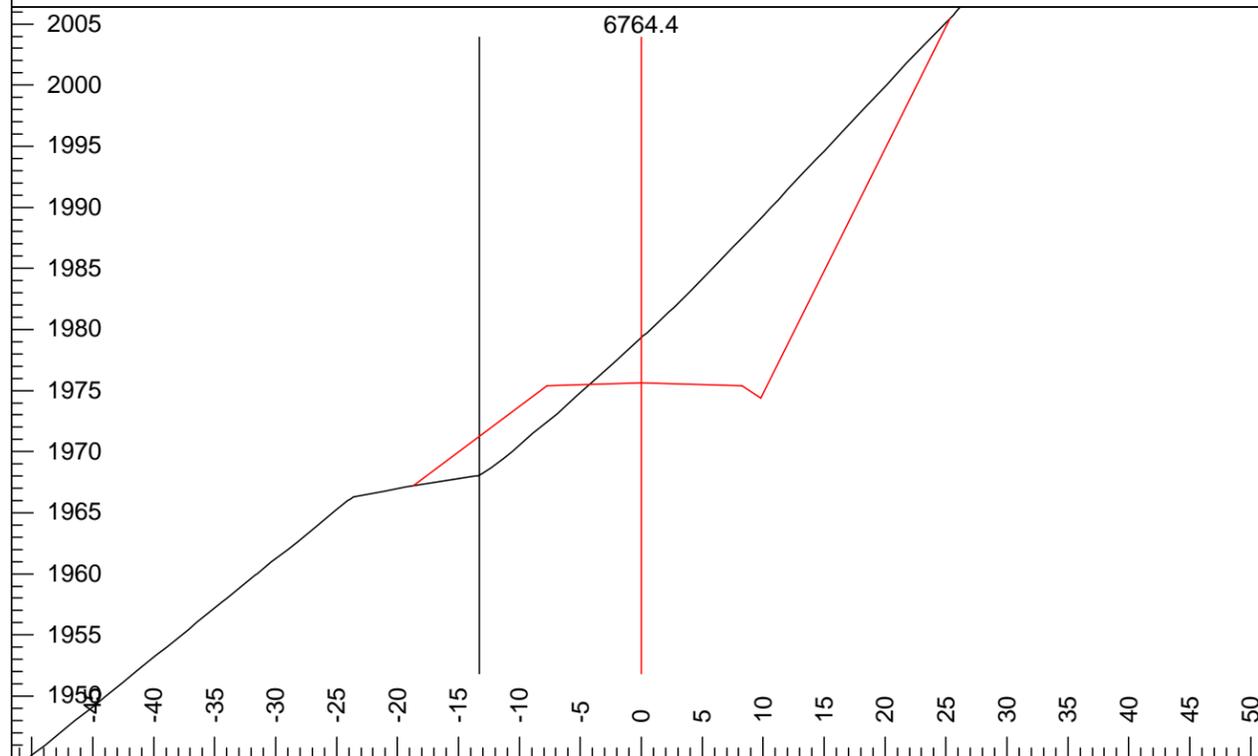
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



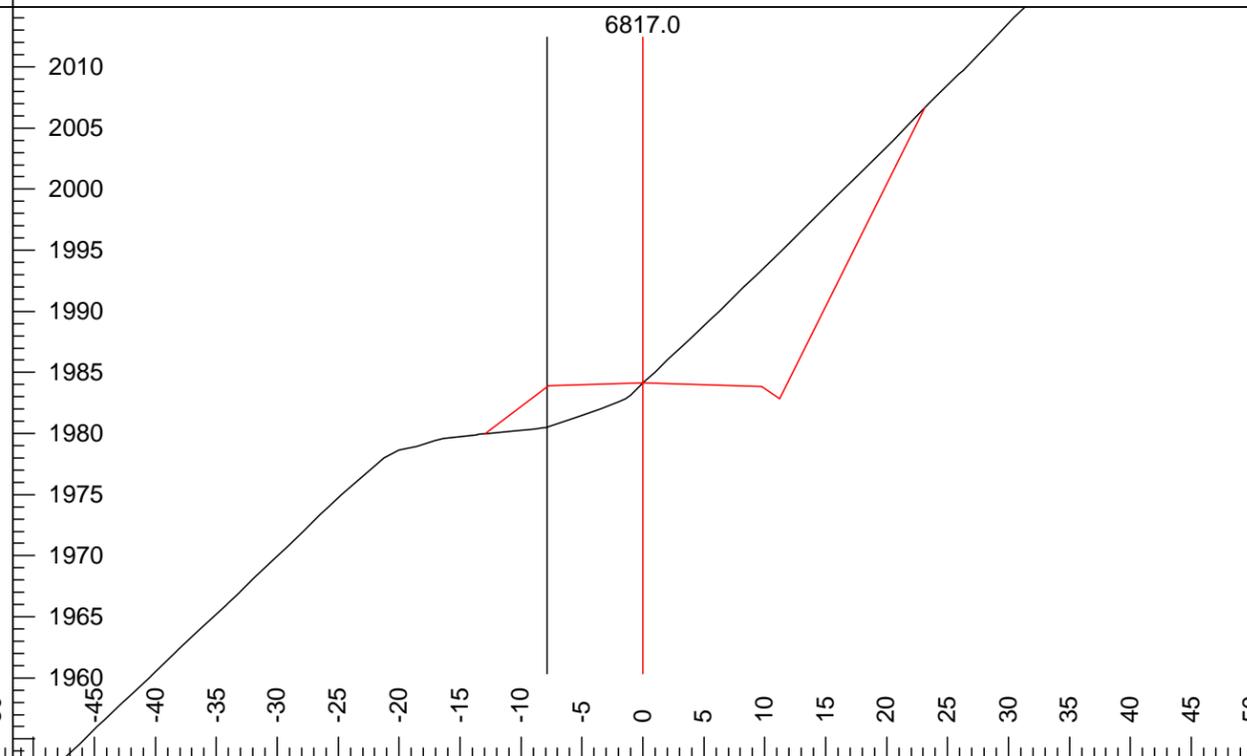
Trav.Cmnt:	72+01;pt129	Grd.Lst:	17	Stk R Y:	15.1
P-Stn:	6615.2	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	2.5	Rd. Wd. R:	7.9	FILL_SLOPE (Right):	75
V.Offset:	4.9	Stk L X:	-16.3	Cul DIA:	
Cut Dp:	-2.4	Stk L Y:	-6.6	Cul Length:	
Grd.Nxt.:	17	Stk R X:	17.5	Cul Dip %:	



Trav.Cmnt:	72+61;pt130	Grd.Lst:	17	Stk R Y:	-0.3
P-Stn:	6684.5	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.0	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	6.6	Stk L X:	-15.8	Cul DIA:	
Cut Dp:	-4.7	Stk L Y:	-6.3	Cul Length:	
Grd.Nxt.:	17	Stk R X:	7.8	Cul Dip %:	



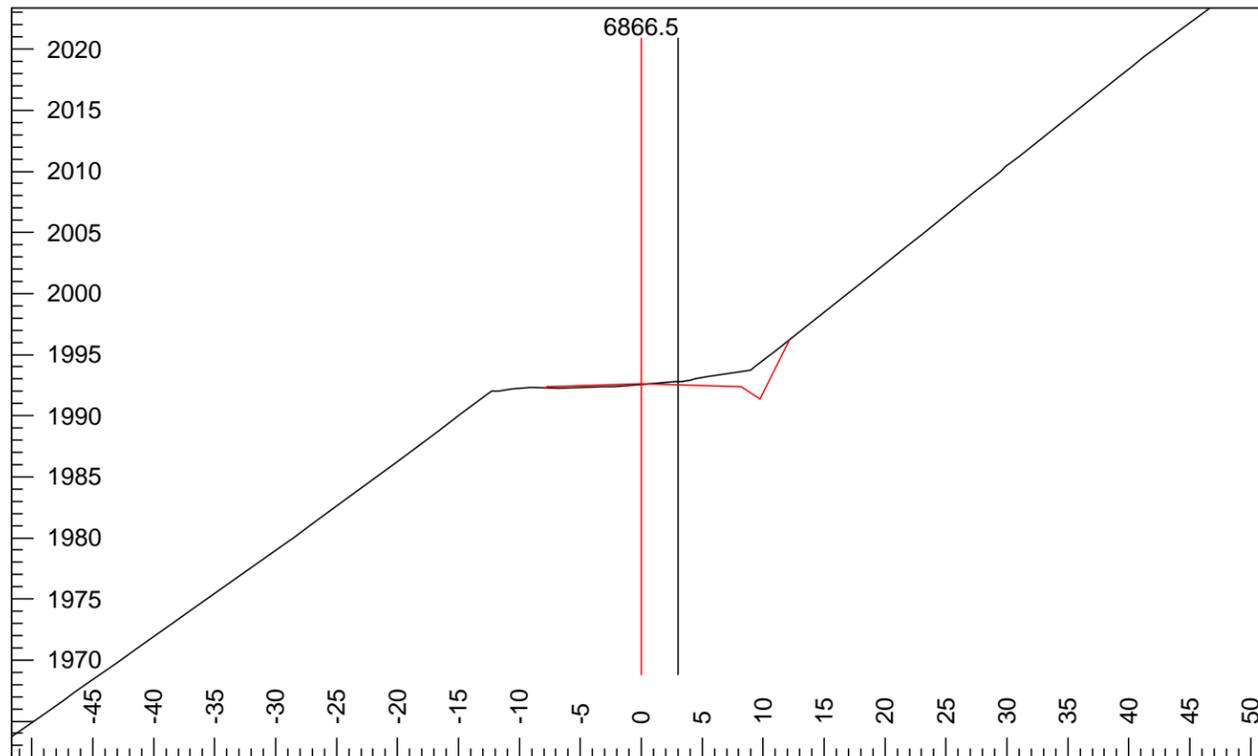
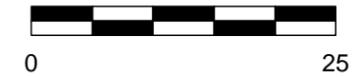
Trav.Cmnt:	73+30;pt131	Grd.Lst:	17	Stk R Y:	29.8
P-Stn:	6764.4	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	13.4	Rd. Wd. R:	8.3	FILL_SLOPE (Right):	75
V.Offset:	7.5	Stk L X:	-18.6	Cul DIA:	
Cut Dp:	3.7	Stk L Y:	-8.4	Cul Length:	
Grd.Nxt.:	17	Stk R X:	25.3	Cul Dip %:	



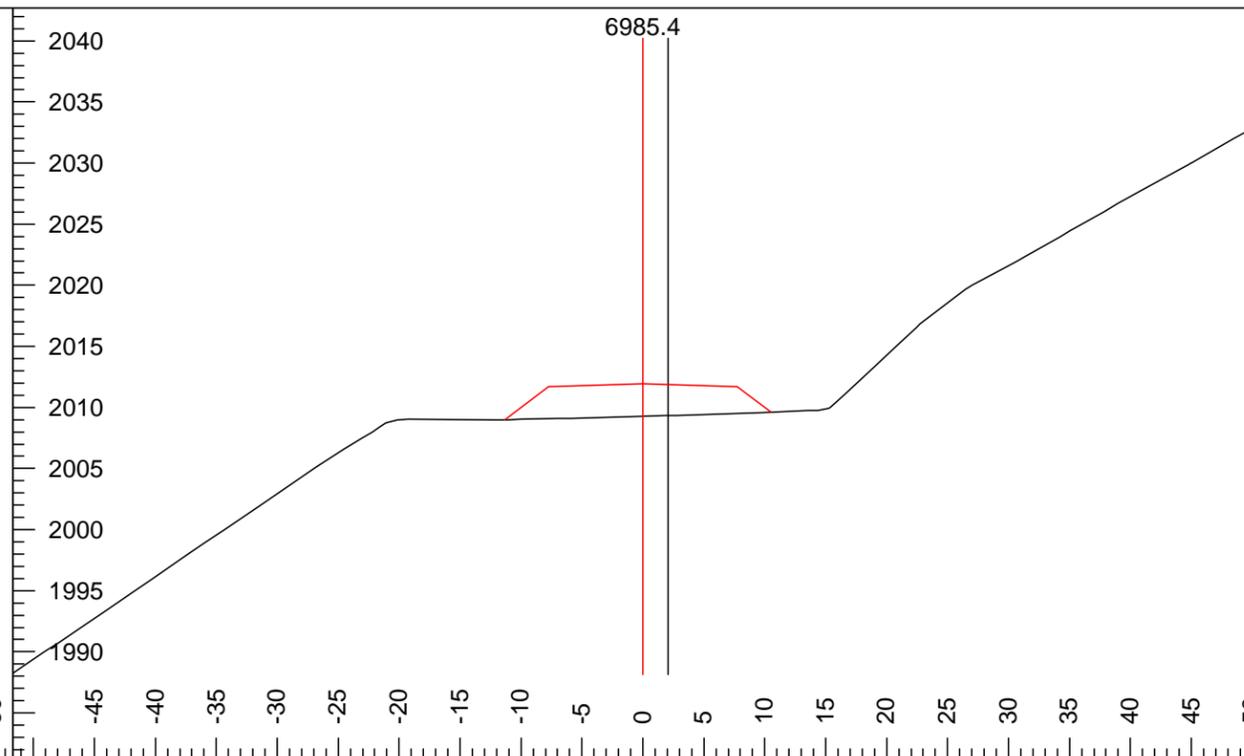
Trav.Cmnt:	74+12;pt132	Grd.Lst:	17	Stk R Y:	22.6
P-Stn:	6817.0	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	8.0	Rd. Wd. R:	9.8	FILL_SLOPE (Right):	75
V.Offset:	3.4	Stk L X:	-13.0	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	-4.2	Cul Length:	
Grd.Nxt.:	17	Stk R X:	23.2	Cul Dip %:	

# PA-S-1300 Design Specifications

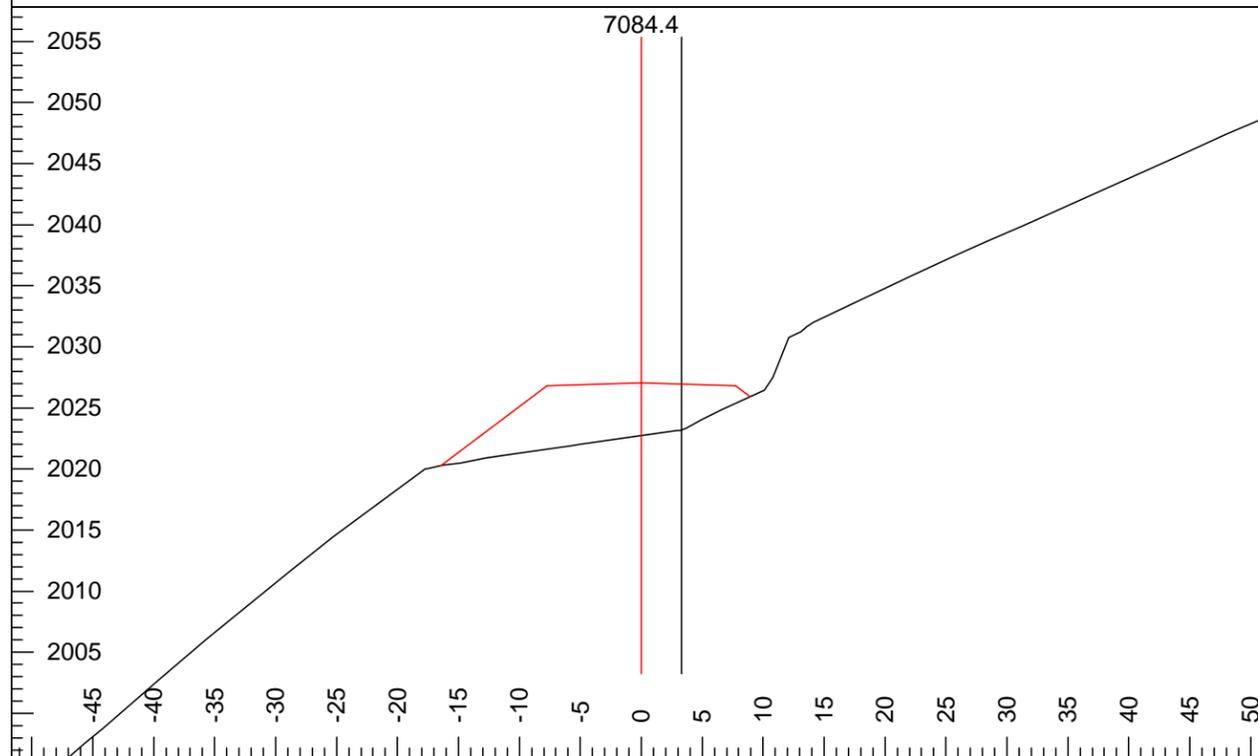
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



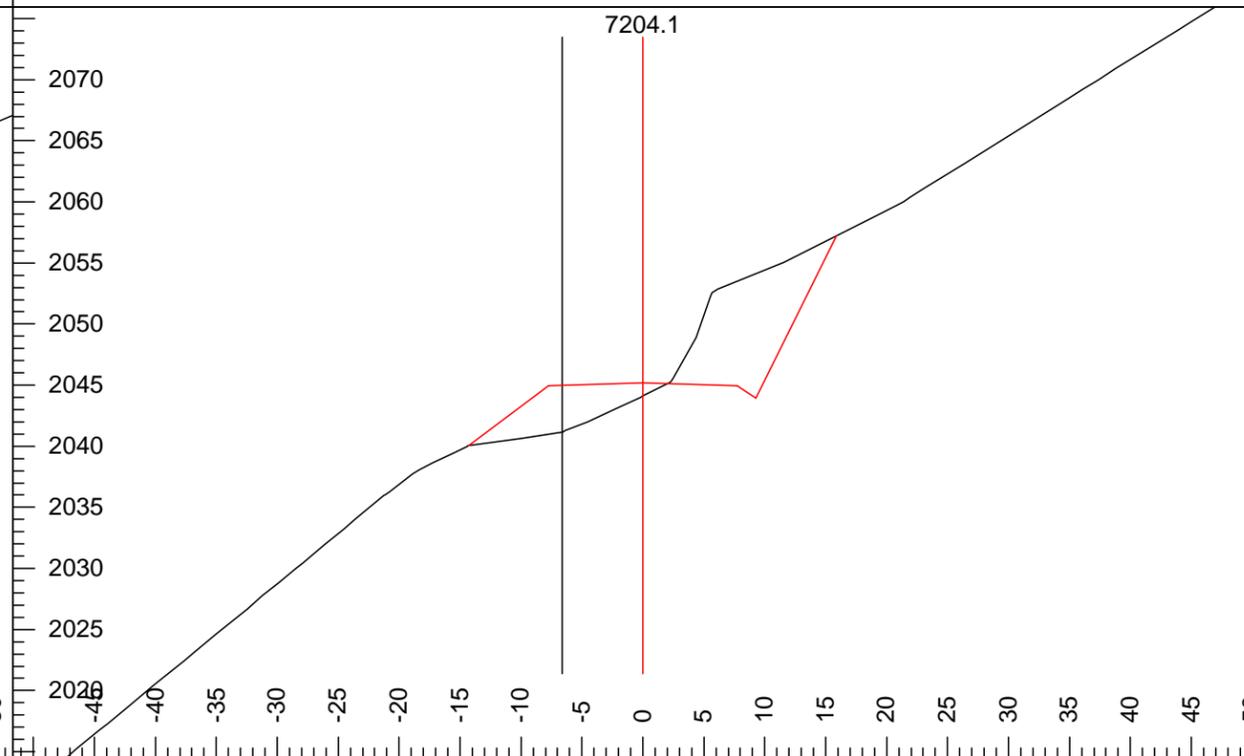
Trav.Cmnt:	74+66;pt133	Grd.Lst:	16	Stk R Y:	3.6
P-Stn:	6866.5	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-3.0	Rd. Wd. R:	8.2	FILL_SLOPE (Right):	75
V.Offset:	-0.1	Stk L X:	-7.9	Cul DIA:	
Cut Dp:	0.0	Stk L Y:	-0.3	Cul Length:	
Grd.Nxt.:	16	Stk R X:	12.1	Cul Dip %:	



Trav.Cmnt:	75+17	Grd.Lst:	16	Stk R Y:	-2.3
P-Stn:	6985.4	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-2.1	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	2.6	Stk L X:	-11.4	Cul DIA:	
Cut Dp:	-2.7	Stk L Y:	-2.9	Cul Length:	
Grd.Nxt.:	16	Stk R X:	10.5	Cul Dip %:	



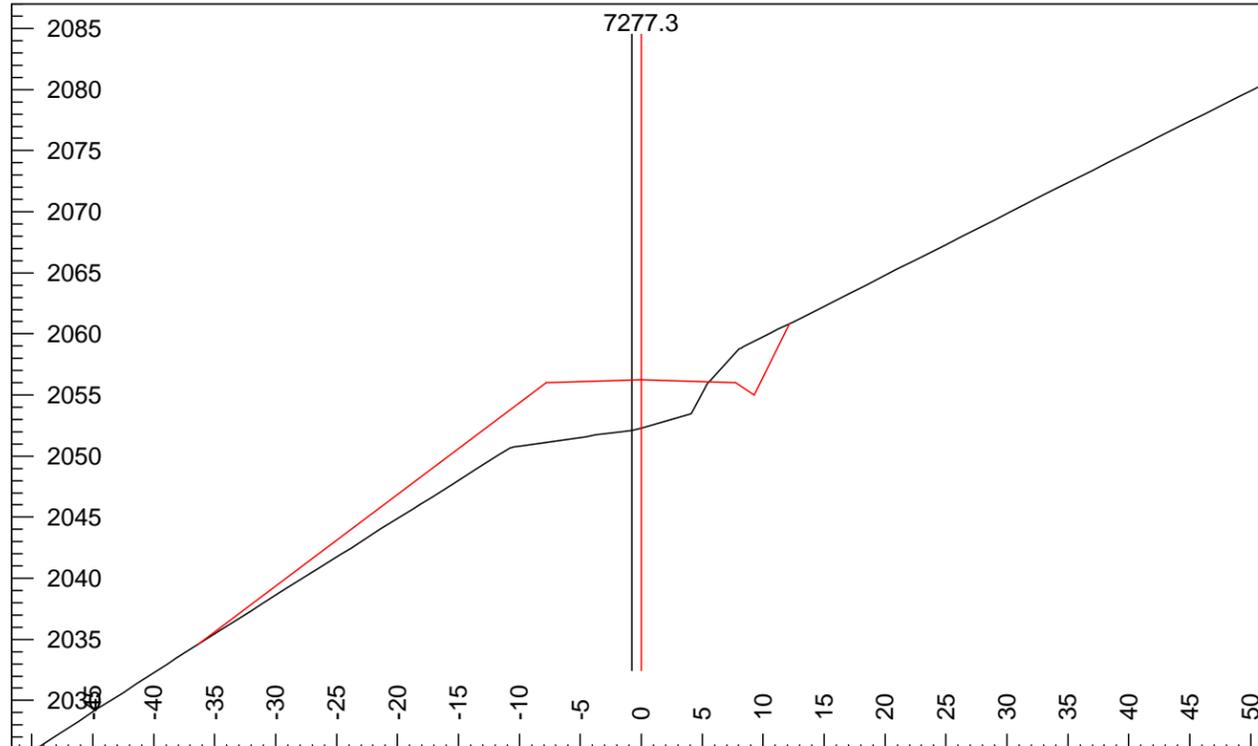
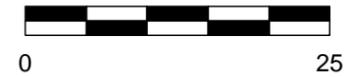
Trav.Cmnt:	76+37	Grd.Lst:	15	Stk R Y:	-1.1
P-Stn:	7084.4	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	-3.3	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	3.9	Stk L X:	-16.5	Cul DIA:	
Cut Dp:	-4.3	Stk L Y:	-6.8	Cul Length:	
Grd.Nxt.:	15	Stk R X:	8.9	Cul Dip %:	



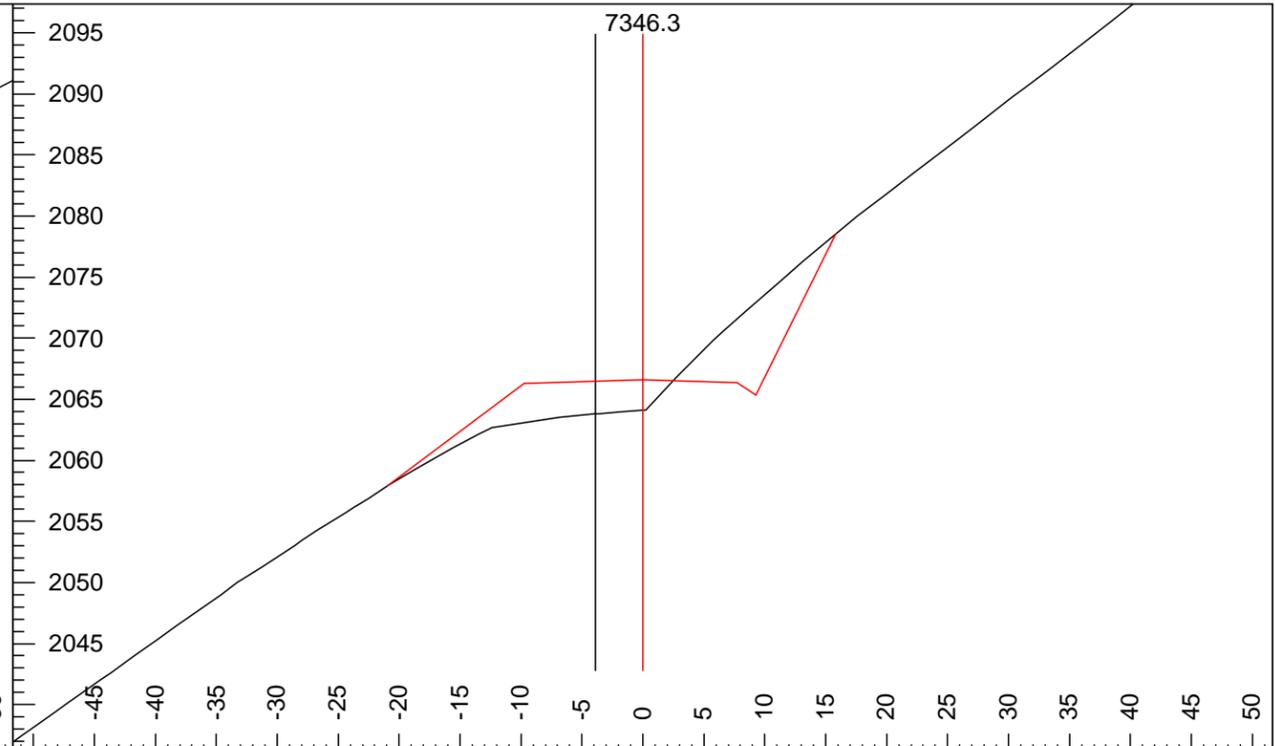
Trav.Cmnt:	77+37	Grd.Lst:	15	Stk R Y:	12.0
P-Stn:	7204.1	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	6.7	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	4.1	Stk L X:	-14.3	Cul DIA:	
Cut Dp:	-1.1	Stk L Y:	-5.1	Cul Length:	
Grd.Nxt.:	15	Stk R X:	15.9	Cul Dip %:	

# PA-S-1300 Design Specifications

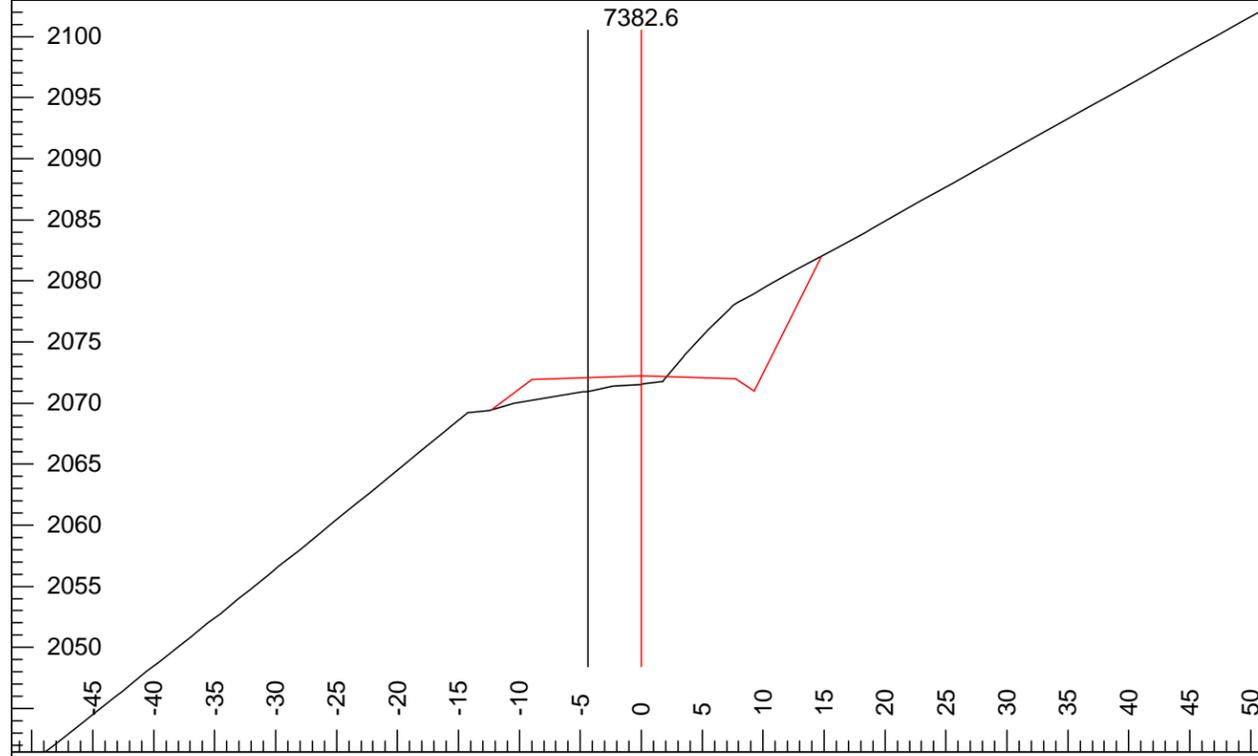
Legend	
	Location(L) line
	Preliminary(P) line
	Road prism
	Existing ground profile
	Culvert



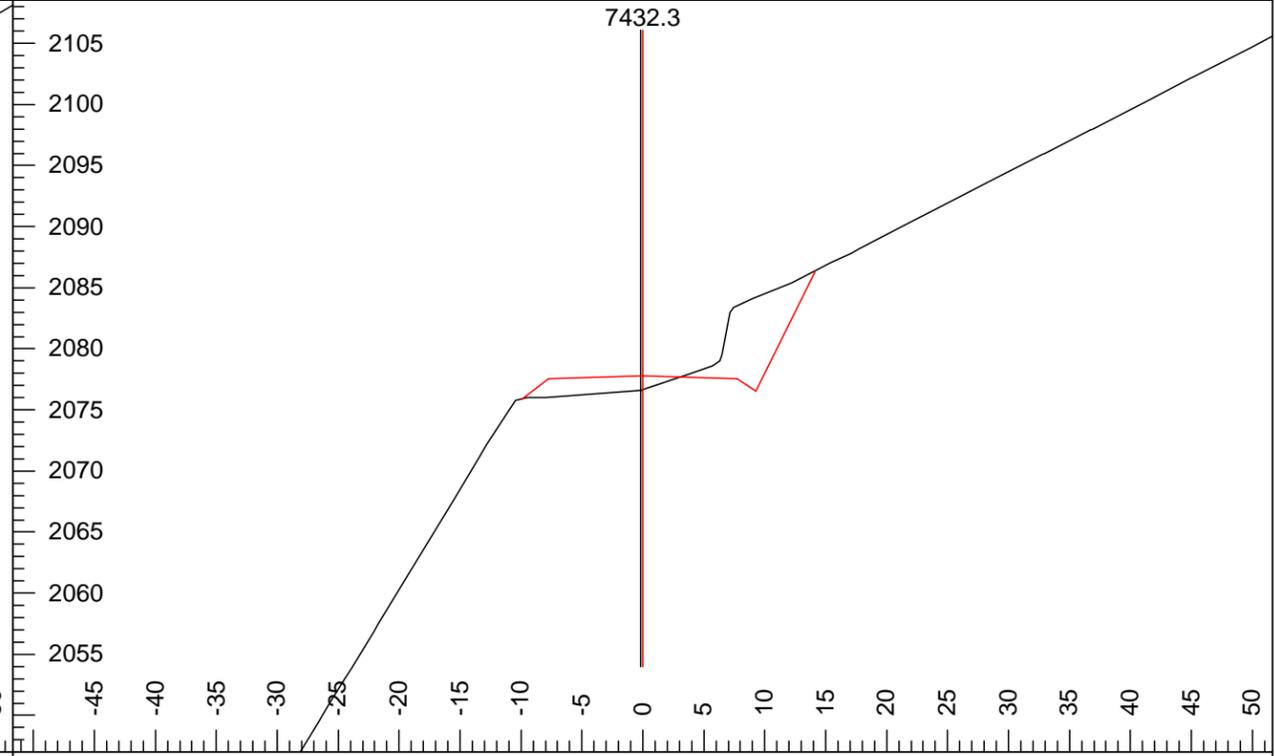
Trav.Cmnt:	78+58	Grd.Lst:	15	Stk R Y:	4.6
P-Stn:	7277.3	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.7	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	4.1	Stk L X:	-36.4	Cul DIA:	
Cut Dp:	-3.9	Stk L Y:	-21.7	Cul Length:	
Grd.Nxt.:	15	Stk R X:	12.2	Cul Dip %:	



Trav.Cmnt:	79+32	Grd.Lst:	15	Stk R Y:	11.9
P-Stn:	7346.3	Rd. Wd. L:	9.8	CUT_SLOPE1 (Right):	200
H. Offset:	3.9	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	2.7	Stk L X:	-21.0	Cul DIA:	
Cut Dp:	-2.5	Stk L Y:	-8.7	Cul Length:	
Grd.Nxt.:	15	Stk R X:	15.8	Cul Dip %:	



Trav.Cmnt:	80+02	Grd.Lst:	15	Stk R Y:	9.8
P-Stn:	7382.6	Rd. Wd. L:	9.0	CUT_SLOPE1 (Right):	200
H. Offset:	4.3	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	1.1	Stk L X:	-12.3	Cul DIA:	
Cut Dp:	-0.7	Stk L Y:	-2.8	Cul Length:	
Grd.Nxt.:	15	Stk R X:	14.8	Cul Dip %:	



Trav.Cmnt:	80+39; pt. 001 (Nick)	Grd.Lst:	11	Stk R Y:	8.6
P-Stn:	7432.3	Rd. Wd. L:	7.8	CUT_SLOPE1 (Right):	200
H. Offset:	0.2	Rd. Wd. R:	7.8	FILL_SLOPE (Right):	75
V.Offset:	1.2	Stk L X:	-9.9	Cul DIA:	
Cut Dp:	-1.1	Stk L Y:	-1.9	Cul Length:	
Grd.Nxt.:	11	Stk R X:	14.2	Cul Dip %:	