Alberni Valley Community Forest Corporation

7500 Airport Road, Port Alberni, BC, V9Y 8Y9, manager@communityforest.ca Phone: 731-7377

Request for Proposal

Standing Timber Bid Proposal July 13, 2012

The Alberni Valley Community Forest Corporation (AVCFC) is the corporate entity entrusted to operate the Alberni Valley Community Forest. The Licence Holder is the City of Port Alberni. The AVCFC is administered by a local Board of Directors and managed by a local Contract Manager.

The AVCFC is seeking bid proposals from B.C. entities interested in purchasing standing timber from the Community Forest Lands. The AVCFC and its Board has a mandate to manage this tenure in a way that is both economically sustainable and provides positive benefits to the community These benefits include water quality, recreation, local employment, local use of forest products and non timber forests products while maintaining a high level of forest stewardship.

The AVCFC is requesting interested parties to present bid proposals to harvest approximately 6,400m^3 of wood by December of 2012. Please see the attached Information Package for specifications.

Your bid proposal should include the following:

1. Expected destination or customers for the logs produced.
2. Access to, or relationships with, competent and experienced BC Safe Certified logging contractors.
3. Bid price per cubic meter.
4. The expertise and benefits your company can provide to ensure the maximum financial benefit to the AVCFC while ensuring its mandates are met.
5. Methods and assurances on how your company could meet the goals of the AVCFC regarding:
   - high levels of local employment
   - maximum utilization of wood within Port Alberni, on Vancouver Island and within B.C.
6. Any other information you wish to provide, i.e. references etc.

The Manager of the AVCFC, Shawn Flynn, R.P.F., will be happy to discuss your bid proposal, answer any questions or provide clarification if required. Shawn can be reached by email at manager@communityforest.ca or by phoning (250)731-7377.

We encourage you to present your bid proposal via email (manager@communityforest.ca) so that the Board of the AVCFC can evaluate it. Please visit the AVCFC website at www.communityforest.ca for more information.

Please submit your bid proposal by July 31, 2012

The AVCFC makes no commitments as a result of this Request for Proposal and may, as a result of submissions received, accept or reject a proposal at their sole discretion. Based on the proposals received, the AVCFC may issue a timber sale agreement for volumes in addition to the amount in this proposal.

Bid Proposal Specifics
Block B9, B10

1. **Harvesting**:
   Approximately 6,400m^3 of second growth Douglas-fir with minor amounts of western hemlock and western red cedar. (See the cruise information.)

   Block B9 is a 13.9ha clearcut with dispersed retention 18sph. Harvest volume is approximately 5470m^3 and ground based harvesting is prescribed.

   Block B10 is a 3.2ha commercial thinning treatment, and ground based harvesting is prescribed. Approximately 150m^3/ha shall be removed. Harvesting from below of the co-dominate and suppressed layers will yield approximately 500m^3.

2. **Road Building:**
   New road. Construction of in-block road AW21-8 0+933 lineal meters and AW21-8G 0+165 lineal meters (approximately 1100 lineal meters) to be paid for by the successful proponent and constructed to industry standards. Any changes to planned road construction must be approved by the AVCFC.

3. **Completion:**
   All harvesting and logging cleanup to be completed by December 15, 2012. Unharvested volume left on site meeting the contracted harvesting specifications will be charged as per the harvesting contract.

4. **Waste and Residue:**
   The successful bidder will complete at their costs, waste and residue obligations including undertaking waste surveys to determine:
   a. HBS waste billing to be submitted to the Ministry of Forests, Lands and Natural Resource Operations, and
   b. Waste payments for contract purposes. If awarded as part of this bid, the contract will allow for:
      - 1% waste and trim at sort at 0$/$m^3$
      - 10m^3/ha waste and residue at blocks (roadside and dispersed) at 0$/$m^3$.
      - Deciduous species not included in above at \$10/m^3 (same as conifer specs).
      - All other waste wood payable at \$/m^3 bid amount.

5. **Tendered Bid:**
   Your bid per cubic meter shall be for all scaled volume, all species, all grades U grade or better, 7 RADS and greater diameter.

Other Info:
- Road Permit is approved.
- Cutting Permit is approved.
- Ministry of Highways Access Permits approved.

Attachments:
See Block B9, B10 Information Package

Alberni Valley Community Forest

CP 002

Final Submission Package Table of Contents

1. Safety Highlights
2. Overview Map
3. Engineering Report
4. Harvest Plan Maps
5. Cruise Compilation – Percent Reduction Applied
6. Road Construction Report
7. Road Construction Map
8. Stream Crossing Table for New Road Construction
9. Best Management Practices for Community Watersheds
10. Wet Weather Shutdown Guidelines
11. Detailed Designs for New Road Construction
12. Site Plans and Maps
    - Block B9
    - Block B10

Safety Highlights

Alberni Valley Community Forest
CP 002
Blocks B9, and B10

Recreation and Public Use
All roads may be used by members of the public to access recreational opportunities. Warning signs must be well placed and visible during operations.

Highway Access
Stop signs must be installed at all public road junctions and care must be taken when accessing public roads especially considering vehicles often exceed the speed limit on Highway 4.

Steep Road Grades
Adverse road grades equal to or greater than 10% exist on some new forest road sections:

- FC 200: 0+045 – 0+254
- AW 21-8: 0+006 – 0+232
- AW 21-8: 0+389 – 0+692
- AW 21-8b: 0+021 – 0+041

Falling
The following falling hazards may exist within all blocks and/or road right of ways. Careful planning and assessment is required before starting work:

- Narrow side hill falling along road right of ways.
- Heavy leaners at boundaries due to proximity to rock bluffs, fall and yard away zones along creeks, retention patches and trees leaning upslope or out of the blocks.
- Uphill falling where the bottom of a block is at or drops below the break.

- Falling where trees may brush standing timber or disturb the canopy along block boundaries, retention areas or leave trees.
- Trees that are potentially unsafe to fall including danger trees, hangups, over mature/decadent trees (including deciduous), blowdown, disturbed or brushed timber, dead or partially decayed stems and widow makers.

Steep Slopes

Block B9 contains areas designated for ground based harvesting where slopes exceed 35%. These are highlighted on harvest plan maps. In many cases where steep areas are adjacent to block boundaries, layout has anticipated that trees can be felled into lead at the base of these slopes. Equipment operators are advised to carefully assess all highlighted areas prior to starting work and to follow all WorkSafe guidelines and/or written safe work practices for harvesting on steep slopes.

Alberni Valley Community Forest K2D

Overview Map

N

1:30,000

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers
Drafted:	July 10, 2012
By:	ECON

Cutting Permit Area
Block, existing
Park
CommFor
Highway
Road, existing
Road, new
Watercourse

Turtle Lake
Great Central Lake Boot Lagoon
Alberni Valley Community Forest
K2D Sproat FDU
Ward Lake
W1479
Blk B10
Blk B9
Taylor Arm Park
Taylor Arm Park
Hwy 4
Sproat Lake

Alberni Valley Community Forest

Engineering Report

CP 002
Blocks B9 and B10

Sproat FDU
February 2012

Prepared by:

Erik Holbek, RPF
and
Len Apedaile, RPF

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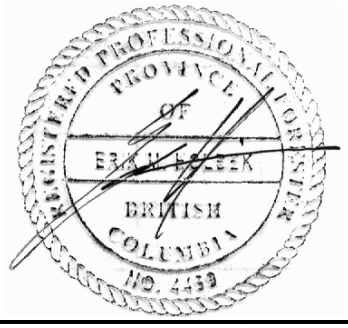


Signed _____

Name (Print) Erik Holbek, RPF

RPF # 4499 Contact phone number (250)-337-5588

Email mail@econ.ca

Introduction

This report has been revised from the original to include only Blocks B9 and B10.

Subsequent to the development of CP001 Econ Consulting was asked to proceed with the development, layout and permitting of a further 10,000+m^3 of timber (CP002) in the area between Friesen Creek and Bookhout Creek in the Alberni Valley Community Forest. The focus areas were based on prior recce information by Econ and discussion with the AVCF Manager to determine access and development priorities. The objectives of the AVCF management plan and the multiple resource values and management strategies contained in the AVCF Forest Stewardship Plan were considered when deciding on all block boundary locations.

Blocks B9 and B10 have a combined net merchantable volume of 6,423 m^3 (includes 902m^3 of in-block road RoW volume). These two blocks are located on lower slopes below road AW21. B9 and B10 were split into two separate units to manage for visual quality objectives.

Block access requires 1092m of new road construction. The AW21 road has recently been reactivated including the replacement of the bridge over Bookhout Creek. The development area is otherwise isolated from the highway by Bookhout and Clutesi Creeks and the east block of Taylor Arm Provincial Park.

Block B10 occurs as a distinct unit within B9 and is prescribed for commercial thinning as a strategy to mitigate the visual impact of block B9 and provide for further stand development within B10.

Block selection and layout targeted stands with merchantable volume and size and was based on utilizing ground based harvest systems and existing roads and trails as much as possible. Visual quality management and the protection of water quality also drove layout and selection. In the end, these blocks are designed to provide a profitable harvest opportunity that maintains water quality, biodiversity, visual quality, recreation, and other forest resource values.

The following report provides more detailed rationale behind the block boundary and road locations and harvesting systems. A new block naming convention has been defined and is implemented in this report.

Location

Attributes	Description
Tenure	K2D, Alberni Valley Community Forest Corporation
General location and access	24 km west of Port Alberni on Highway 4
Mapsheet	92F024, 25, 26, 35, 36
Forest Region/District	Coast/South Island
Timber Supply Area/Block	Strathcona / B Kyuquot

Cutting Permit Area Attributes

Attributes	Description
Blocks	2 blocks: B9 and B10
Average age/height of stand	50-60 yrs / 16-35
Combined Harvest Area	18.2 ha (Including timbered road right-of-way)
General Species Composition	Fd(HwCwBa)
General Biogeoclimatic Information	CWH xm (01,05,06 07)
General terrain (Position, Slope)	Mid and lower slopes, south to southwest aspect.
Forest Health	Phellinus root rot. See site plans for details.
Windthrow	Low to moderate risk.
Estimated CP Harvest Volume	**6,423 m^3 (Including Road RoW Volume)**

Block Descriptions and Engineering Rationale

The following is an outline of the current status and final engineering rationale by block.

Bookhout Creek Area

The area accessed from the highway via AW21 is referred to as the Bookhout Creek area and all blocks developed in this area will carry a B prefix. Primary access is via the AW21, AW21-8 and AW21-8b roads.

The AW21 road is in good condition having been reactivated for CP001 up to station 2+449. Beyond that it will require the replacement of the (~12m) bridge over Bookhout Creek and the replacement of a failed log box culvert at 2+711, installation of additional culverts and minor ditch cleaning for re-activation.

Block B9

	Recommendation
Gross Block Area	13.9 ha
Proposed Silviculture System	Clearcut with Reserves (Dispersed retention)
Proposed Harvest Method	Ground based – skidder and/or hoe-chuck.
Estimated Harvest Volume	**5,019 m^3 (Excluding Road RoW Volume)**

Block B9 is accessed by AW21 and the in block spur AW21-8 and AW21-8b. AW21 requires replacement of the bridge over Bookhout Creek at 2+500 (refer to Onsite design March 28/2012). The POC of spur AW21-8 begins at the edge of the RMZ of stream 9-3 and proceeds adverse at 10-12% for 725m, including a switchback, to the toe of the slope where it connects to an old access grade. The remaining 208 m and spur AW21-8b are located on old road grades. Spur AW21-8b is required to provide a landing on the east side of stream 9-2 and is extended beyond FC 8 so that the landing is not within the RMA of stream 9-2.

A remnant section of the old access grade continues northeast from FC S2 to FC S1 and beyond eventually crossing Stream 9-3 between FC 2 & 3. The portion of this grade between FC S1 & FC S2 is suitable for temporary access or skidding and was used as a split line below Block B10 for this reason.

Future access to timber to the east of block B9 is possible by extending a short spur across stream 9-1 from AW21-8 at the switchback (~ 0+439). This area was not included in this development due to both steeper slopes and smaller average diameter and stand heights. An area of timber below AW21 and east of stream 9-3 was also not included due to more open (lower density & volume) stands that are still developing. The same applies to stands located above AW-21.

Block B9 encompasses relatively uniform second growth stands that were previously logged in the 1950's. Forest cover is characterized by Douglas-fir (Fd) stands with minor components of Hw and Cw. Ba, Ac, Dr and Mb are found primarily in the flats and along riparian or wetland features in the lower half of the block.

The stands are young, thrifty and although merchantable are still developing. Average merchantable stand volume is 390m^3/ha (range 321-799m3/ha) and average stand height and diameter are 27.6m and 28.5 cm respectively. In general the mid slopes in the upper half of the block tend to be drier with areas of smaller trees (dbh & height) while well drained to fresh areas in the lower flats support larger trees. Areas of the lower flats contain impeded or perched water drainage that affects rooting depth and has resulted in pockets of windthrow or expressions of wetter ecosystem associations including unclassified wetland features.

The upper half of the block is located on 15-30% side slopes while the lower half is located on flat and rolling toe slopes with steep canyon breaks down to both Bookhout and Clutesi Creeks.

Short pitches over 35% exist within this block and are shown on the harvesting maps

Block boundaries were established using existing features.

The north boundary (FC 16 – FC 1) has been located along the existing road (AW21).

The east and west boundaries are defined by respective riparian features. FC1-6 is located alongside and/or within the RMZ of stream 9-3 and Bookhout Creek. FC 11-16 is located along and/or within the RMZ of stream 9-1.

The south boundary, FC 6-10, has been established 10 m away from the boundary of Taylor Arm Provincial Park. The Park boundary was located in the field by establishing GPS reference points at 50 m intervals along the map projection of the Park Boundary and is identified with blue ribbon. Note that the location of the Park Boundary using GPS does not constitute a legal survey. The 10m buffer is established both as a physical buffer and to address any error or inconsistencies in the location to the Park boundary. This manner of establishing the boundary and its location in the field should be agreed upon with BC Parks prior to the start of harvest activities (i.e. falling).

The block includes a clearcut treatment unit and clearcut with dispersed retention treatment. Dispersed retention of 18 mature Douglas-fir per hectare is prescribed in SU-A in the upper sections of the block to mitigate visual impact of this block (from AW21 looking down as well as from Sproat Lake) and to provide vertical and horizontal structural diversity, wildlife tree and coarse woody debris recruitment. The objective was also to soften the linear upper boundary as defined by AW-21. Block B10 was removed from B9 as a stand-alone commercial thinning treatment unit to further break up the visual impact of the block.

No retention is planned in the flatter lower half of the block adjacent to the Park boundary and Bookhout and Clutesi Creeks. This area is not visible from any significant viewpoints and in-block windthrow hazard is higher in areas with shallow water tables. Some retention of deciduous and non-merchantable trees within stream RMA's is prescribed.

Wildlife Tree Retention area requirements are met by designating RMZ and RRZ portions along Friesen and Bookhout Creeks, Stream 9-3, and the buffer along the Park Boundary as wildlife tree retention areas. These areas are representative of the stands within the block and the Park itself acts as a permanent, large retention area. The section of WTRA along Bookhout Creek further links up with the WTRA on the east side of the creek designated in association with blocks B8 & B7.

Block B10

	Recommendation
Gross Block Area	3.2 ha
Proposed Silviculture System	Commercial Thinning
Proposed Harvest Method	Ground based – skidder and/or hoe-chuck.
Estimated Harvest Volume	**502 m^3 (Excluding Road RoW Volume)**

Block B10 is located within block B9 and is accessed via AW21-8, which forms its north, south, and west boundaries. The east boundary is a split line running down slope from AW21-8 that connects with FC S1. The boundary between FC S1 & S2 is located along an old road grade that may be used for temporary access or skidding.

Block B10 was established as a separate treatment unit within block B9 as a strategy to reduce visual impact of this block complex from Sproat Lake to meet the established visual quality objective of partial retention.

The age and stand structure of the stand and the site quality (SI 24-27) is suitable (if marginal) for commercial thinning from below, with enough merchantable volume in the co-dominant and suppressed layers to make a viable commercial thinning opportunity, and will produce approximately 150m^3 per hectare while retaining 60% of the volume and creating a stand profile that should benefit from the increased light, moisture and nutrients available after thinning. Moisture is considered to be the limiting factor on the well drained mid slopes upon which these stands exist.

The thinning prescription may be implemented as a strip commercial thinning or as dispersed removal. The specific harvest method will be determined in consultation with the contractor and the AVCF manager.

Strip CT would consist of 100% removal in narrow corridors with some tree removal between. Corridor spacing and inter-corridor removal is dependant on the minimum operable width based on equipment selection. 5m corridors at 12m spacing with 28% removal between corridors will achieve the prescribed retention levels.

Dispersed removal would consist of evenly dispersed removal/retention throughout the block. Basal area retention and inter-tree distance specifications would be used to assure overall retention targets are met.

Wildlife tree retention requirements associated with block B10 are designated within the RMZ along stream 9-3 adjacent to FC 1 & FC2 and are representative of the timber within the block.

Cruising

Blocks were cruised to Ministry of Forests Standards with full measure and count plots established on a 100m x 100m cruise grid.

This methodology resulted in an average of 1.1 plots per hectare and an average of 5.0 trees per plot.

Blocks B9 and B10 were compiled as one timber type.

Full volume compilation stand and stock tables were used to model commercial thinning in Block B10. These retention specifications were then submitted to the compiler and the cruise was recompiled. The "% Reduction Applied" compilation accounts for the retained volume in Block B10 and the dispersed retention in Blocks F1, F2 and B9.

Cruise plan maps and cards are not required for appraisal purposes but are retained on file and are available upon request.

Appendices

Appendix 1.

Block B9 and B10 Harvest Plan Maps

Block	Harvest Method	Net Area (ha)	Retention	Net Volume (m^3)	Timbermark
B9	SCR	3.70	18 stems/ha	5019	K2D-002
	SC	9.41	N/A		
B10	SS	2.87	375 stems/ha*	502	K2D-002
RoW	SC	2.20	N/A	902	K2D-R01
Total		**18.18**		**6423**	

SS = Ground Skidding Select
SC = Ground Skidding Clearcut
SCR = Ground Skidding Clearcut Retention
CC = Cable Clearcut
*See detailed commercial thinning prescription.

NOTIFICATION OF HARVEST COMMENCEMENT REQUIRED
RAINFALL SHUTDOWN THRESHOLD IS 36mm IN 24 HOURS
READ AND UNDERSTAND THE BLOCK SITE PLANS.
STOP WORK AND CONTACT THE AVCF MANAGER IF ANY PART OF THE PLAN IS UNCLEAR

NAD83 BLOCK	BC ALBERS Easting	BC ALBERS Northing	GEOGRAPHIC Latitude	GEOGRAPHIC Longitude
F1	1068679	474222	125°3'22.6"	49°16'46.8"
F2	1068191	474500	125°3'48.9"	49°16'58.0"
F3	1068047	474632	125°3'55.9"	49°17'2.4"
B9	1069331	474259	125°2'52.7"	49°16'49.8"
B10	1069312	474347	125°2'53.5"	49°16'52.6"

Known Hazards for Ground Based Equipment

Area of Steep Slopes
Isolated Location of Steep Slopes

Contains slopes over 35%. Please refer to OHS Regulation Section 26.16 for equipment slope limitations and acceptable safe work practices.

*Note: Harvest area may contain other non-identified areas of steep slopes.

Harvesting Feature
- TAUP
- Block
- SC Ground Skidding Clear Cut
- SCR Ground Skidding Clear Cut Retention
- SS Ground Skidding Select
- CC Cable Clear Cut
- Yarding Direction
- Slope > 35% in Ground Skidding Areas

Treatment
- Windthrow Management Area
- Root Rot Management Area

Stream Classification
- S1-S4 Stream
- S5-S6 Stream
- NCD
- Stream, Non Classified

Other Feature
- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Non Productive, Rock
- Non Productive, Wetland
- Park
- Community Forest

MAP 1 of 1

Alberni Valley Community Forest K2D

Sproat FDU

Harvesting Plan Map

CP-002
Block 9 & 10

N

1:5,000

0 50 100 Meters

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers
TSA:	38 Arrowsmith
TSB:	A
FIZ:	B
P.S.Y.U.:	471
Inv. Reg.:	5
Comp.:	4B (Sproat), 4C (Taylor)
Drafted:	July 10, 2012
By:	econ

- Falling Corner
- Permanent Landing
- Temporary Landing
- Station
- Culvert
- Bridge
- Bridge, out
- Quarry
- Designated Crossing
- Spoil Site
- Swamp
- Wildlife Tree

Roads & Trails
- Highway / FSR
- Road, existing
- Road, engineered
- Road, to be re-activated
- Trail, temp
- Old Grade
- Hiking Trail
- Rock Bluff
- Hydro Line

Attention!

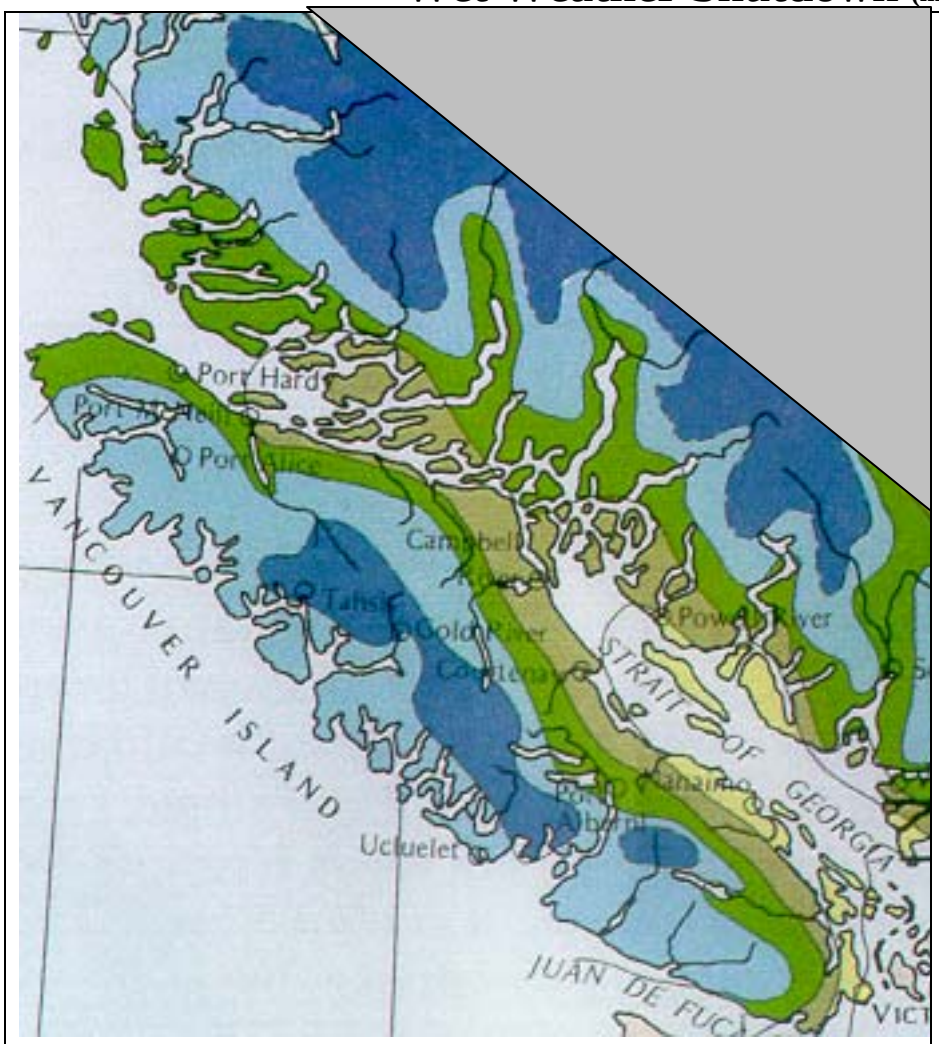
Refer to Back for Detailed Operating and Safety Instructions

Appendix 2.

Wet Weather Shutdown Guidelines

Wet Weather Shutdown (modified Nov 7, 2006)

BCTS
BC Timber Sales
Strait of Georgia



Zone	Mean Annual Precip (mm)	Shutdown Threshold (mm/24 hours)
1	750	20
2	1500	40
3	2500	60
4	3000	75
5	3500	90

TABLE B Local Soil Type	Multiplier Factor
Very Erodible (e.g. lacustrine)	0.4
Erodible (e.g. organics, sands)	0.6
Least Erodible (e.g. colluvium, till)	0.8
Bedrock	1.0

TABLE C Slope Modifier	Multiplier Factor
0% - 57	1.0
57% - 70%	0.9
71% - 88%	0.8
89% +	0.7

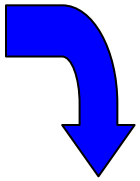
Instructions:

1) Use base shutdown threshold from Table A
2) Multiply by Soil Type Modifier from Table B
3) Multiply result by Slope Modifier from Table C

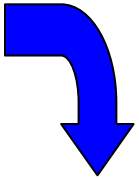
Result is rainfall shutdown threshold in millimeters in a 24 hour period

Example

Zone¤	Table·A:·Mean·Annual·¤	Shutdown· Threshold¤
°¤	Precipitation·(mm)¤	(mm/24·hours)¤
1¤	750¤	20¤
2¤	1500¤	40¤
3¤	2500¤	60¤
4¤	3000¤	75¤
5¤	3500¤	90¤



TABLE·B·Local·Soil·Type¤	Multiplier¤
°¤	Factor¤
Very·Erodible·(e.g.· lacustrine)¤	0.4¤
Erodible·(e.g.·organics,· sands)¤	0.6¤
Least·Erodible·(e.g.· colluvium,·till)¤	0.8¤
Bedrock¤	1.0¤



TABLE·C·Slope·Modifier¤	Multiplier¤
°※	Factor¤
0%·-·57¤	1.0¤
·57%·-·70%¤	0.9¤
71%·-·88%¤	0.8¤
89%·+¤	0.7¤

For Dark Blue Zone 5; 24 Hr Shutdown Criteria = 90 x 0.8 x 0.8 = 58 mm

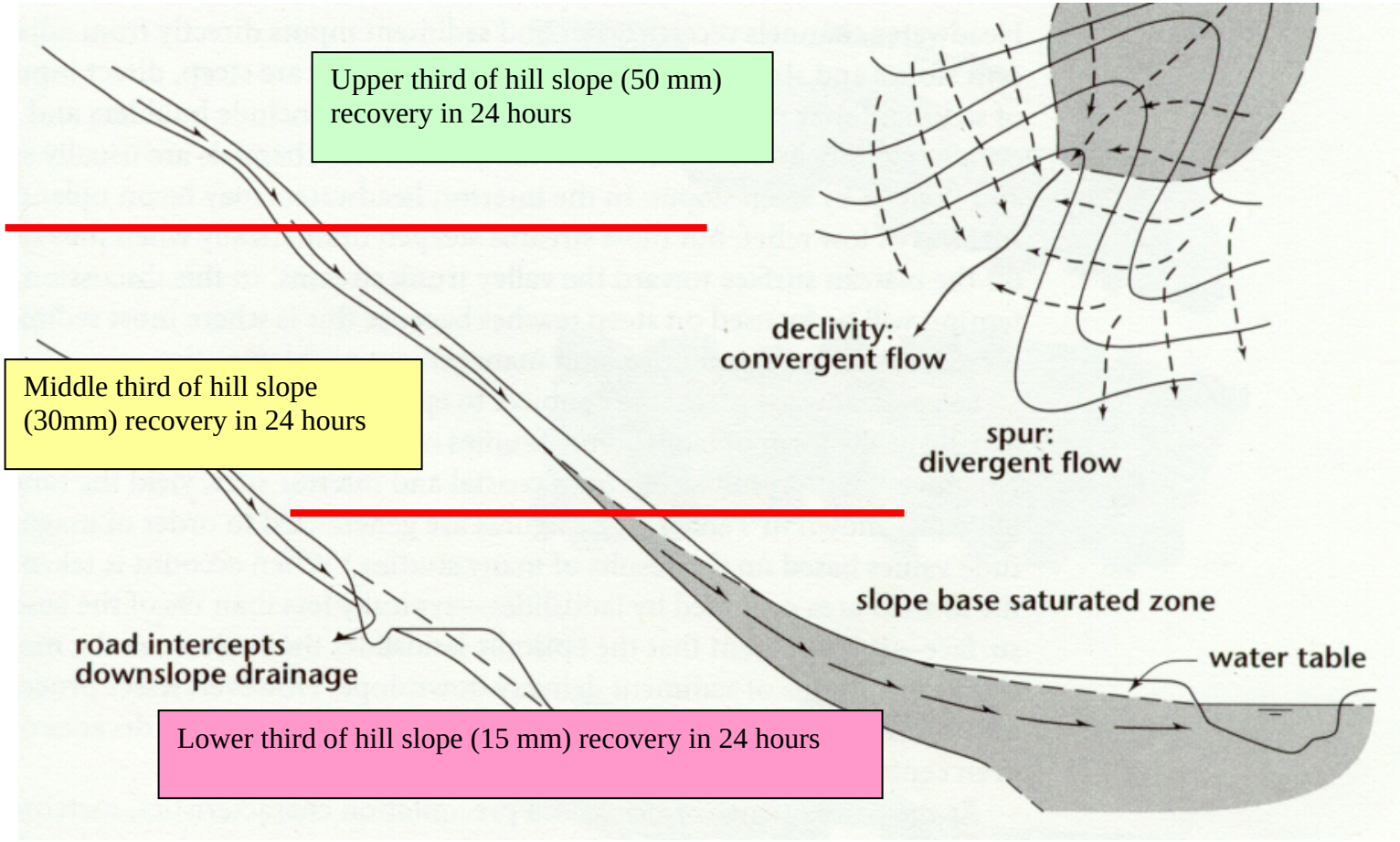
Return to Work Estimation Guide

Water balance returns to normal after a heavy rainfall period subject to a number of variables

- -slope position
- -slope gradient
- -soil type and depth (or proximity to bedrock)

Where a road is located above the worksite, interception by ditch lines may have the effect of increasing the recovery rate for lower slope positions

Using the following sketch as a guide, identify the slope position of the planned activity (upper, middle and lower thirds)
In an **average** situation precipitation input is reduced in a 24 hour period by the indicated values based on slope position



Appendix 3.

BCTS Ground Based Harvesting Guidelines

BCTS
BC Timber Sales
Strait of Georgia
EMS ISO 14001 Registered

SUSTAINABLE FORESTRY INITIATIVE

BCTS Strait of Georgia

GROUND BASED HARVESTING GUIDELINES

In the event of any discrepancy between these guidelines and contractual, legal and regulatory requirements related to forest practices or safety, the latter shall prevail.

This document provides guidelines for best management practices to be considered during ground based harvesting activities. All statements are recommendations only.

SHUTDOWN STANDARDS

STOP WORK and contact your Supervisor and BCTS if any part of the plan is unclear, or if you believe the work cannot be completed safely or may cause negative environmental impacts.

Ground based operations should cease if the Wet Weather Shutdown thresholds are met

OR

BEFORE the following conditions develop:

- water is transporting visible siltation or sediment towards streams, Fisheries Sensitive Features (FSFs), lakes or Marine Sensitive Features (MSFs); or
- excessive rutting of 15cm or greater depth is occurring.

ADVISE YOUR SUPERVISOR AND BC TIMBER SALES WHEN SHUTDOWN OCCURS

SAFETY FIRST

1. **As per Section 26.2 of the Occupational Health & Safety (OH&S) Regulations, forestry operations must be planned and conducted in a manner that is safe for all workers.**
2. **Daily ground based harvesting operations must be planned to ensure that hazards specific to ground based equipment from steep slopes are communicated and a written plan to avoid such hazards is in place.**
3. **Slope Limitations for logging equipment, contained in Section 26.16 of the OH&S Regulations, must be adhered to during all ground based operations.**

KNOW YOUR PLAN

1. All ground-based operating areas must be authorized under a Silviculture Prescription, Site Plan and or Silviculture Prescription exemption.
2. If the ground based machine operator considers the weather and/or site conditions are such that work cannot be completed in compliance with these guidelines, operations must stop.
3. The person conducting ground based operations must have an up-to-date harvesting map, complete with stream classifications and authorized crossings.
4. The person conducting ground based operations must have had a recent, thorough pre-work and must understand the plan and potential environmental impacts of their work.
5. Stop work in the immediate area when a stream or other feature not identified on the map is encountered. Notify your supervisor and BC Timber Sales.

Created July 21, 2009
Last Revision: June 8, 2010

GROUND-BASED OPERATIONS

1. If a stream is **not visible** to a machine operator, the operator must ask their supervisor to flag the stream.
2. Do not remove or disturb stable natural material in a stream or embedded in a stream bank, or a root system that contributes to stream bank stability and fish habitat, during harvesting or stream cleaning.
3. Ground based operating areas should be confined to benches or flat terrain to avoid sidecutting and sidecasting. Sections of discontinuous sidecutting may on occasion be used to join benches.
4. Excessive rutting (ie. 15cm deep, 2 meters long and 30cm wide or greater) is not acceptable.
5. Brush matting and/or puncheon should be used when working on high sensitivity ground (wet and/or fine textured soil). Brush matted/punched trails should be left plantable.
6. Ground based operations should not occur when soils are saturated and most susceptible to compaction and rutting (ie during and after heavy rain or snow melt)
7. Stumping, cutting, or filling should be avoided to mitigate site disturbance on or beside the trail. Trail cuts should not exceed 30 cm and should be re-sloped after use. Mitigating site impact has a higher priority than a steady alignment and grade. Reduce the number of passes on trails (1-3 passes) by planning refueling, maintenance and loading operations.
8. Natural drainages should be maintained with cross drains where:
   - channelization down a length of trail could occur in heavy rains,
   - water accumulates in a low spot.
9. A person engaging in ground-based operations:
   - must not deposit soil or slash in a stream, wetland, lake or fisheries-sensitive zone, or in a position where the soil or slash can be transported by water into any of these watercourses,
   - must maintain natural surface drainage patterns,
   - must mitigate subsurface seepage water being intercepted by trails and diverted into areas that would not naturally have received the water.

STREAMS AND STREAM CROSSINGS

1. Maintaining water quality is the primary concern.
2. Do not fuel or service machinery within a Riparian Management Area of a stream or wetland, or within 30m of a lakeshore.
3. **No ground based machinery is permitted within 5 metres (16 feet) of any streambank, floodplain or wetland unless there is written permission or an authorized stream crossing.**
4. **Do not construct a temporary stream crossing unless it is approved on a harvesting or road construction plan map.**
5. Locate, construct and use a temporary stream crossing in a manner that:
   - protects the stream channel and stream bank, immediately above and below the stream crossing, and mitigates disturbance to the stream channel and stream bank at the crossing;
   - mitigates damage to understory vegetation;
   - does not disturb stable natural material that is in a stream or embedded in a stream bank; and
   - maintains natural drainage patterns and mitigates surface soil erosion, soil displacement, and sedimentation.
6. Any material used to construct a temporary stream crossing must be removed upon completion of harvesting.

TRAIL REHABILITATION

A PERSON REHABILITATING A TRAIL MUST DO ALL OF THE FOLLOWING:

- remove brush mats or puncheon,
- fluff up and decompact the trail,
- re-establish natural surface drainage,
- place some woody debris randomly over exposed mineral soil, leaving the trail so that it can be revegetated. A mix of organic material and mineral soil is preferred.

Created July 21, 2009
Last Revision: June 8, 2010

For more information contact:

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Block	Harvest Method	Net Area (ha)	Retention	Net Volume (m^3)	Timbermark
B9	SCR	3.70	18 stems/ha	5019	K2D-002
	SC	9.41	N/A		
B10	SS	2.87	375 stems/ha*	502	K2D-002
RoW	SC	2.20	N/A	902	K2D-R01
Total		**18.18**		**6423**	

SS = Ground Skidding Select
SC = Ground Skidding Clearcut
SCR = Ground Skidding Clearcut Retention
CC = Cable Clearcut
*See detailed commercial thinning prescription.

NOTIFICATION OF HARVEST COMMENCEMENT REQUIRED
RAINFALL SHUTDOWN THRESHOLD IS 36mm IN 24 HOURS
READ AND UNDERSTAND THE BLOCK SITE PLANS.
STOP WORK AND CONTACT THE AVCF MANAGER IF ANY PART OF THE PLAN IS UNCLEAR

NAD83 BLOCK	BC ALBERS Easting	BC ALBERS Northing	GEOGRAPHIC Latitude	GEOGRAPHIC Longitude
F1	1068679	474222	125°3'22.6"	49°16'46.8"
F2	1068191	474500	125°3'48.9"	49°16'58.0"
F3	1068047	474632	125°3'55.9"	49°17'2.4"
B9	1069331	474259	125°2'52.7"	49°16'49.8"
B10	1069312	474347	125°2'53.5"	49°16'52.6"

Known Hazards for Ground Based Equipment

Area of Steep Slopes
Isolated Location of Steep Slopes

Contains slopes over 35%. Please refer to OHS Regulation Section 26.16 for equipment slope limitations and acceptable safe work practices.

*Note: Harvest area may contain other non-identified areas of steep slopes.

Harvesting Feature
- TAUP
- Block
- SC Ground Skidding Clear Cut
- SCR Ground Skidding Clear Cut Retention
- SS Ground Skidding Select
- CC Cable Clear Cut
- Yarding Direction
- Slope > 35% in Ground Skidding Areas

Treatment
- Windthrow Management Area
- Root Rot Management Area

Stream Classification
- S1-S4 Stream
- S5-S6 Stream
- NCD
- Stream, Non Classified

Other Feature
- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Non Productive, Rock
- Non Productive, Wetland
- Park
- Community Forest

MAP 1 of 1

Alberni Valley Community Forest K2D

Sproat FDU

Harvesting Plan Map

CP-002
Block 9 & 10

N

1:5,000

0 50 100 Meters

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers
TSA:	38 Arrowsmith
TSB:	A
FIZ:	B
P.S.Y.U.:	471
Inv. Reg.:	5
Comp.:	4B (Sproat), 4C (Taylor)
Drafted:	July 10, 2012
By:	econ

- Falling Corner
- Permanent Landing
- Temporary Landing
- Station
- Culvert
- Bridge
- Bridge, out
- Quarry
- Designated Crossing
- Spoil Site
- Swamp
- Wildlife Tree

Roads & Trails
- Highway / FSR
- Road, existing
- Road, engineered
- Road, to be re-activated
- Trail, temp
- Old Grade
- Hiking Trail
- Rock Bluff
- Hydro Line

Attention!

Refer to Back for Detailed Operating and Safety Instructions

RIPARIAN PRESCRIPTION AND MANAGEMENT

AVCF Block B9

CP 002

Stream/ Wetland/ Lake	Riparian Class	RMZ Retention %	Fall Across	Yard Across	Transport Potential	Debris Cleaning	Comments
Stream 9-1	S3/S4	N/A	N/A	N/A	Low	N/A	
Stream 9-2	S3/S4/NCD	0	Yes	Yes*	Low	MC	* No falling or yarding across S3/S4 reaches. Fall and yard across NCD reach acceptable but limit machine crossings in lower/wetter portion the NCD reach (nearest to S4).
Stream 9-2a	NCD	0	No	No	Low	HC	Wet soils prone to machine displacement
Stream 9-3	S3	N/A	N/A	N/A	Medium	N/A	Outside block
Clutesi Creek	S2	0	N/A	N/A	High	N/A	Outside block.
Bookhout Creek	S3	N/A	N/A	N/A	High	N/A	Outside block

General NCD/Stream Comments:

Limit machine traffic through and around all streams, NCD's and wet areas.
Fall and yard away preferred wherever practicable.
Minimize introduced debris in all streams and NCD's.
Retain all non-merchantable and understory cedar.

Debris Cleaning Method		Sign Off
None	N	
Hand Clean	HC	
Machine Clean	MC	Forester: Len Apedaile

- RETAIN 18 SPH OF DOMINANT AND CO-DOMINANT DOUGLAS-FIR PER HECTARE EVENLY DISTRIBUTED AT AN AVERAGE INTER-TREE DISTANCE OF 25m IN SU-A.
- UNDERSTAND AND FOLLOW THE STREAM PRESCRIPTION TABLE ABOVE AND THE SITE PLAN FOR THIS BLOCK.
- USE ADEQUATE PUNCHEON ON MACHINE TRAILS TO AVOID EXCESSIVE SCOUR.
- AVIOD DEBRIS ACCUMULATION AT ROADSIDES WITHIN THE RMA OF ALL STREAMS.
- RETAIN HIGH VALUE WILDLIFE TREES IF IDENTIFIED DURING HARVESTING AND SAFE TO DO SO.
- SLOPES OVER 35% ARE MARKED ON THE MAP – OTHER SLOPES OVER 35% MAY EXIST IN THIS BLOCK.
- KNOCK DOWN ALL Hw TALLER THAN 3.0m CONCURRENT WITH HARVEST.
- STOP WORK AND NOTIFY THE AVCF MANAGER IMMEDIATELY IF ANY EVIDENCE OF TRADITIONAL USE, CULTURAL HERITAGE VALUES OR ARCHAEOLGICAL FEATURES ARE FOUND.
- ADHERE TO WET WEATHER SHUTDOWN PROCEDURES.

FIELD MARKING KEY	
Falling Boundary	Orange "Falling Boundary"
Falling Corner	Orange and Blue with Paint Blaze and Metal Tag
Internal Retention & Reserves	Orange "Falling Boundary"
Road R/W Boundary	Orange Glo
Road Location	Pink "Road Centerline"
Culvert	Pink "Culvert"
Road Station	Pink with Paint Blaze
Reconnaissance & Grade Lines	Green
Streams	Yellow "Stream"
Deflection Lines	Red and White Candystripe
Cruise Lines	Blue
Cruise Trees	Blue Painted Numbers

NOTE
Block B9 and B10 Cruise Volumes

The original cruise compilation for Blocks B9 and B10 netted out a 10m wide road RoW area instead of a standard 20m wide RoW. The total volume in the cruise compilation is correct however the balance between the RoW and the in-block volume is incorrect for a 20m wide RoW.

	Cruise Compilation Volume (10m RoW)	Adjusted Volume (20m RoW)
Block B9	5470	5019
Block B10	502	502
Road RoW	451	902
TOTAL	**6423**	**6423**

Block Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 05-Apr-2012 11:22:44AM
AVCF | Computerized Decay | TFL: TFL 44 (MB Zone 1) | Filename: ecc-2012-05-k2d-cp-2.ccp
Licence Number: K2D CP: 2 | Computerized Waste | Region: 1 - Coastal | Compiled by: IFS
Project: 2012-05 | Computerized Breakage | District: 4 - South Island | Cruised by: ECON
Version: 2011.00 IFS build 5786

Net Area: Block : (I) - 0B9:B9, Plots in Block: 18, TUs: [B9 : 13.9]
Gross Area: [R/W Removed : 1.0][Np : 0.1][WTP : 3.4][Grand Total : 18.4]

		Total	Conifer	F	C	H	B	AC
Utilization Limits								
Min DBH cm (I)				12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)				30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)				10.0	10.0	10.0	10.0	10.0
Log Len m				10.0	10.0	10.0	10.0	10.0
Volume and Size Data								
Gross Merchantable	m3	5708	5626	5502	93	31		82
Net Merchantable	m3	5470	5400	5282	89	29		70
Net Merch - All	m3/ha	394	388	380	6	2		5
Distribution	%	100	99	97	2	1		1
Decay	%	0						10
Waste	%							
Waste(billing)	%							
Breakage	%	4	4	4	5	4		5
Total Cull (DWB)	%	4	4	4	5	4		15
Stems/Ha (Live & DP)		717.9	717.0	696.9	8.1	12.1		0.9
Avg DBH (Live & DP)	cm	28.5	28.3	28.3	37.7	19.6		89.3
Snags/Ha								
Avg Snag DBH	cm							
Gross Merch Vol/Tree	m3	0.57	0.56	0.57	0.83	0.18		6.77
Net Merch Vol/Tree	m3	0.55	0.54	0.55	0.79	0.17		5.75
Avg Weight Total Ht	m	27.6	27.5	27.7	21.7	16.5		35.4
Avg Weight Merch Ht	m	22.0	21.8	22.0	17.0	10.2		30.3
Avg 10.0 m Log Net	m3	0.27	0.27	0.27	0.42	0.18		2.03
Avg 10.0 m Log Gross	m3	0.27	0.27	0.27	0.42	0.18		2.26
Avg # of 10.0 m Logs/Tree		2.09	2.09	2.11	2.00	1.00		3.00
Net Immature	%	98.7	100.0	100.0	100.0	100.0		
Net 2nd Growth	%		100.0					
Average Slope	%	24						
Algorithm Grades %								
#4 Sawlog	J	67	68	69	81			
#5 Utility	U	29	30	29	19	100		
#6 Utility	X	2	2	2				
#7 Chipper	Y	2						100
Statistical Summary								
Coeff. of Variation	%	35.3	36.6	38.8	175.9	469.0		469.0
Two Standard Error	%	20.4	21.1	22.4	101.5	270.6		270.6
Number and Type of Plots		MP = 11	CP = 7					
Number of Potential Trees		60						
Plots/Ha		1.3						
Cruised Trees/Plot		4.7						

Slope % Statistics
Min= 0, Max= 52, CV=61.2, Std Error of Mean=3.4, 2SE%=30.5

FLAGS: Percent Reduction Applied, Normal Cruise, All Trees Compiled, Double Sampling Factor Applied, Damage,

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Block Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 05-Apr-2012 11:22:44AM
AVCF | Computerized Decay | TFL: TFL 44 (MB Zone 1) | Filename: ecc-2012-05-k2d-cp-2.ccp
Licence Number: K2D CP: 2 | Computerized Waste | Region: 1 - Coastal | Compiled by: IFS
Project: 2012-05 | Computerized Breakage | District: 4 - South Island | Cruised by: ECON
Version: 2011.00 IFS build 5786

Net Area: Block : (I) - B10:B10, Plots in Block: 4, TUs: [B10 : 3.2]
Gross Area: [R/W Removed : 0.3][WTP : 0.4][Grand Total : 3.9]

		Total	Conifer	F	C	H	B	AC
Utilization Limits								
Min DBH cm (I)				12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)				30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)				10.0	10.0	10.0	10.0	10.0
Log Len m				10.0	10.0	10.0	10.0	10.0
Volume and Size Data								
Gross Merchantable	m3	525	507	500		7		19
Net Merchantable	m3	502	486	480		7		16
Net Merch - All	m3/ha	157	152	150		2		5
Distribution	%	100	97	95		1		3
Decay	%	0						10
Waste	%							
Waste(billing)	%							
Breakage	%	4	4	4		4		5
Total Cull (DWB)	%	4	4	4		4		15
Stems/Ha (Live & DP)		356.4	355.6	343.5		12.1		0.9
Avg DBH (Live & DP)	cm	26.0	25.6	25.8		19.6		89.3
Snags/Ha								
Avg Snag DBH	cm							
Gross Merch Vol/Tree	m3	0.46	0.45	0.45		0.18		6.77
Net Merch Vol/Tree	m3	0.44	0.43	0.44		0.17		5.75
Avg Weight Total Ht	m	26.6	26.3	26.5		16.5		35.4
Avg Weight Merch Ht	m	20.6	20.3	20.5		10.2		30.3
Avg 10.0 m Log Net	m3	0.24	0.23	0.23		0.18		2.03
Avg 10.0 m Log Gross	m3	0.24	0.23	0.23		0.18		2.26
Avg # of 10.0 m Logs/Tree		1.92	1.92	1.95		1.00		3.00
Net Immature	%	96.8	100.0	100.0		100.0		
Net 2nd Growth	%		100.0					
Average Slope	%	28						
Algorithm Grades %								
#4 Sawlog	J	59	61	62				
#5 Utility	U	36	38	37		100		
#6 Utility	X	1	1	1				
#7 Chipper	Y	4						100
Statistical Summary								
Coeff. of Variation	%	35.3	36.6	38.8	175.9	469.0		469.0
Two Standard Error	%	20.4	21.1	22.4	101.5	270.6		270.6
Number and Type of Plots		MP = 2	CP = 2					
Number of Potential Trees		60						
Plots/Ha		1.3						
Cruised Trees/Plot		7.5						

Slope % Statistics

Min= 22, Max= 32, CV=16.7, Std Error of Mean=2.3, 2SE%=26.6

FLAGS: Percent Reduction Applied, Normal Cruise, All Trees Compiled, Double Sampling Factor Applied, Damage,

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Type Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 05-Apr-2012 11:22:44AM
AVCF | Computerized Decay | TFL: TFL 44 (MB Zone 1) | Filename: ecc-2012-05-k2d-cp-2.ccp
Licence Number: K2D CP: 2 | Computerized Waste | Region: 1 - Coastal | Compiled by: IFS
Project: 2012-05 | Computerized Breakage | District: 4 - South Island | Cruised by: ECON
Version: 2011.00 IFS build 5786

Net Area: Type 3 (I):Fd(CwHw), Plots in Type: 22, TUs: [A : 1.1]

		Total	Conifer	F	C	H	B	AC
Utilization Limits								
Min DBH cm (I)				12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)				30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)				10.0	10.0	10.0	10.0	10.0
Log Len m				10.0	10.0	10.0	10.0	10.0
Volume and Size Data								
Gross Merchantable	m3	471	465	450	12	2		6
Net Merchantable	m3	451	446	432	11	2		6
Net Merch - All	m3/ha	410	405	393	10	2		5
Distribution	%	100	99	96	3	1		1
Decay	%	0						10
Waste	%							
Waste(billing)	%							
Breakage	%	4	4	4	5	4		5
Total Cull (DWB)	%	4	4	4	5	4		15
Stems/Ha (Live & DP)		730.9	730.0	704.9	13.0	12.1		0.9
Avg DBH (Live & DP)	cm	28.8	28.7	28.6	37.7	19.6		89.3
Snags/Ha								
Avg Snag DBH	cm							
Gross Merch Vol/Tree	m3	0.59	0.58	0.58	0.83	0.18		6.77
Net Merch Vol/Tree	m3	0.56	0.56	0.56	0.79	0.17		5.75
Avg Weight Total Ht	m	27.7	27.6	27.8	21.7	16.5		35.4
Avg Weight Merch Ht	m	22.1	22.0	22.2	17.0	10.2		30.3
Avg 10.0 m Log Net	m3	0.28	0.28	0.27	0.42	0.18		2.03
Avg 10.0 m Log Gross	m3	0.28	0.28	0.27	0.42	0.18		2.26
Avg # of 10.0 m Logs/Tree		2.10	2.10	2.12	2.00	1.00		3.00
Net Immature	%	98.8	100.0	100.0	100.0	100.0		
Net 2nd Growth	%		100.0					
Algorithm Grades %								
#4 Sawlog	J	68	69	69	81			
#5 Utility	U	28	29	29	19	100		
#6 Utility	X	2	2	2				
#7 Chipper	Y	2						100
Statistical Summary								
Coeff. of Variation	%	50.1	52.7	56.2	360.6	360.6		360.6
Two Standard Error	%	20.4	21.1	22.4	101.5	270.6		270.6
Number and Type of Plots		MP = 13	CP = 9					
Number of Potential Trees		60						
Plots/Ha		1.2						
Cruised Trees/Plot		5.2						

FLAGS: Percent Reduction Applied, Normal Cruise, All Trees Compiled, Double Sampling Factor Applied, Damage,

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Alberni Valley Community Forest

Road Development Report

CP 002

Bookhout Creek

Sproat FDU

March 2012

Prepared by:

Mike Davis, FIT
and
Erik Holbek, RPF

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TABLE OF CONTENTS

LIST OF TABLES

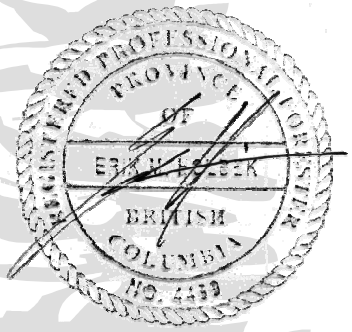
Signed _____

Name (Print) Erik Holbek

RPF # 4499 Contact phone number (250)-337-5588

Email mail@econ.ca

I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.



Introduction

This revised report includes only information relating to road AW21-8 and AW21-8B required to access Blocks B9 and B10.

Subsequent to the development of CP001 Econ Consulting was asked to proceed with the development, layout and permitting of a further 10,000+m^3 of timber (CP002) in the area between Friesen Creek and Bookhout Creek in the Alberni Valley Community Forest. The focus areas were based on prior recce information by Econ and discussion with the AVCF Manager to determine access and development priorities. The objectives of the AVCF management plan and the multiple resource values and management strategies contained in the AVCF Forest Stewardship Plan were considered when deciding on all road locations.

All engineered roads (new and reactivation) are marked with printed black on pink "Road Centerline" ribbon. Stations are marked with double pink ribbons and white ribbons and pink painted blazes. Culverts are marked with printed black on pink "Culvert" ribbon.

Detailed road designs have been completed for all new road construction and are included in Appendix 6. It should be noted that all RMA infringements require end haul of excess material (see Tables 3 and 4). This includes one section on AW 21-8 (0+450 – 0+482). No other special construction will be required.

A significant amount of ballast material will be required for new construction – particularly in consideration of the rock ballasting and culvert armouring best practice recommendations for road works in a community watershed that are contained in the AVCF FSP and Appendix 3 of this plan. Material can be quarried at locations shown on the map or other sources identified during construction, but must not be taken from road sections listed as having RMA infringements. Culvert lengths for new road construction and reactivation are shown in Appendix 2.

Required Permits and Notifications

Affected water licensees or affected water purveyors must be notified at least 48 hours before commencement of road construction, re-activation or deactivation in a community watershed.

All roads included in this report are under active road permit (Timber Mark K2D-0R1).

Bookhout Creek Area

The Bookhout Creek area includes block B9 and block B10. Access is from the recently reactivated Road AW 21including a new bridge over Bookhout Creek.

All roads are within the community watershed.

No streams are fish bearing at any of the road crossings.

All roads require right-of-way danger tree assessment and removal.

Road Construction

All road construction is for in-block access and consists primarily of conventional cut and fill construction. All stream crossing are summarized in the culvert table (Appendix 2a).

Ballasting material will be required for the Rd AW 21-8 from 0+720 onward, and for AW 21-8b. Clean rock fill will be required for armoring around culverts.

Quarry Locations

A potential quarry location can be found on Rd AW 21 before the road reactivation area at 2+149 as is shown on the road construction map.

Table 1: Bookhout Creek Area Road Summary

Road	Start Station	End Station	Total	Construction Type	Comment
AW 21-8	0+000	0+450	720	OMLB	AW 21-8 requires typical cut and fill construction up to 0+450
AW 21-8	0+450	0+482	32	End Haul/ OMLB	Excess material must be end hauled to prevent sidecasting within the RMA of Stream 9-1. Material can be spoiled anywhere outside of the RMA.
AW 21-8	0+482	0+720	238	OMLB	AW 21-8 requires typical cut and fill construction from 0+482 to 0+720

AW 21-8	0+720	0+933	213	OMRB	Rock ballast is required from 0+720 to 0+933. Rock must be brought in from the nearest available quarry.
AW 21-8b	0+000	0+165	165	OMRB	Rock ballast is required for the full length of AW 21-b. Rock must be brought in from the nearest available quarry.

Riparian Management Area Infringements

The following table (3) lists the road encroachments and their rights-of-way into the Riparian Management Areas (RMAs) of streams associated with this timber development. The table includes crossings (in italics) for information purposes. Table (4) below provides specific information and rationales for each encroachment.

Excess material is to be end hauled from all RMA infringement areas and spoiled outside of the RMA.

Table 3: RMA Encroachment Details

Case	Road	Sections	Stream and Steam Class	RMA	Maximum Infringement
Bookhout Creek Area					
1	*AW21*	*2+691 to 2+731*	*Stream 9-3 (S3)*	*40 m*	*Crossing*
2	**AW21-8**	**0+450 to 0+482**	**Stream 9-1 (S4)**	**30 m**	**32 m**
3	*AW21-8b*	*0+067 to 0+097*	*Stream 9-2 (S4)*	*30 m*	*Crossing*

Table 4: RMA Encroachment Rationales

Case	Description	Rationale
2	The switchback on AW21-8 is located within the RMA of Stream 9-1. This is the only possible switchback location that allows for access to the lower part of Block B9. Stream 9-1 is classified as S4 and located outside the block boundary. Excess material will be end hauled from this section and spoiled outside of the RMA.	FPPR 50 (1) b

Road Deactivation

A detailed road deactivation plan has not been prepared as part of this contract. Road deactivation will be determined in discussion with the AVCF manager. All roads are at low risk for failure and may be used to access future volume, as well as for silviculture access. All roads must be inspected regularly to ensure that drainage structures are functioning and that infrastructure and water quality are not at risk.

Appendix 1. Road Reactivation and Construction Map

Attention!

Refer to Back for Detailed Operating and Safety Instructions

Timbermark K2D-0R1

NAD83 BLOCK	BC ALBERS Easting	BC ALBERS Northing	GEOGRAPHIC Latitude	GEOGRAPHIC Longitude
F1	1068679	474222	125°3'22.6"	49°16'46.8"
F2	1068191	474500	125°3'48.9"	49°16'58.0"
F3	1068047	474632	125°3'55.9"	49°17'2.4"
B9	1069331	474259	125°2'52.7"	49°16'49.8"
B10	1069312	474347	125°2'53.5"	49°16'52.6"

MAP 1 of 1

Licensee: Alberni Valley Community Forest Corporation
Forest Region: Coast
Forest District: South Island
Reference Map: 92F024, 025, 026 F035, 036
Datum: NAD 83
Projection: BC Albers, Geographic
TSA: 38 Arrowsmith
TSB: A
FIZ: B
P.S.Y.U.: 471
Inv. Reg.: 5
Comp.: 4B (Sproat), 4C (Taylor)
Drafted: March 31, 2012
By: econ

Alberni Valley Community Forest K2D

Road Construction

Sproat FDU

N

1:5,000

0 50 100 200 Meters

Stakeholder notification is required 48 hours prior to commencement of any road work
Adhere to AVCF strategies for road works in a community watershed
Rainfall shutdown threshold in 36mm in 24 hours
Ensure correct marking of timber.
Stop work and contact the AVCF manager if any part of the plan is unclear

Road Construction Features

- Station
- Culvert, CMP existing
- Culvert, WC existing
- Install Culvert
- Remove Culvert
- Fill Waterbar
- Fill X-Ditch
- Bridge, existing
- Bridge, out
- Install Access Barrier
- Spoil Site
- Quarry
- Ditch Cleaning
- End Haul
- >10% Adverse Grade
- >18% Favourable Grade
- Road, to be constructed
- Road, to be re-activated
- Steep Areas, >35% in Ground Based Areas

Road Feature

- Highway
- Road, existing
- Road, temporary
- Trail, existing
- Trail, temp
- Old Grade
- Recreation Trail

Water Feature

- S1-S4 Stream
- S5-S6 Stream
- NCD Non Classified Drainage
- Unclassified Creek
- Wetland
- Lake

Other Feature

- Block, new
- Block, existing
- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Park
- Community Forest

RMA Infringement from 0+450 to 0+482. End Haul Material and spoil outside RMA

Blk B10 · Blk B9 · Blk 6 · Blk 7 · Blk 8

TAYLOR ARM PARK

Cluteci Creek · Stream 9-1 · Stream 9-3 · Stream 9-2 · Stream 9-2a · Stream M-2 · Bookhout Creek · Stream 2 · Stream 1 · Stream 3

AW21 · AW21-8 · AW21-8b · AW21-6 · AW24-7 · AW24

STREAM CROSSING CULVERT TABLE

Road Construction

Road	P-line Sta. (km)	Culvert Size (mm)	Structure	Culvert Length (m)	Stream #	Stream Class	Stream Q_{100} Values: $Width_1$(m)	$Width_2$ (m)	Depth (m)	Ac (m^2)	Comments
AW 21-8	0+154	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+273	600	CMP	7.0							Install 600mm CMP; Skew 99°; Armour outflow
	0+619	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+746	600	CMP	8.0							Install 600mm CMP; Skew 93°; Armour outflow
	0+806	600	CMP	7.0	9-2a	NCD					Install 600mm CMP; Armour outflow
AW 21-8b	0+082	600	CMP	10.0	9-2	S3	1.10	0.90	0.10	0.30	Replace WBC with 600mm CMP

STREAM CROSSING CULVERT TABLE

Road Construction

Road	P-line Sta.	Culvert Size	Structure	Culvert Length	Stream #	Stream Class	Stream Q_{100} Values				Comments
	(km)	(mm)		(m)			$Width_1$(m)	$Width_2$ (m)	Depth (m)	Ac (m^2)	
AW 21-8	0+154	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+273	600	CMP	7.0							Install 600mm CMP; Skew 99°; Armour outflow
	0+619	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+746	600	CMP	8.0							Install 600mm CMP; Skew 93°; Armour outflow
	0+806	600	CMP	7.0	9-2a	NCD					Install 600mm CMP; Armour outflow
AW 21-8b	0+082	600	CMP	10.0	9-2	S3	1.10	0.90	0.10	0.30	Replace WBC with 600mm CMP

AVCF CP002 Culvert Shopping List

CMP Size	7m	8m	9m	10m
600mm	4	1	0	1

Stakeholder notification is required 48 hours prior to commencement of any road work
Adhere to AVCF strategies for road works in a community watershed
Rainfall shutdown threshold in 36mm in 24 hours
Ensure correct marking of timber - RP timbermark to be determined
Stop work and contact the AVCF manager if any part of the plan is unclear

BEST MANAGEMENT PRACTICES FOR COMMUNITY WATERSHEDS

Refer also to Section 5.2.4 of the AVCF FSP.

Ditch Cleaning: ditches are to be cleaned when conditions are dry. Ditch spoil is not to be windrowed along the road shoulder. On moderate slopes, the ditch spoil could be thinly spread on the slope below the road, but not heaped or piled against trees. Where the road is on steep slopes, the ditch spoil should be end hauled to a suitable spoil site.

Culvert replacement: Where required culvert replacements are to be done during dry weather (except in emergency). The inlet and outlet areas on new culverts, and the adjacent fill slopes, are to be armoured to prevent erosion or sloughing.

Rock Ballasting of road surface: For new road construction, where the road is close to a stream channel, the road surface is to be ballasted with clean rock. The road surface is also to be rock ballasted for 30 meters either side of stream culverts.

Road grading practices: grading is to be avoided during heavy rain.

Shutdown or harvest completion: In preparation for a shutdown for a period longer than 30 days or at a harvest completion, the following measures will be taken:

No excavated or end hauled material will be left piled in such a way as to become unstable during the shutdown period. Spoil sites, piles and fills will be sloped uniformly to prevent instability.

Ditches and culverts will be left clear and functional, with adequate inlet basins to minimize the potential for plugging.

On sections of steep grades, cross ditches and back-up swales will be constructed where needed to minimize ditch erosion.

If road construction has reached a drainage course but a drainage structure has not been installed prior to shutdown, the drainage course will be left open and unimpeded.

Where exposed silty soils could erode and enter surface streams or ditches connected to streams, silt fences, hay bales or erosion blankets will be applied as needed for temporary protection.

Appendix 2 Stream Crossing Table for New Road Construction

STREAM CROSSING CULVERT TABLE Road Construction											
Road	P-line Sta.	Culvert Size	Structure	Culvert Length	Stream #	Stream Class	Stream Q_{100} Values				Comments
	(km)	(mm)		(m)			$Width_1$(m)	$Width_2$ (m)	Depth (m)	Ac (m^2)	
AW 21-8	0+154	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+273	600	CMP	7.0							Install 600mm CMP; Skew 99°; Armour outflow
	0+619	600	CMP	7.0							Install 600mm CMP; Skew 114°; Armour outflow
	0+746	600	CMP	8.0							Install 600mm CMP; Skew 93°; Armour outflow
	0+806	600	CMP	7.0	9-2a	NCD					Install 600mm CMP; Armour outflow
AW 21-8b	0+082	600	CMP	10.0	9-2	S3	1.10	0.90	0.10	0.30	Replace WBC with 600mm CMP

Appendix 3. Best Management Practices for Community Watersheds

Refer also to Section 5.2.4 of the AVCF FSP.

Ditch Cleaning: where needed, ditches are to be cleaned when conditions are dry. Ditch spoil is not to be windrowed along the road shoulder. On moderate slopes, the ditch spoil could be thinly spread on the slope below the road, but not heaped or piled against trees. Where the road is on steep slopes, the ditch spoil should be end hauled to a suitable spoil site.

Culvert replacement: Where required culvert replacements are to be done during dry weather (except for emergency repairs or replacements). The inlet and outlet areas on new culverts, and the adjacent fill slopes, are to be armoured to prevent erosion or sloughing into the creek.

Rock Ballasting of road surface: For new road construction, where the road is close to a stream channel, the road surface is to be ballasted with clean rock. The road surface is also to be rock ballasted for 30 meters either side of stream culverts.

Road grading practices: grading is to be avoided during heavy rain.

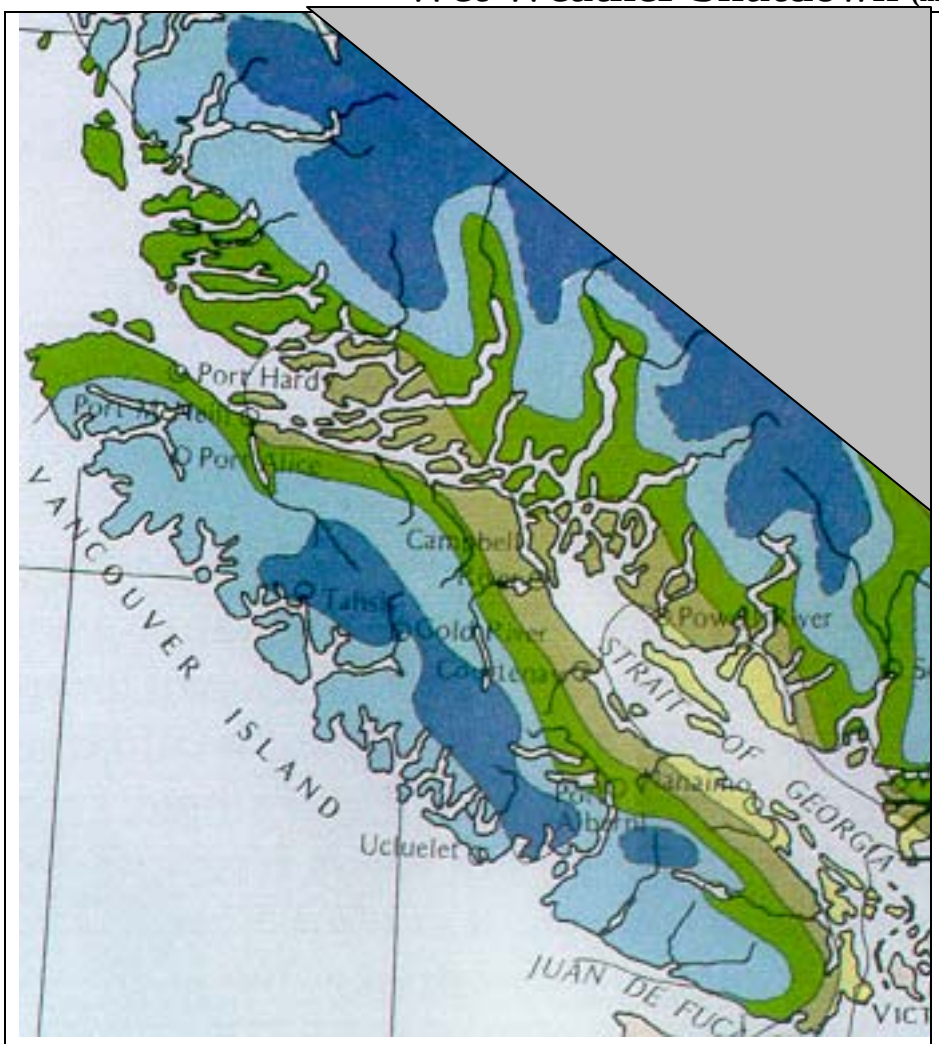
Shutdown or harvest completion: In preparation for a shutdown for a period longer than 30 days or at a harvest completion, the following measures will be taken:

- No excavated or end hauled material will be left piled in such a way as to become unstable during the shutdown period. Spoil sites, piles and fills will be sloped uniformly to prevent instability.
- Ditches and culverts will be left clear and functional, with adequate inlet basins to minimize the potential for plugging.
- On sections of steep grades, cross ditches and back-up swales will be constructed where needed to minimize ditch erosion.
- If road construction has reached a drainage course but a drainage structure has not been installed prior to shutdown, the drainage course will be left open and unimpeded.
- Where exposed silty soils could erode and enter surface streams or ditches connected to streams, silt fences, hay bales or erosion blankets will be applied as needed for temporary protection.

Appendix 4. Wet Weather Shutdown Guidelines

Wet Weather Shutdown (modified Nov 7, 2006)

BCTS
BC Timber Sales
Strait of Georgia



Zone	Mean Annual Precip (mm)	Shutdown Threshold (mm/24 hours)
1	750	20
2	1500	40
3	2500	60
4	3000	75
5	3500	90

TABLE B Local Soil Type	Multiplier Factor
Very Erodible (e.g. lacustrine)	0.4
Erodible (e.g. organics, sands)	0.6
Least Erodible (e.g. colluvium, till)	0.8
Bedrock	1.0

TABLE C Slope Modifier	Multiplier Factor
0% - 57	1.0
57% - 70%	0.9
71% - 88%	0.8
89% +	0.7

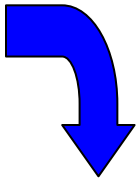
Instructions:

1) Use base shutdown threshold from Table A
2) Multiply by Soil Type Modifier from Table B
3) Multiply result by Slope Modifier from Table C

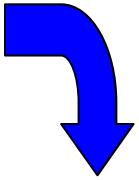
Result is rainfall shutdown threshold in millimeters in a 24 hour period

Example

Zone¤	Table·A:·Mean·Annual·¤	Shutdown· Threshold¤
°¤	Precipitation·(mm)¤	(mm/24·hours)¤
1¤	750¤	20¤
2¤	1500¤	40¤
3¤	2500¤	60¤
4¤	3000¤	75¤
5¤	3500¤	90¤



TABLE·B·Local·Soil·Type¤	Multiplier¤
°¤	Factor¤
Very·Erodible·(e.g.· lacustrine)¤	0.4¤
Erodible·(e.g.·organics,· sands)¤	0.6¤
Least·Erodible·(e.g.· colluvium,·till)¤	0.8¤
Bedrock¤	1.0¤



TABLE·C·Slope·Modifier¤	Multiplier¤
°※	Factor¤
0%·-·57¤	1.0¤
·57%·-·70%¤	0.9¤
71%·-·88%¤	0.8¤
89%·+¤	0.7¤

For Dark Blue Zone 5; 24 Hr Shutdown Criteria = 90 x 0.8 x 0.8 = 58 mm

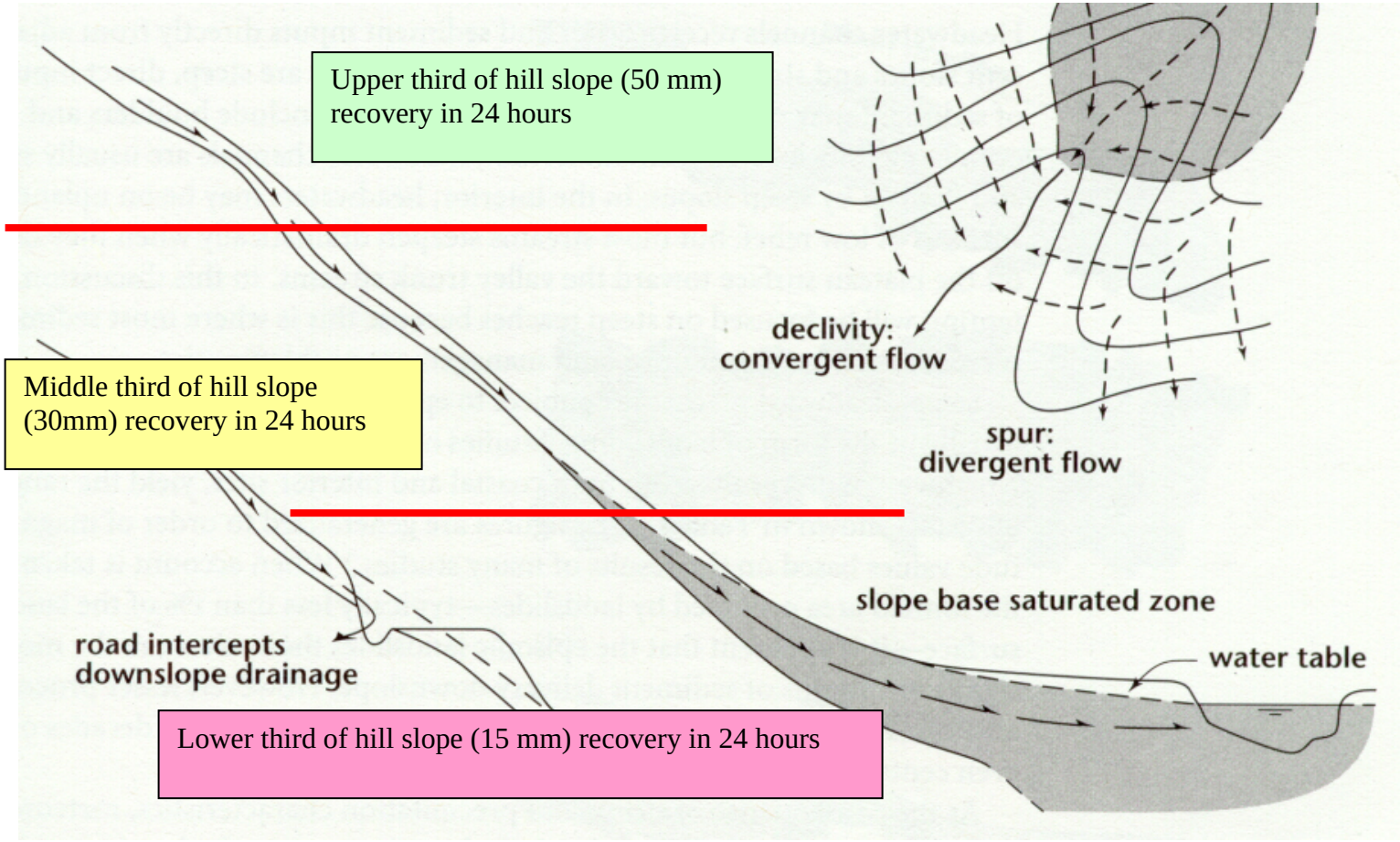
Return to Work Estimation Guide

Water balance returns to normal after a heavy rainfall period subject to a number of variables

- -slope position
- -slope gradient
- -soil type and depth (or proximity to bedrock)

Where a road is located above the worksite, interception by ditch lines may have the effect of increasing the recovery rate for lower slope positions

Using the following sketch as a guide, identify the slope position of the planned activity (upper, middle and lower thirds)
In an **average** situation precipitation input is reduced in a 24 hour period by the indicated values based on slope position



Appendix 5: Detailed Designs for New Road Construction

Alberni Valley Community Forest
Licence K2D - Sproat FDU
Road: AW 21-8
New Construction

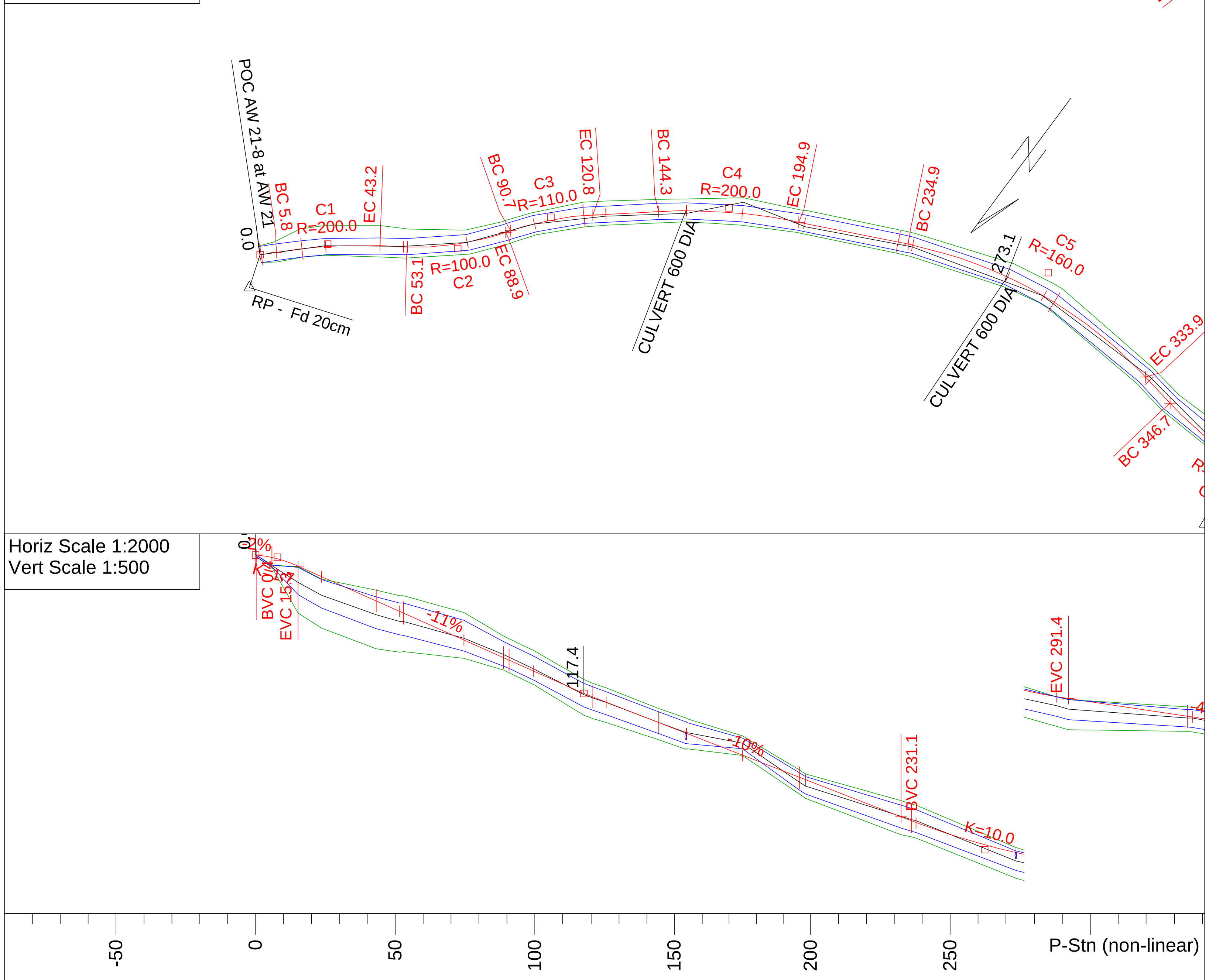
Page 1 of 5	12/03/22
South Coast Forest Region Sunshine Coast Forest District Mapsheet: NTS 92K2 5m Contour Interval Decl. 18º 1' E (2011)	Survey: ECON Constulting Design: Mike Davis, F.I.T. Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Plan Scale 1:2000

Horiz Scale 1:2000
Vert Scale 1:500



Lyr1 Gnd:	OB 400											
Lyr2 Gnd:	n/a											
Ssl:	-5	-39	-42	-40	-35	-38	-35	-26	-25	-36	-30	-33	-30
Ssr:	0	+47	+57	+54	+40	+32	+31	+17	+30	+35	+33	+28	+26

Curve Table

	C1	C2	C3	C4	C5
Angle (I)	10.7	20.5	15.7	14.5	35.4
Tangent (T)	18.7	18.1	15.1	25.4	51.1
Curve Len.(L)	37.3	35.8	30.1	50.6	98.9
Radius (R)	200.0	100.0	110.0	200.0	160.0

Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

Design File:
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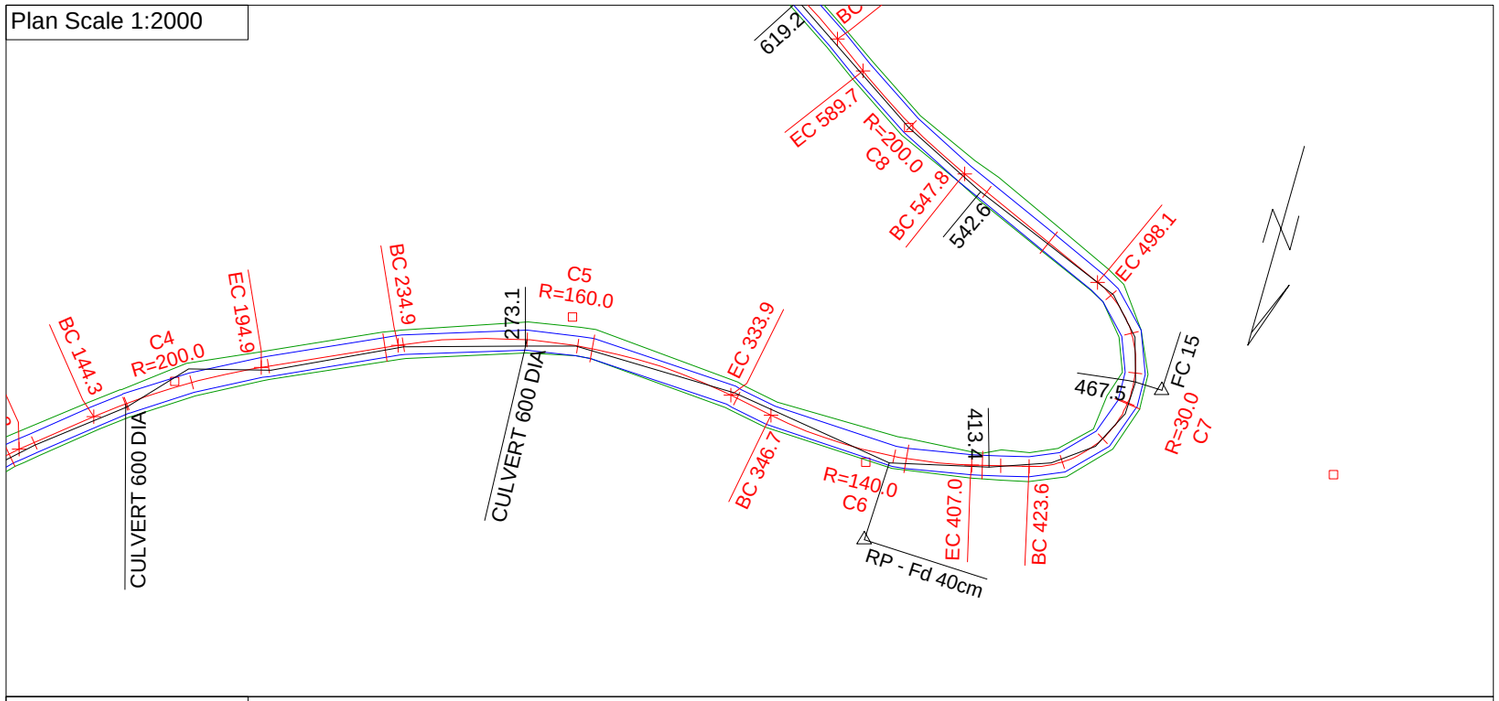
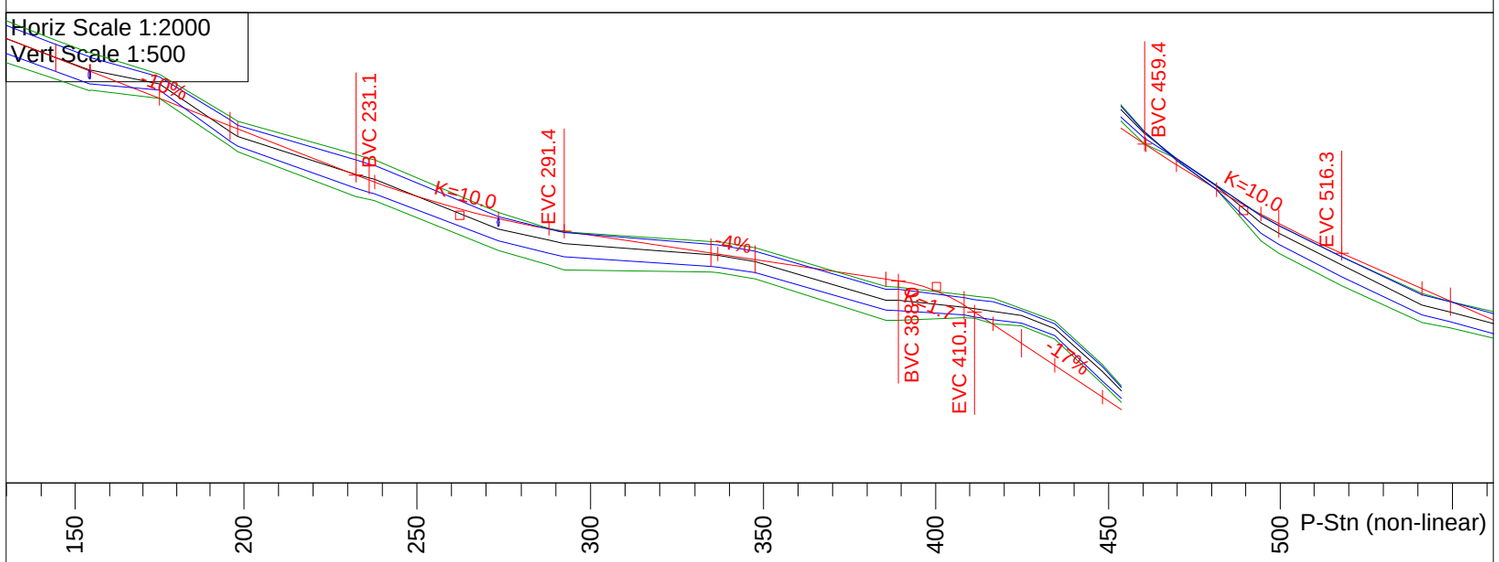
Traverse Date: 12/02/15 (MD/EH)
Traverse File:
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\rdaw21-8120215md.tr1

ECON Consulting
PO Box 329, Merville B.C., V0R 2M0
ph 250 337 5588
fx 250 337 2063
mail@econ.ca
www.econ.ca





Alberni Valley Community Forest
Licence K2D - Sproat FDU
Road: AW 21-8
New Construction

Page 2 of 5 | **12/03/22**

South Coast Forest Region
Sunshine Coast Forest District
Mapsheet: NTS 92K2
5m Contour Interval
Decl. 18º 1' E (2011)

Survey: ECON Constulting
Design: Mike Davis, F.I.T.
Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Curve Table

	C5	C6	C7
Angle (I)	35.4	24.7	142.3
Tangent (T)	51.1	30.6	87.9
Curve Len.(L)	98.9	60.3	74.5
Radius (R)	160.0	140.0	30.0

Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

Design File:
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Traverse Date: 12/02/15 (MD/EH)
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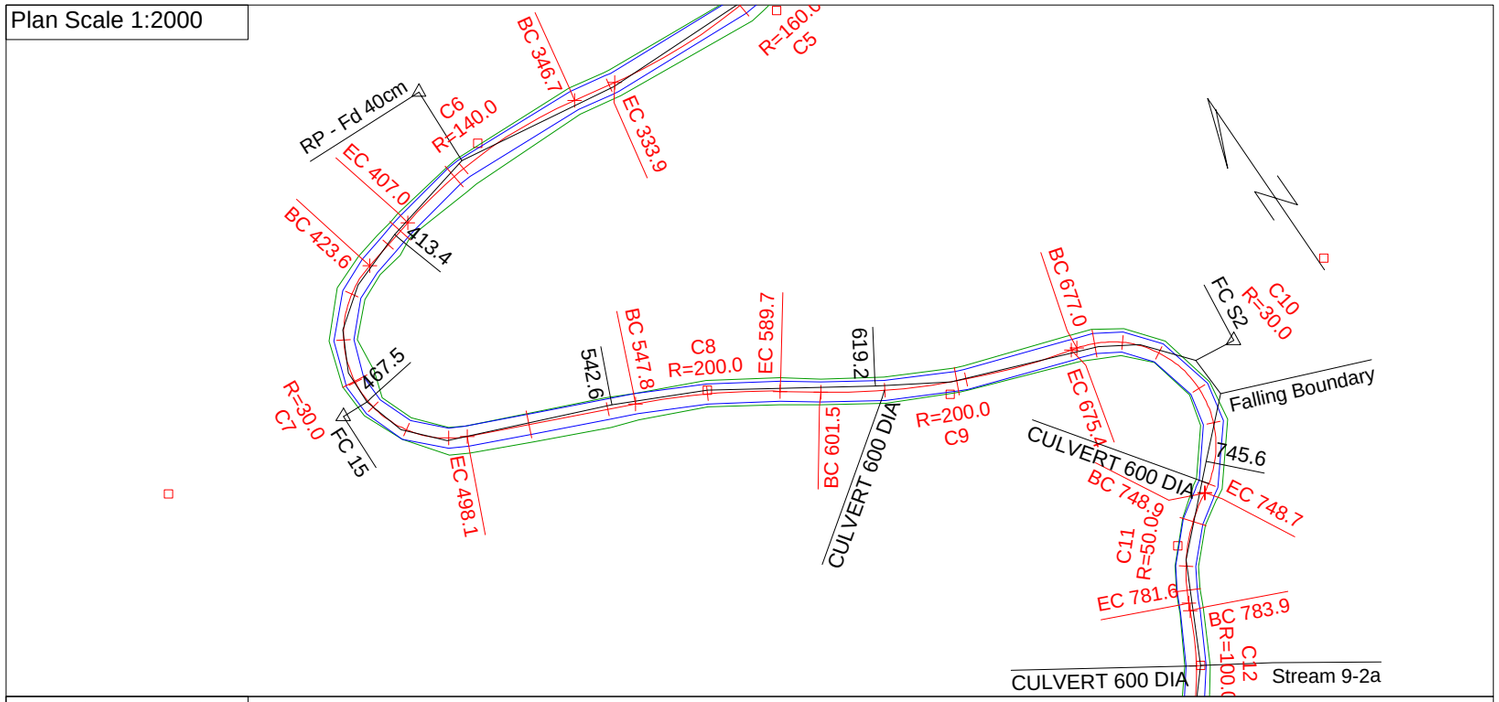

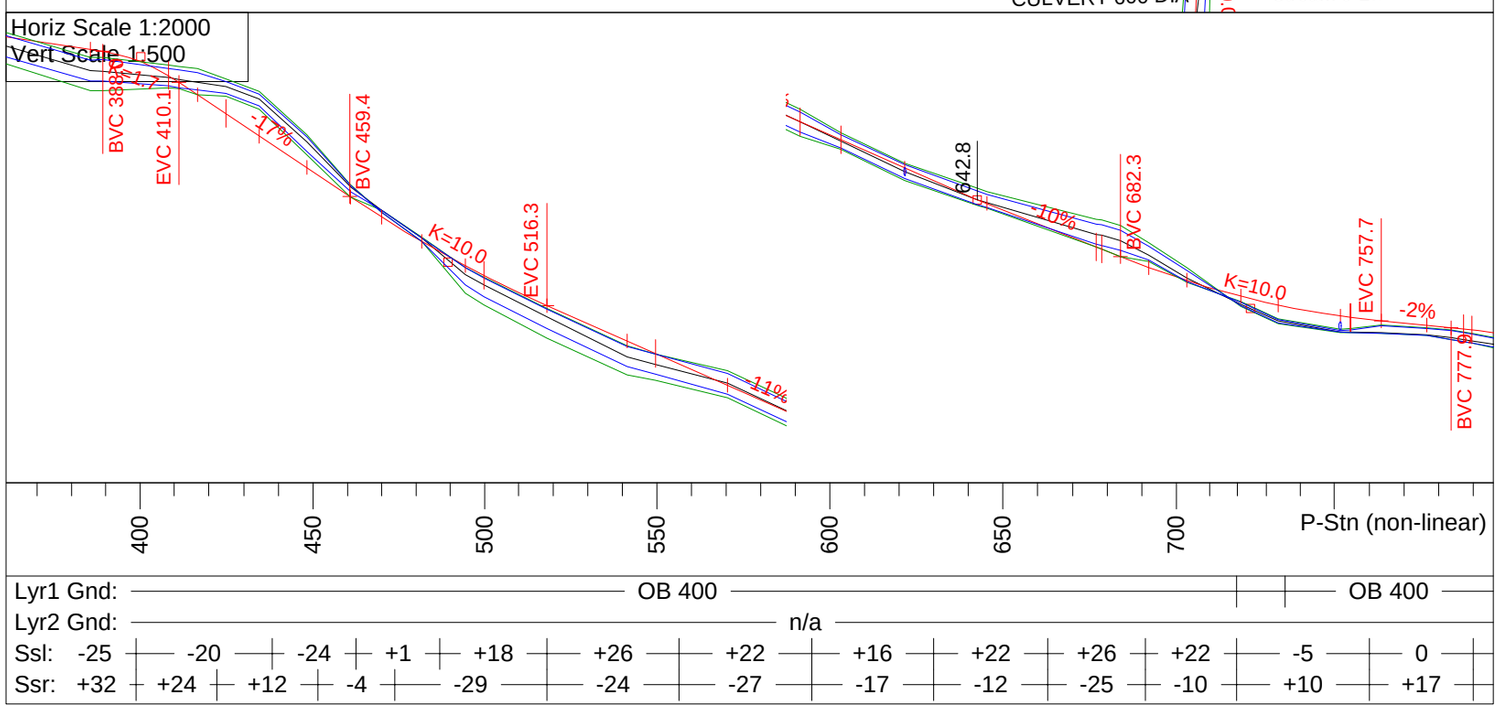

Alberni Valley Community Forest
Licence K2D - Sproat FDU
Road: AW 21-8
New Construction

Page 3 of 5 | **12/03/22**

South Coast Forest Region
Sunshine Coast Forest District
Mapsheet: NTS 92K2
5m Contour Interval
Decl. 18º 1' E (2011)

Survey: ECON Constulting
Design: Mike Davis, F.I.T.
Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Curve Table

	C7	C8	C9	C10
Angle (I)	142.3	12.0	21.2	136.9
Tangent (T)	87.9	21.0	37.4	76.0
Curve Len.(L)	74.5	41.9	73.9	71.7
Radius (R)	30.0	200.0	200.0	30.0

Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

Design File:
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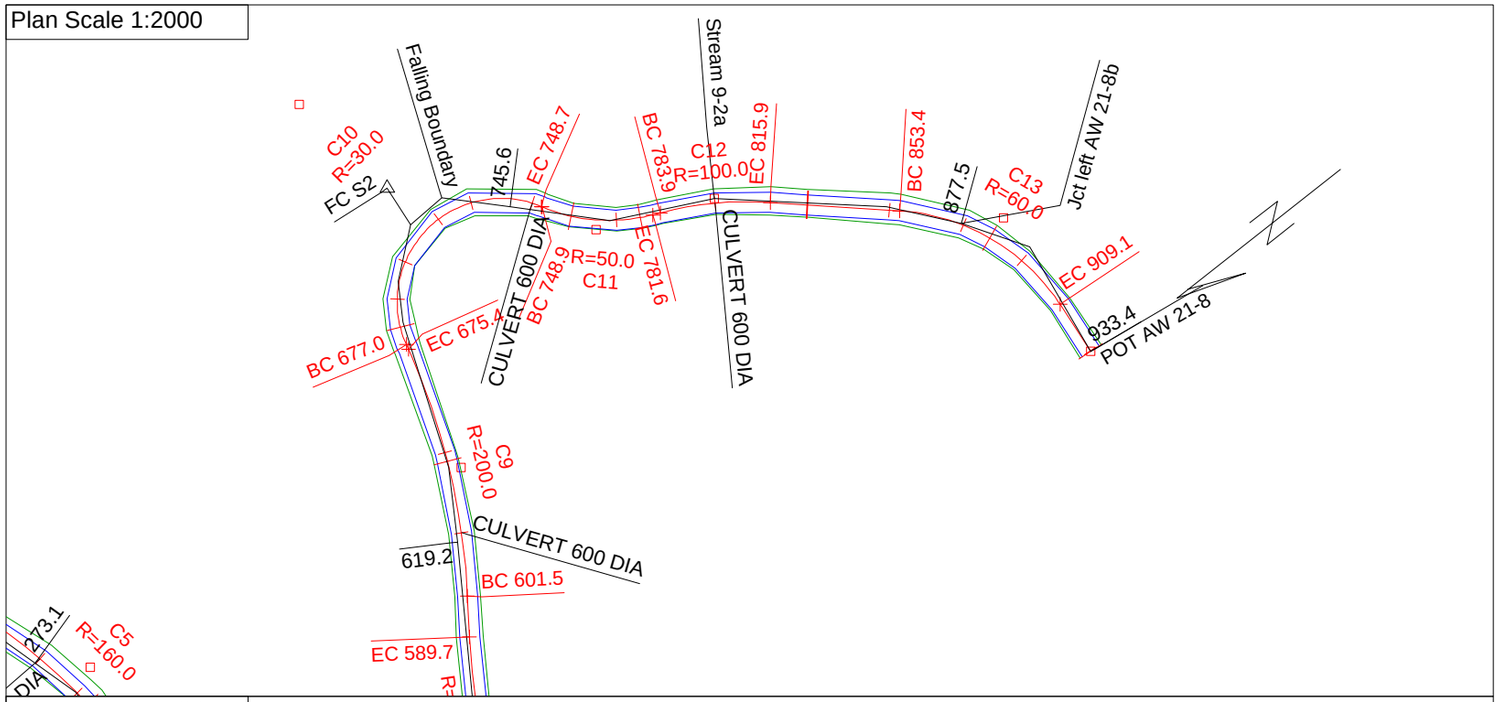

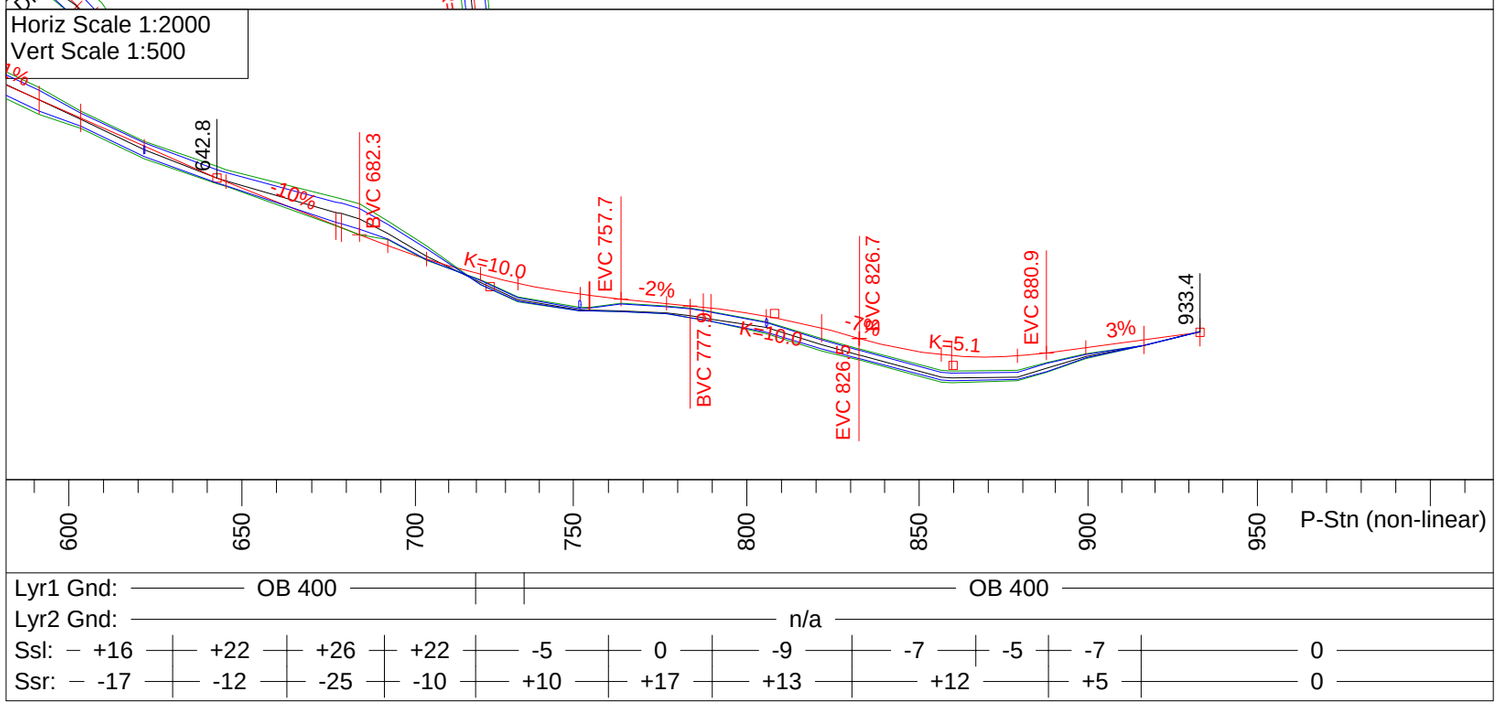

Alberni Valley Community Forest Licence K2D - Sproat FDU
Road: AW 21-8
New Construction

Page 4 of 5 | **12/03/22**

South Coast Forest Region
Sunshine Coast Forest District
Mapsheet: NTS 92K2
5m Contour Interval
Decl. 18º 1' E (2011)

Survey: ECON Constulting
Design: Mike Davis, F.I.T.
Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Curve Table

	C9	C10	C11	C12	C13
Angle (I)	21.2	136.9	37.5	18.3	53.2
Tangent (T)	37.4	76.0	17.0	16.1	30.0
Curve Len.(L)	73.9	71.7	32.7	32.0	55.7
Radius (R)	200.0	30.0	50.0	100.0	60.0

Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

Design File:
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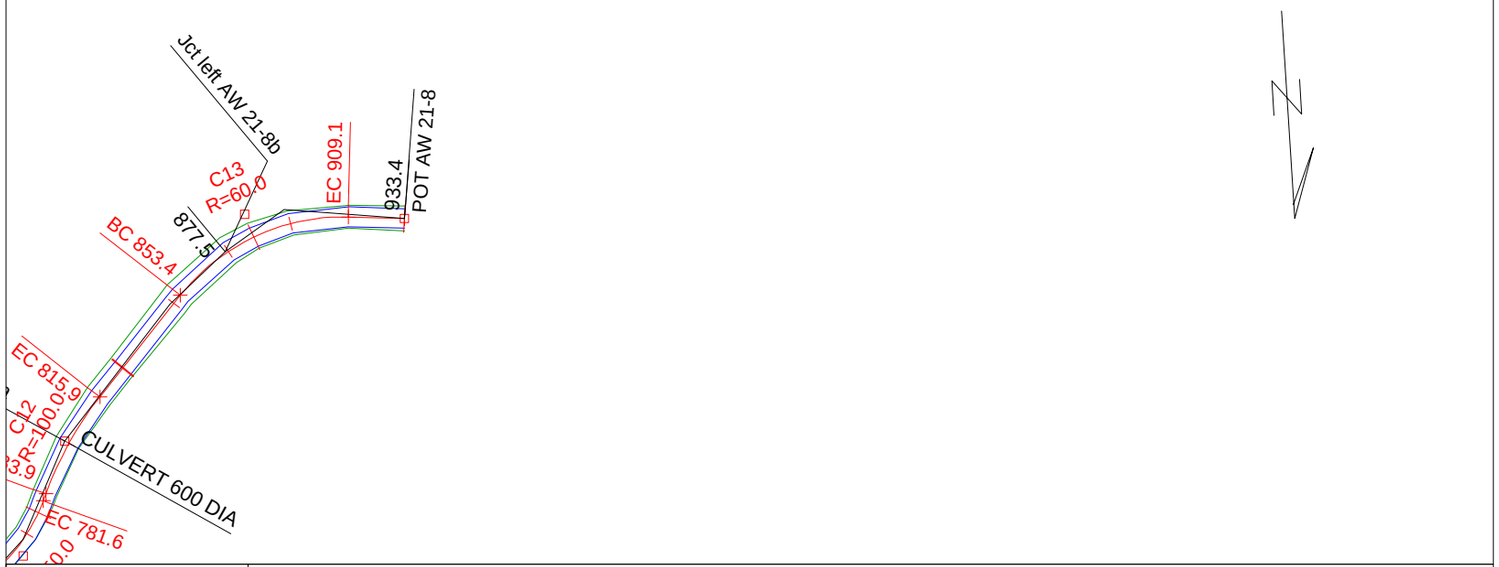
Plan Scale 1:2000



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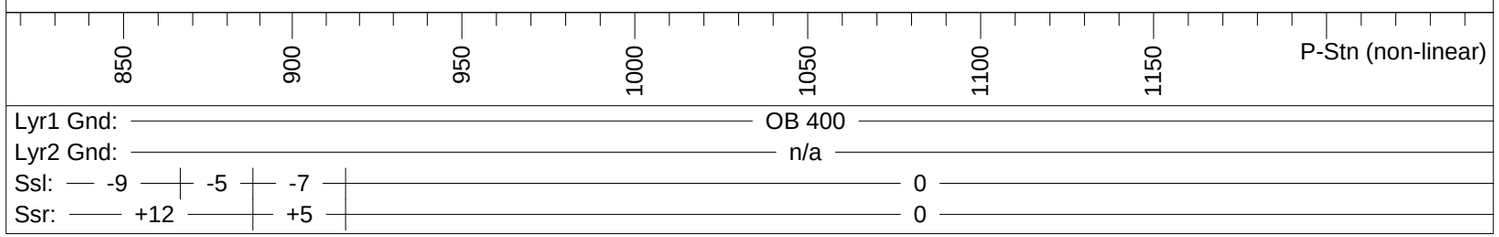

Alberni Valley Community Forest Licence K2D - Sproat FDU
Road: AW 21-8
New Construction

Page 5 of 5 | **12/03/22**

South Coast Forest Region
Sunshine Coast Forest District
Mapsheet: NTS 92K2
5m Contour Interval
Decl. 18º 1' E (2011)

Survey: ECON Constulting
Design: Mike Davis, F.I.T.
Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Curve Table

	C13
Angle (I)	53.2
Tangent (T)	30.0
Curve Len.(L)	55.7
Radius (R)	60.0

Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

Design File:
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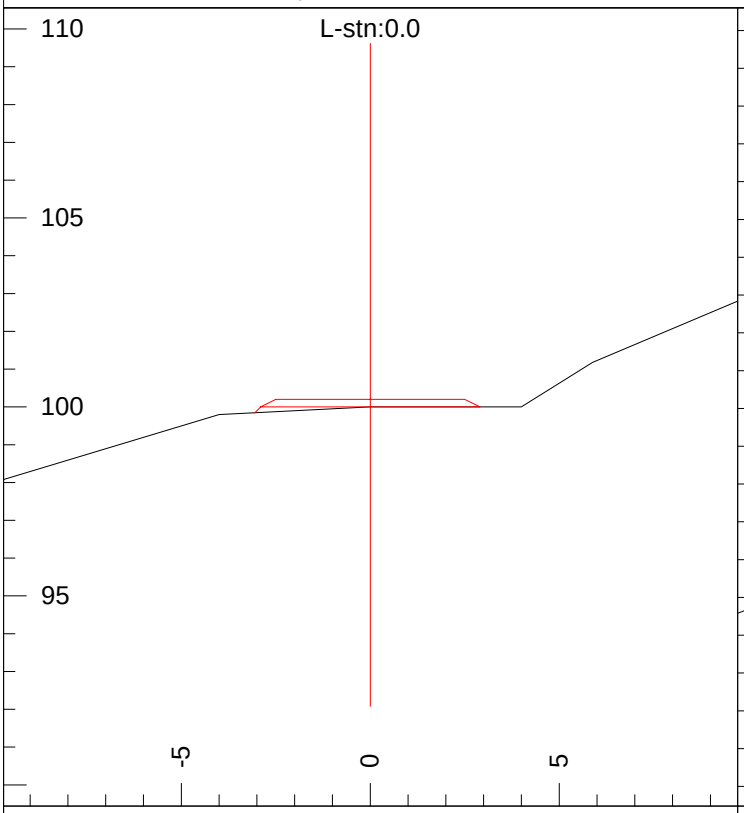
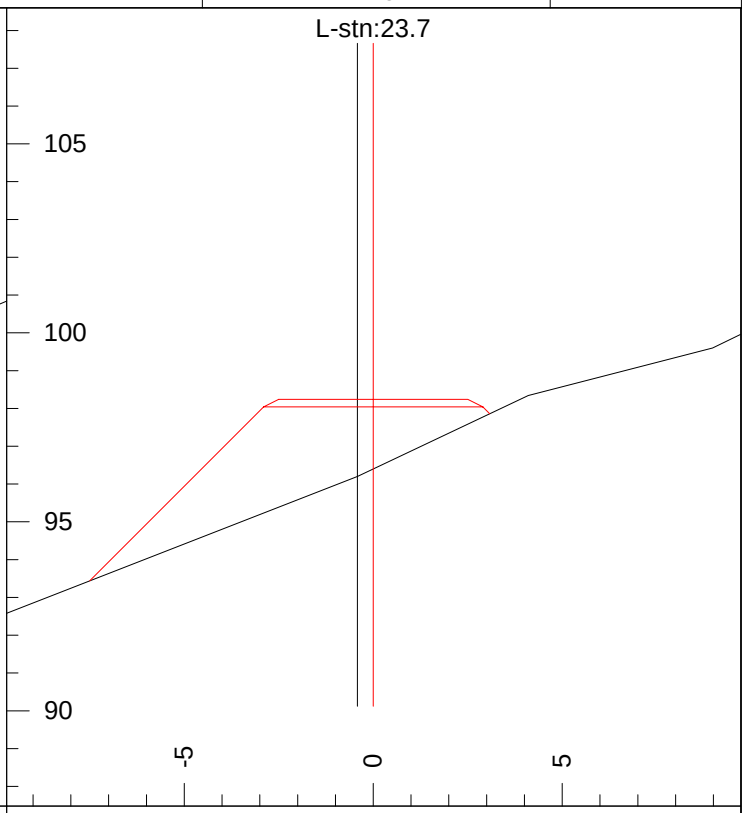
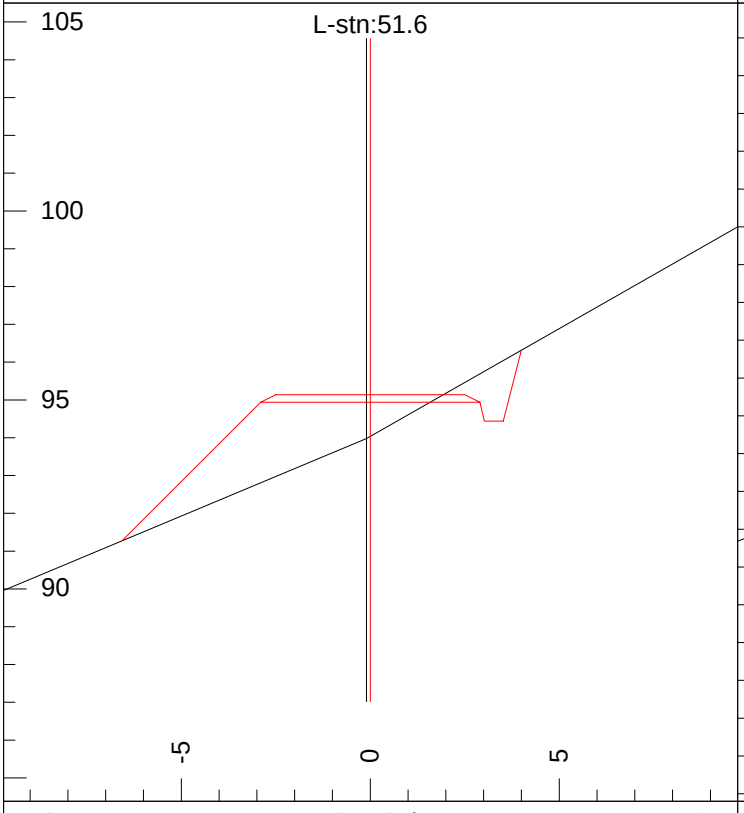


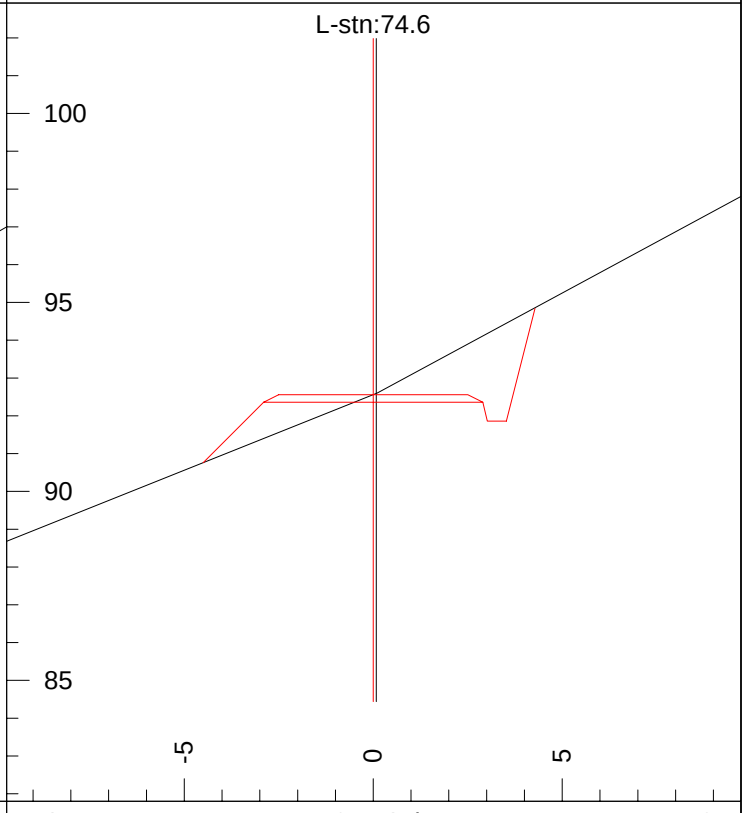
P-Stn:	0.0	Ssl:	-5
Cut Dp:	0.0	Ssr:	0
Grd.Nxt.	-2	Stk L Y:	-0.2
Grd.Lst:	n/a	Stk R Y:	0.0



P-Stn:	23.7	Ssl:	-39
Cut Dp:	-1.6	Ssr:	47
Grd.Nxt.	-11	Stk L Y:	-4.6
Grd.Lst:	-11	Stk R Y:	-0.2



P-Stn:	51.6	Ssl:	-42
Cut Dp:	-0.9	Ssr:	57
Grd.Nxt.	-11	Stk L Y:	-3.7
Grd.Lst:	-11	Stk R Y:	1.4



P-Stn:	74.6	Ssl:	-40
Cut Dp:	0.2	Ssr:	54
Grd.Nxt.	-11	Stk L Y:	-1.6
Grd.Lst:	-11	Stk R Y:	2.5

ROADENG Section	Scale 1:200	P. 2
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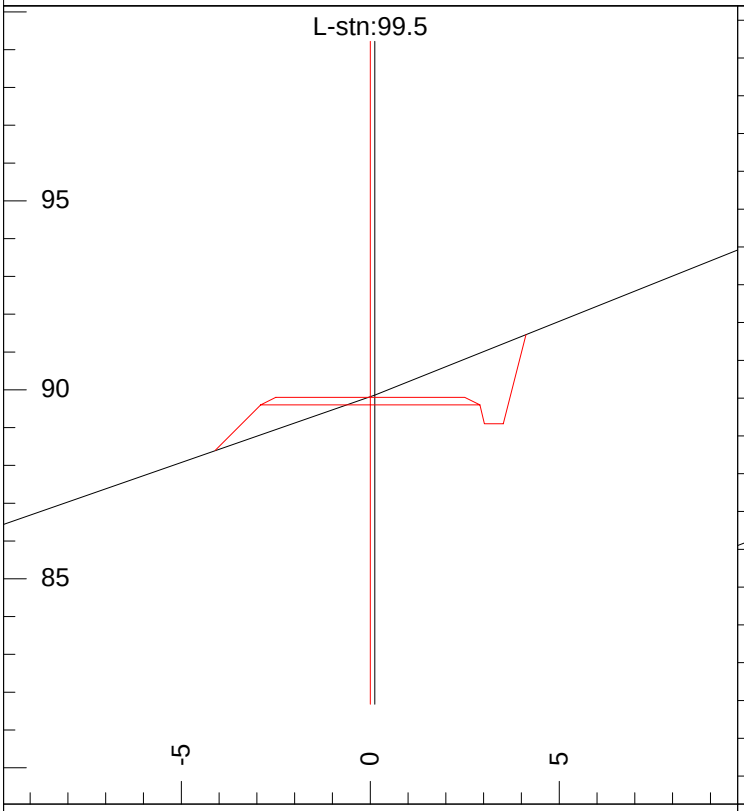
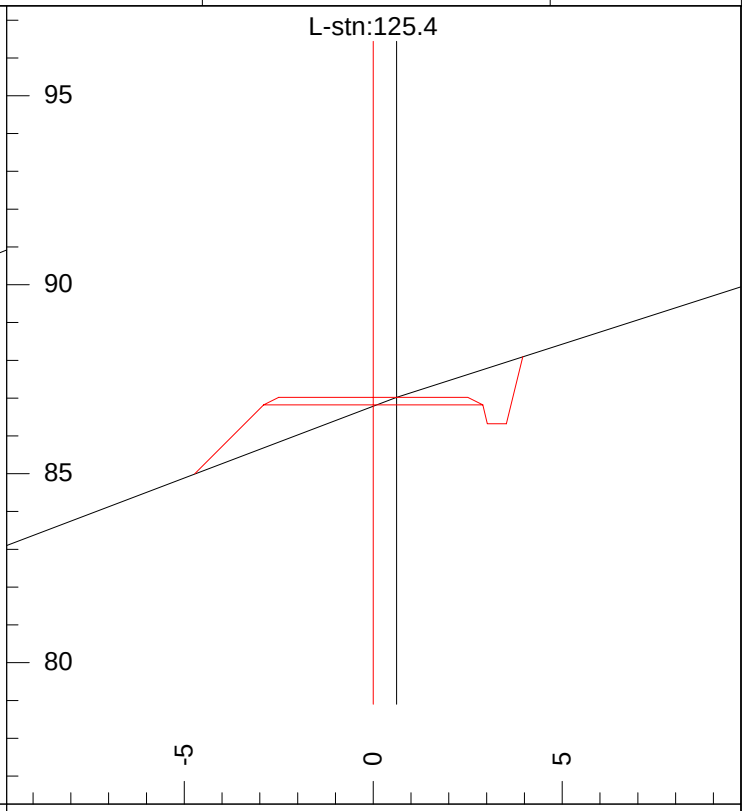
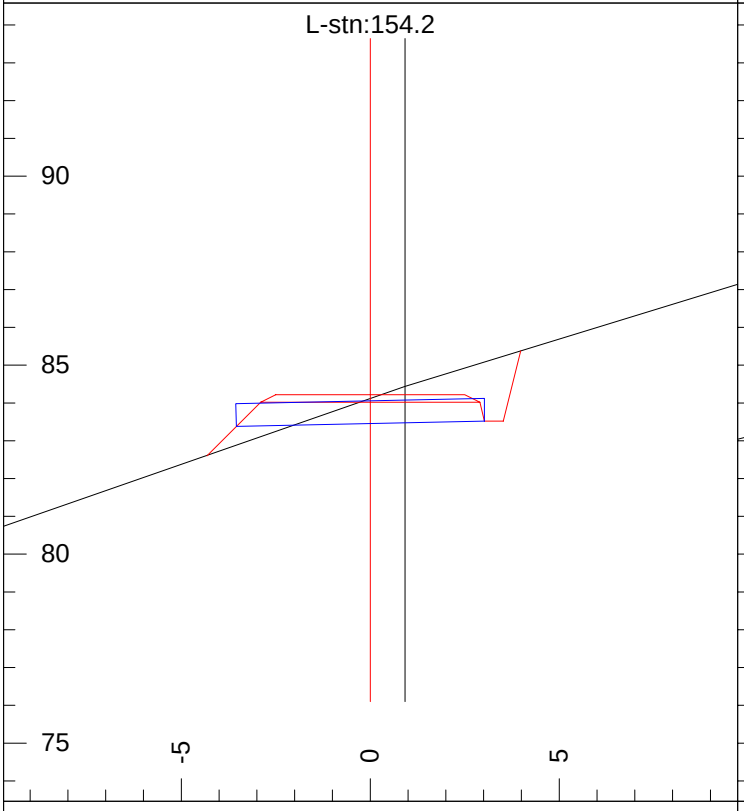


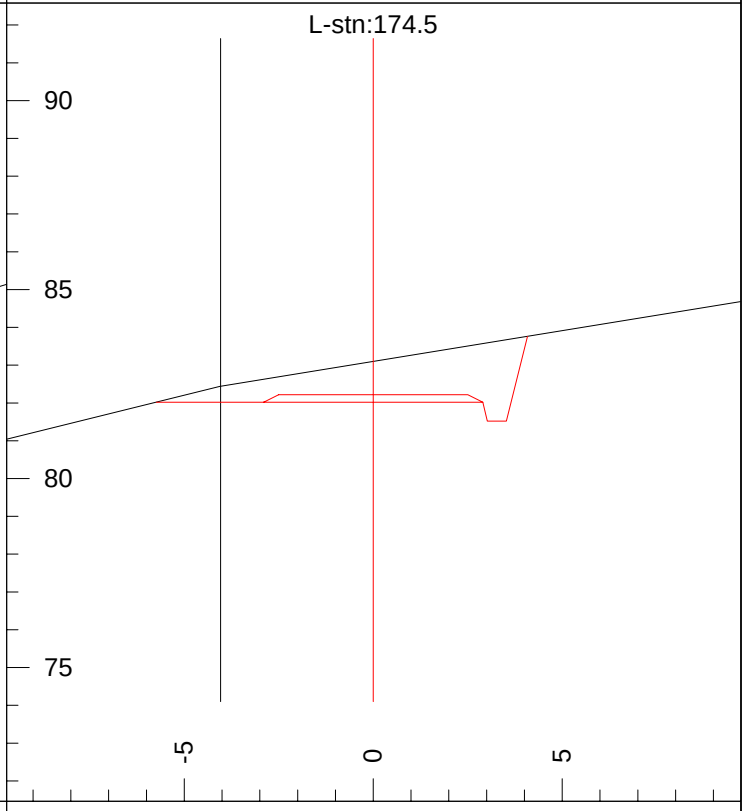
P-Stn:	99.4	Ssl:	-35
Cut Dp:	0.2	Ssr:	40
Grd.Nxt.	-11	Stk L Y:	-1.2
Grd.Lst:	-11	Stk R Y:	1.9



P-Stn:	125.3	Ssl:	-38
Cut Dp:	-0.0	Ssr:	32
Grd.Nxt.	-10	Stk L Y:	-1.8
Grd.Lst:	-10	Stk R Y:	1.3



P-Stn:	154.1	Ssl:	-35
Cut Dp:	0.1	Ssr:	31
Grd.Nxt.	-10	Stk L Y:	-1.4
Grd.Lst:	-10	Stk R Y:	1.4



P-Stn:	175.0	Ssl:	-26
Cut Dp:	1.1	Ssr:	17
Grd.Nxt.	-10	Stk L Y:	0.0
Grd.Lst:	-10	Stk R Y:	1.7

ROADENG Section	Scale 1:200	P. 3
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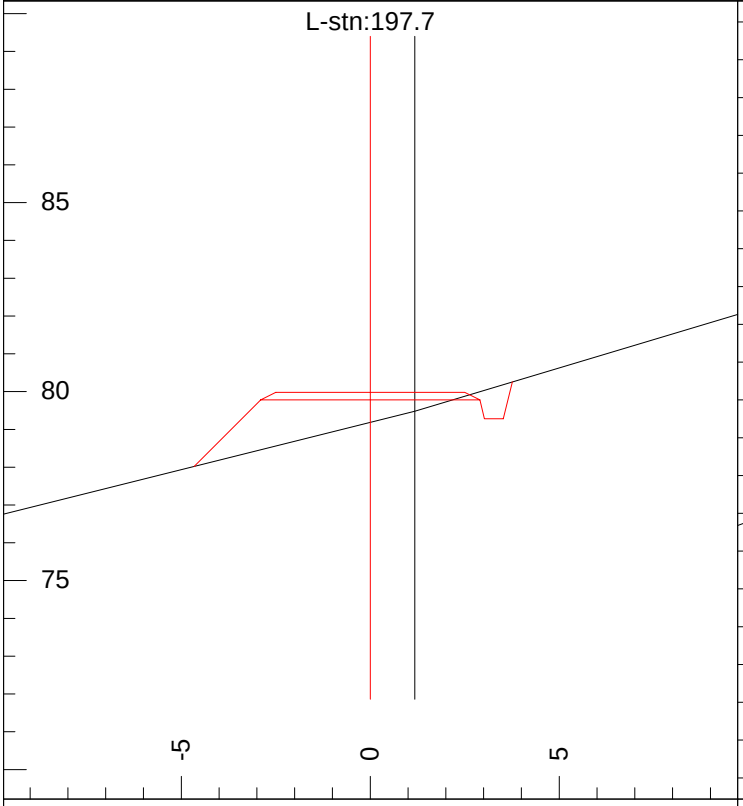
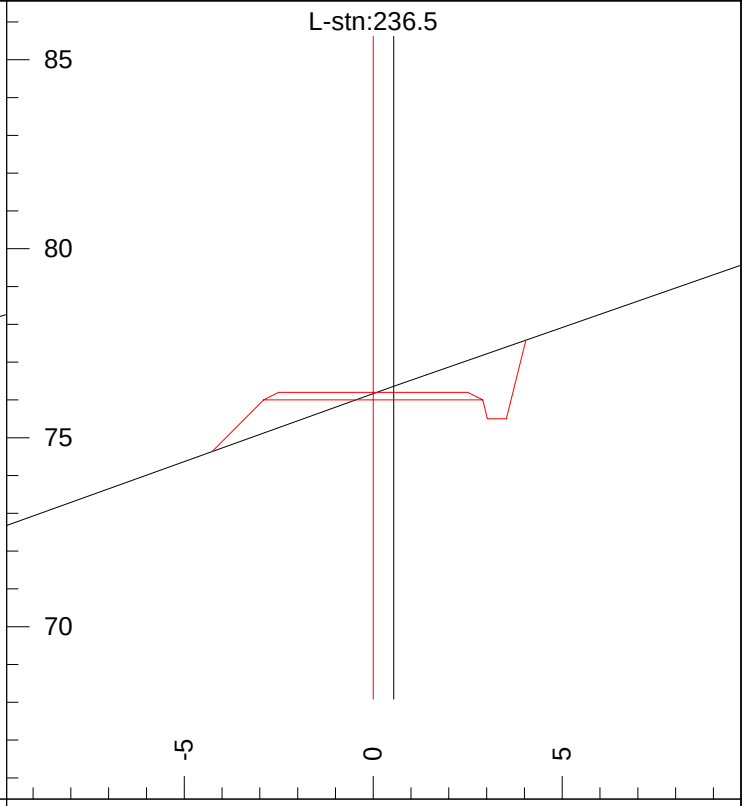
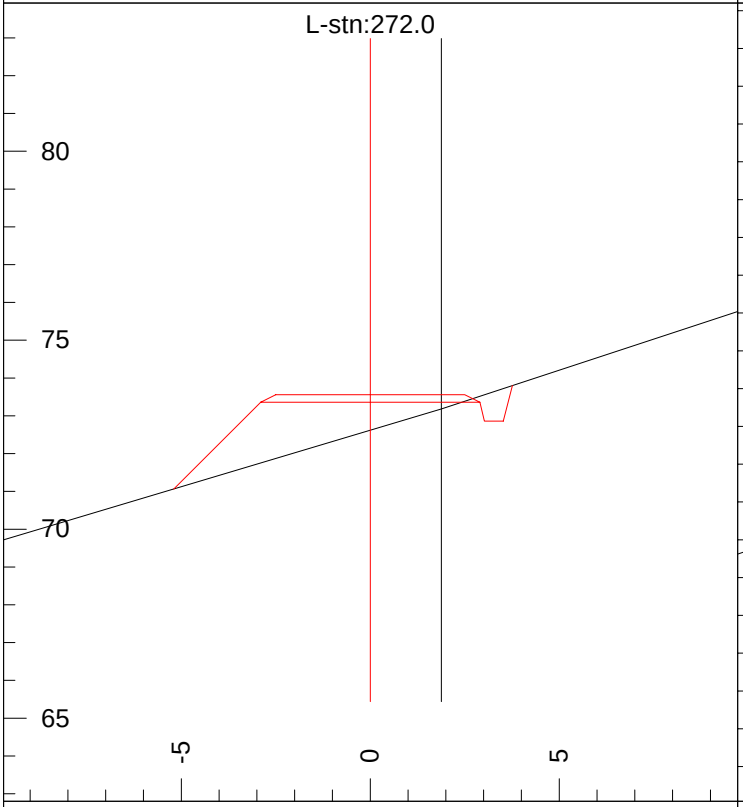


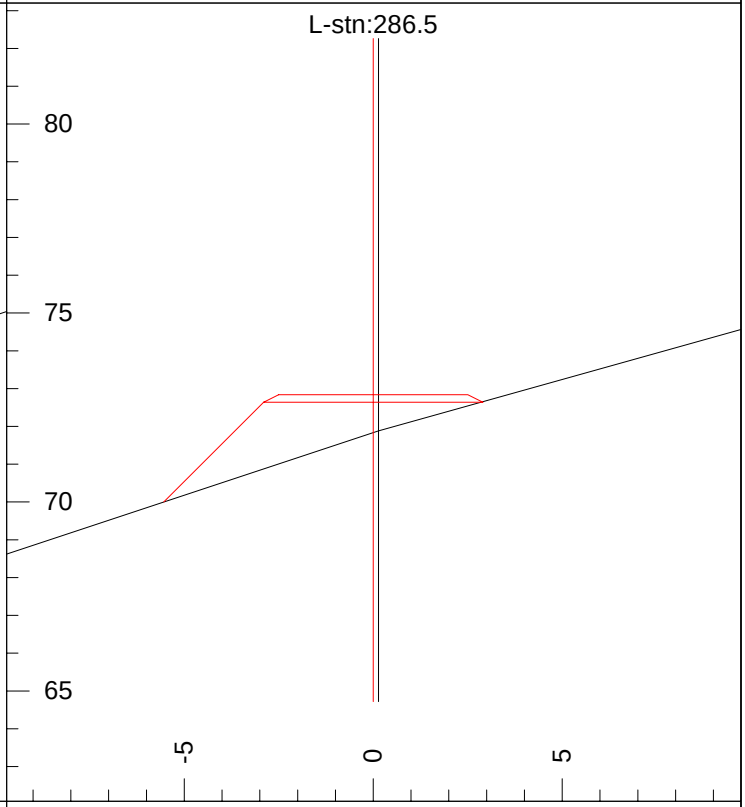
P-Stn:	198.9	Ssl:	-25
Cut Dp:	-0.6	Ssr:	30
Grd.Nxt.	-10	Stk L Y:	-1.8
Grd.Lst:	-10	Stk R Y:	0.5



P-Stn:	237.7	Ssl:	-36
Cut Dp:	0.2	Ssr:	35
Grd.Nxt.	-9	Stk L Y:	-1.4
Grd.Lst:	-9	Stk R Y:	1.6



P-Stn:	273.1	Ssl:	-30
Cut Dp:	-0.7	Ssr:	33
Grd.Nxt.	-6	Stk L Y:	-2.3
Grd.Lst:	-6	Stk R Y:	0.4



P-Stn:	287.5	Ssl:	-33
Cut Dp:	-0.8	Ssr:	28
Grd.Nxt.	-4	Stk L Y:	-2.6
Grd.Lst:	-4	Stk R Y:	0.0

ROADENG Section	Scale 1:200	P. 4
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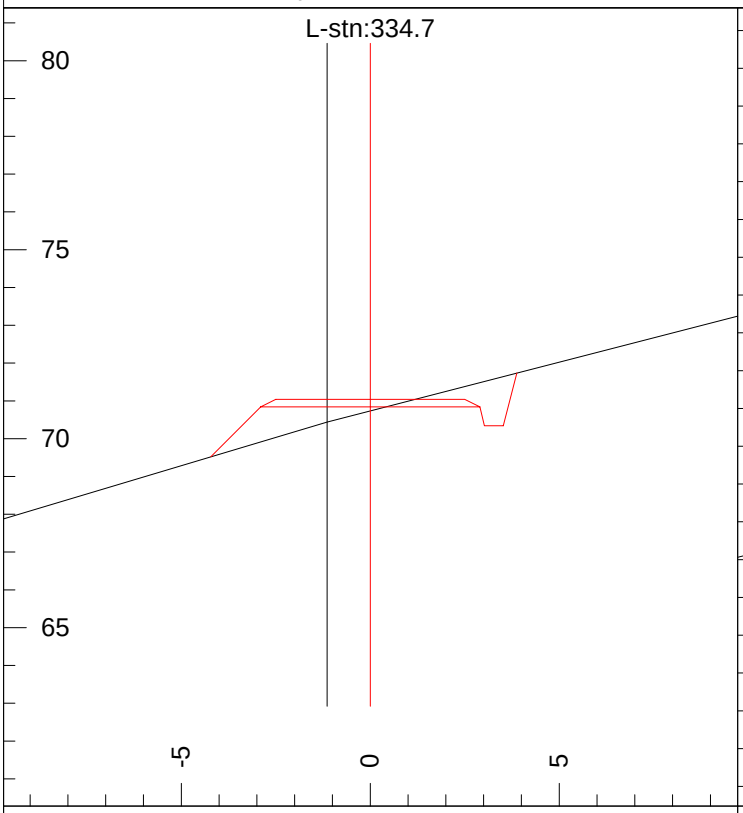
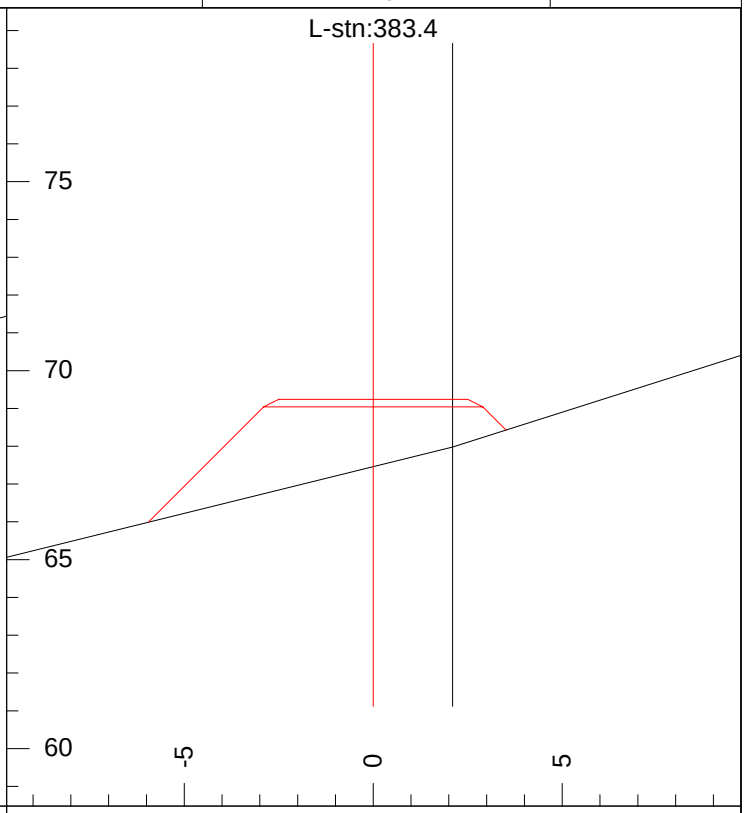
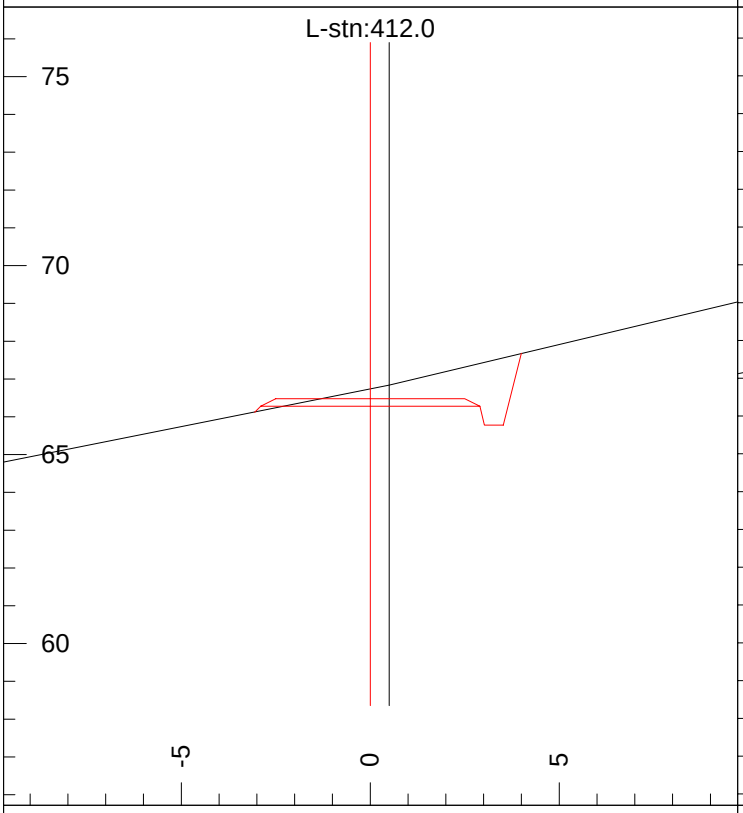


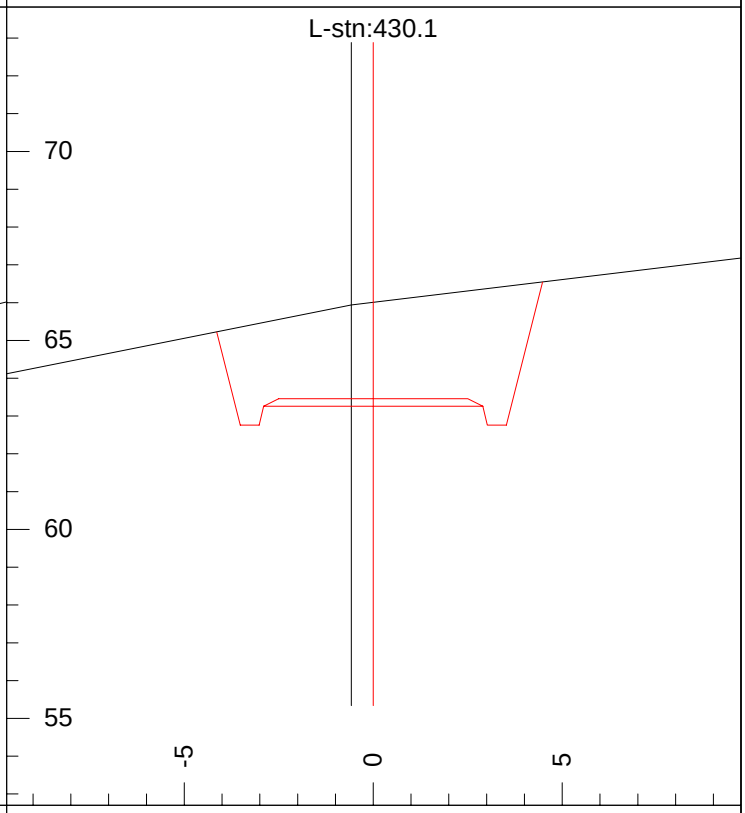
P-Stn:	335.5	Ssl:	-30
Cut Dp:	-0.1	Ssr:	26
Grd.Nxt.	-4	Stk L Y:	-1.3
Grd.Lst:	-4	Stk R Y:	0.9



P-Stn:	384.5	Ssl:	-25
Cut Dp:	-1.6	Ssr:	32
Grd.Nxt.	-4	Stk L Y:	-3.0
Grd.Lst:	-4	Stk R Y:	-0.6



P-Stn:	413.4	Ssl:	-20
Cut Dp:	0.5	Ssr:	24
Grd.Nxt.	-17	Stk L Y:	-0.2
Grd.Lst:	-17	Stk R Y:	1.4



P-Stn:	431.4	Ssl:	-20
Cut Dp:	2.8	Ssr:	12
Grd.Nxt.	-17	Stk L Y:	2.0
Grd.Lst:	-17	Stk R Y:	3.3

ROADENG Section	Scale 1:200	P. 5
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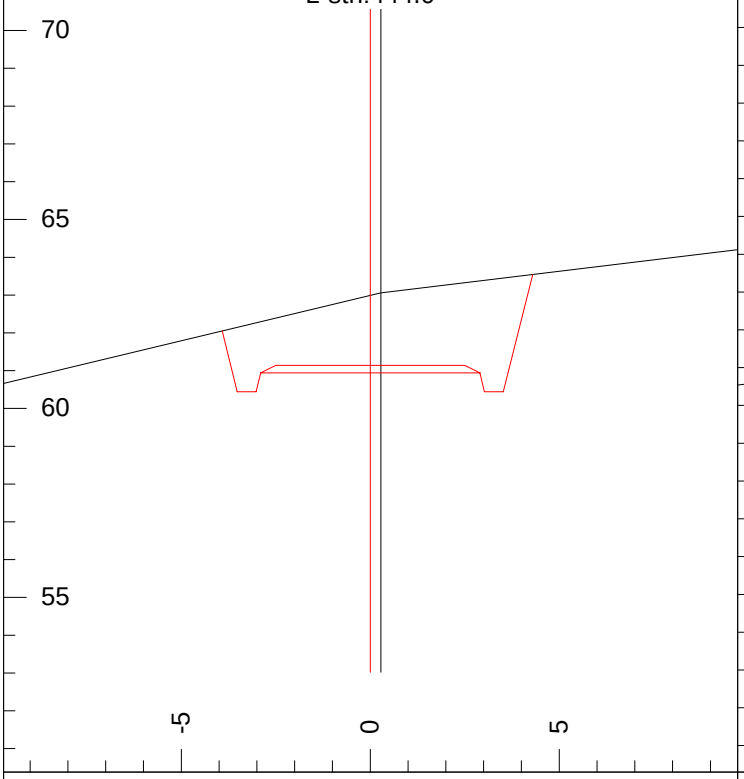
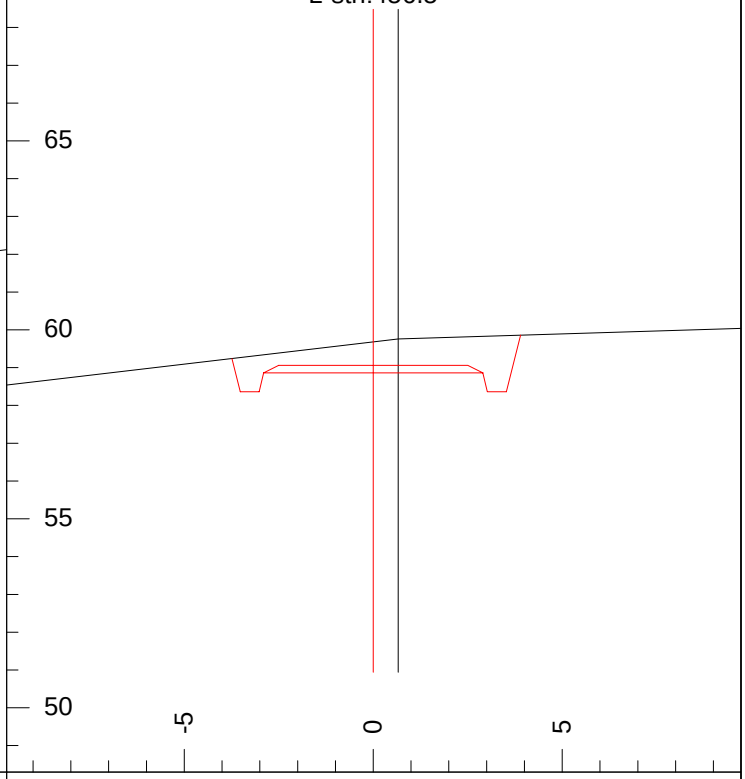
L-stn:444.0



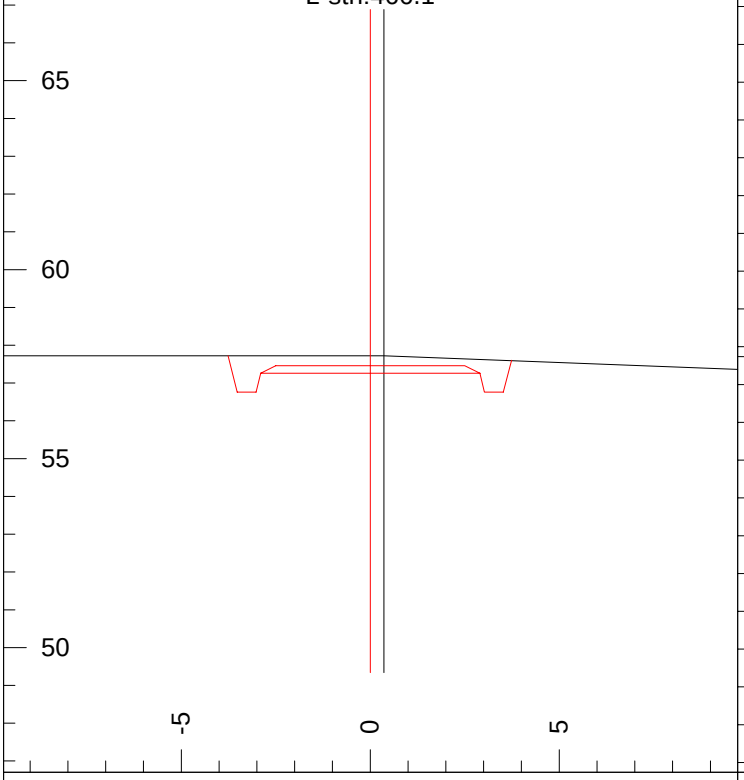
P-Stn:	445.1	Ssl:	-24
Cut Dp:	2.1	Ssr:	12
Grd.Nxt.	-17	Stk L Y:	1.1
Grd.Lst:	-17	Stk R Y:	2.6

L-stn:456.5



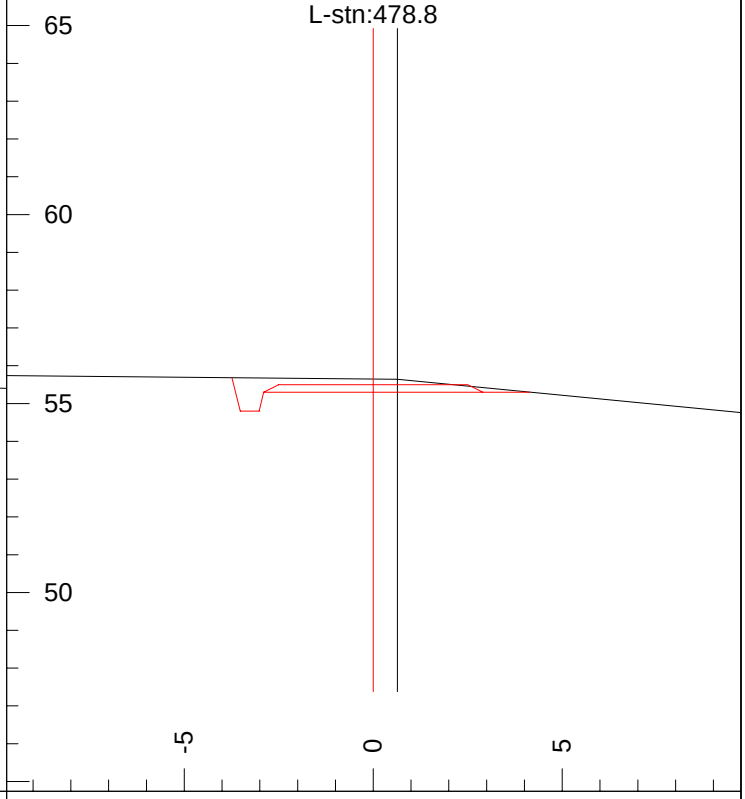
P-Stn:	457.7	Ssl:	-12
Cut Dp:	0.8	Ssr:	3
Grd.Nxt.	-17	Stk L Y:	0.4
Grd.Lst:	-17	Stk R Y:	1.0

L-stn:466.1



P-Stn:	467.5	Ssl:	0
Cut Dp:	0.5	Ssr:	-4
Grd.Nxt.	-16	Stk L Y:	0.5
Grd.Lst:	-16	Stk R Y:	0.3

L-stn:478.8



P-Stn:	480.3	Ssl:	1
Cut Dp:	0.3	Ssr:	-10
Grd.Nxt.	-15	Stk L Y:	0.4
Grd.Lst:	-15	Stk R Y:	0.0

ROADENG Section	Scale 1:200	P. 6
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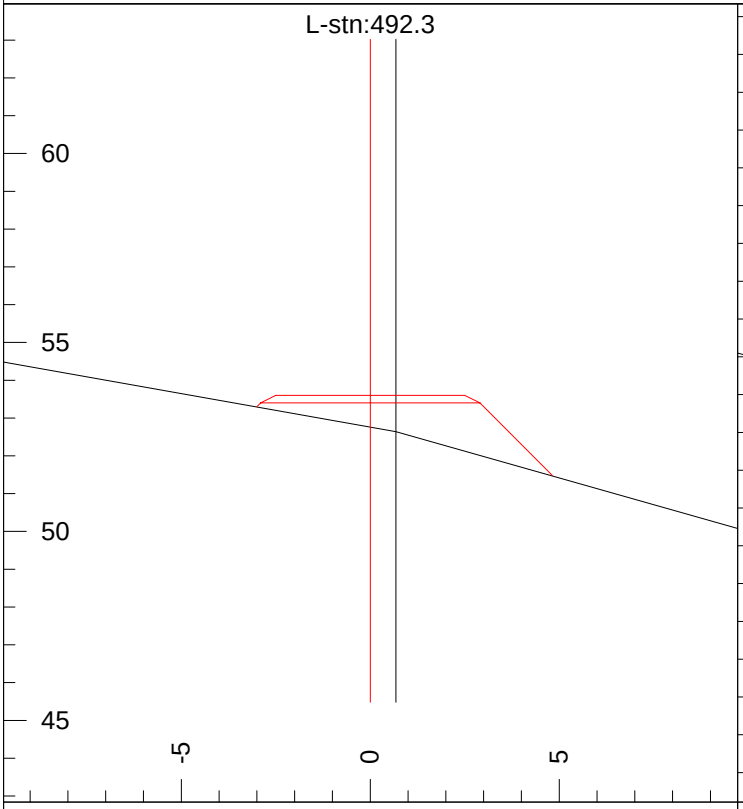
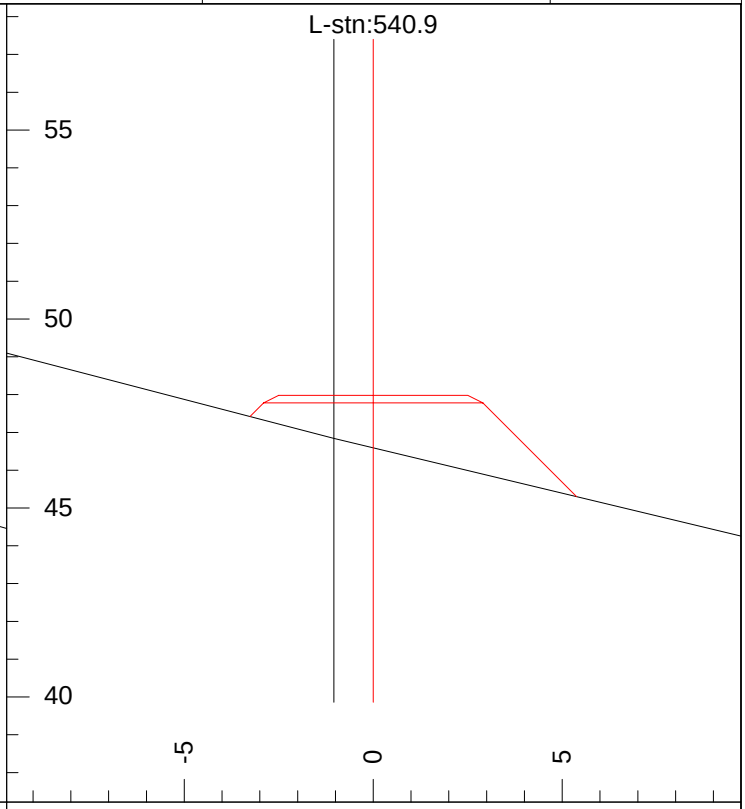
L-stn:492.3



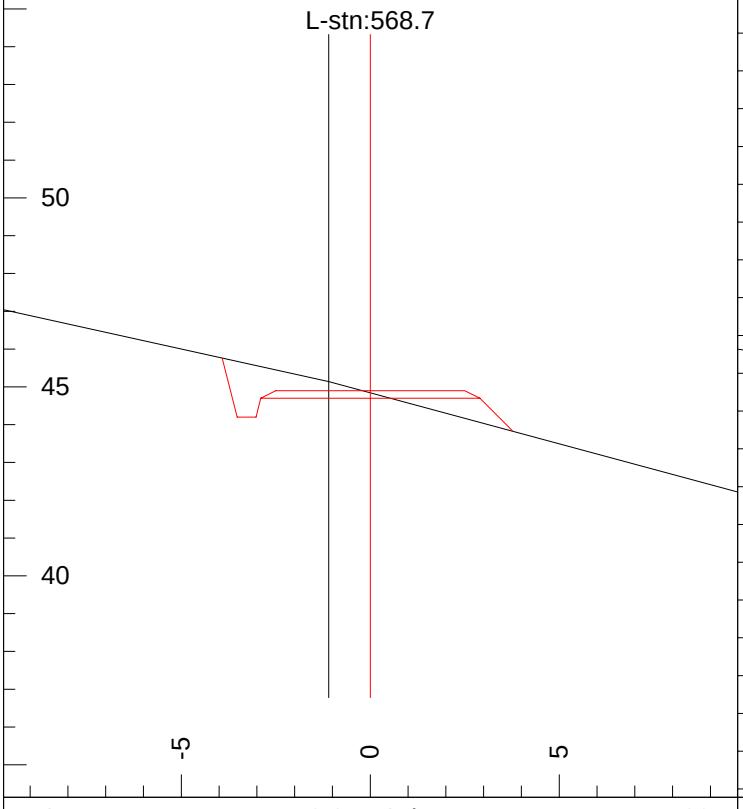
P-Stn:	494.0	Ssl:	18
Cut Dp:	-0.6	Ssr:	-29
Grd.Nxt.	-13	Stk L Y:	-0.1
Grd.Lst:	-13	Stk R Y:	-1.9

L-stn:540.9



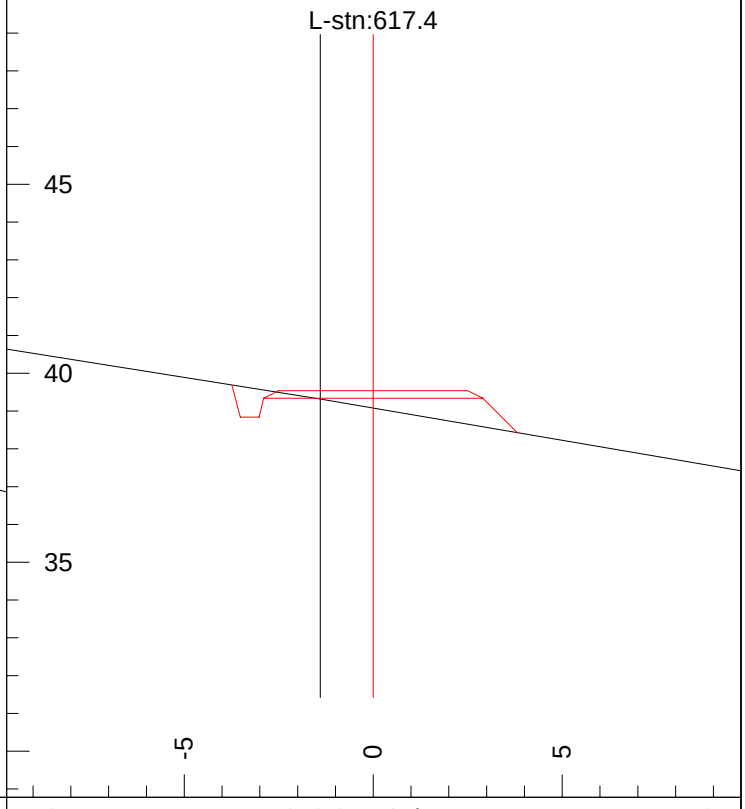
P-Stn:	542.6	Ssl:	26
Cut Dp:	-1.2	Ssr:	-24
Grd.Nxt.	-11	Stk L Y:	-0.4
Grd.Lst:	-11	Stk R Y:	-2.5

L-stn:568.7



P-Stn:	570.6	Ssl:	22
Cut Dp:	0.1	Ssr:	-27
Grd.Nxt.	-11	Stk L Y:	1.1
Grd.Lst:	-11	Stk R Y:	-0.9

L-stn:617.4



P-Stn:	619.2	Ssl:	16
Cut Dp:	-0.3	Ssr:	-17
Grd.Nxt.	-11	Stk L Y:	0.3
Grd.Lst:	-11	Stk R Y:	-0.9

ROADENG Section	Scale 1:200	P. 7
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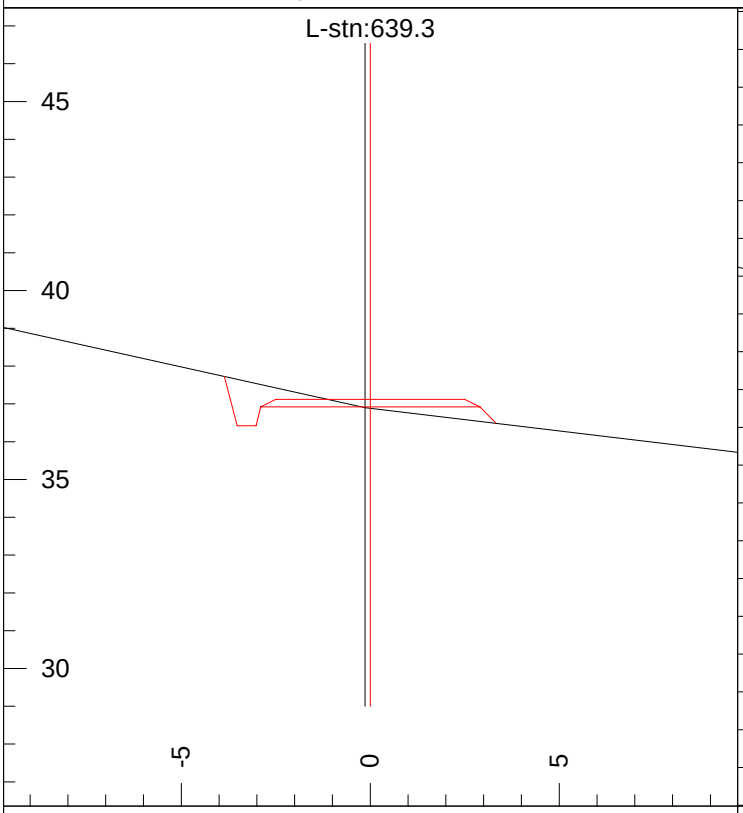
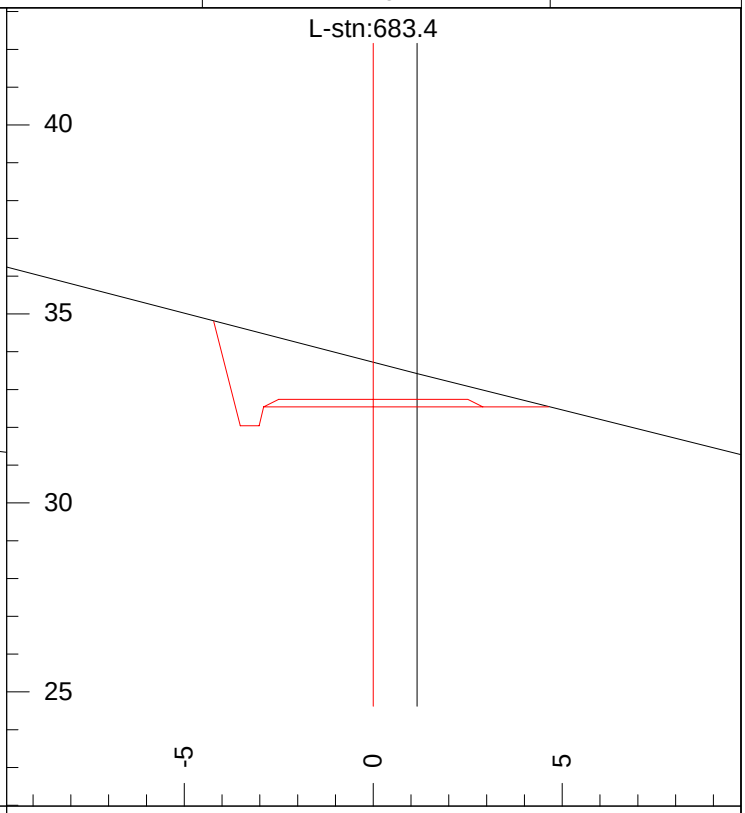
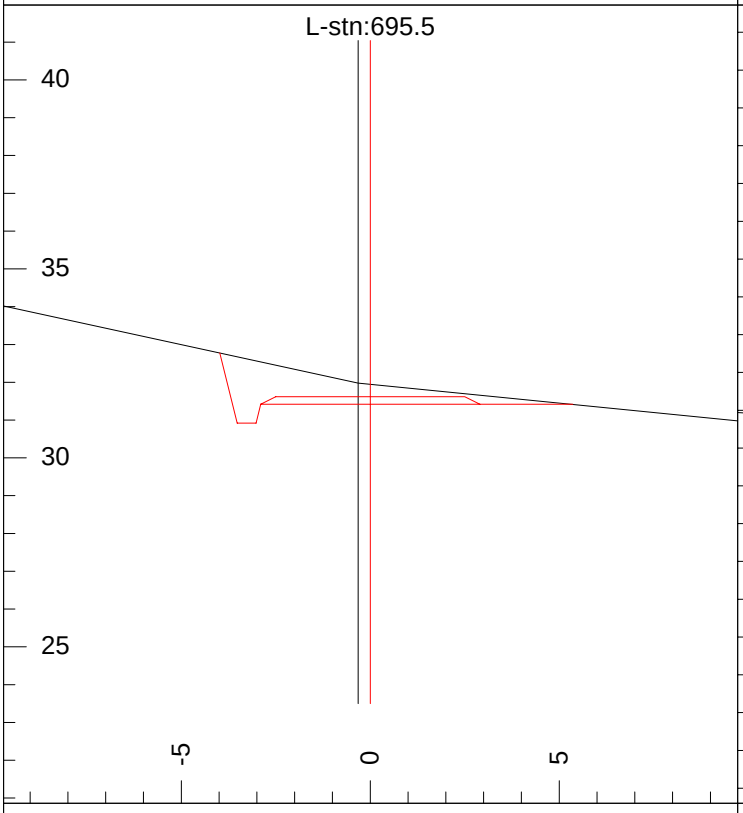


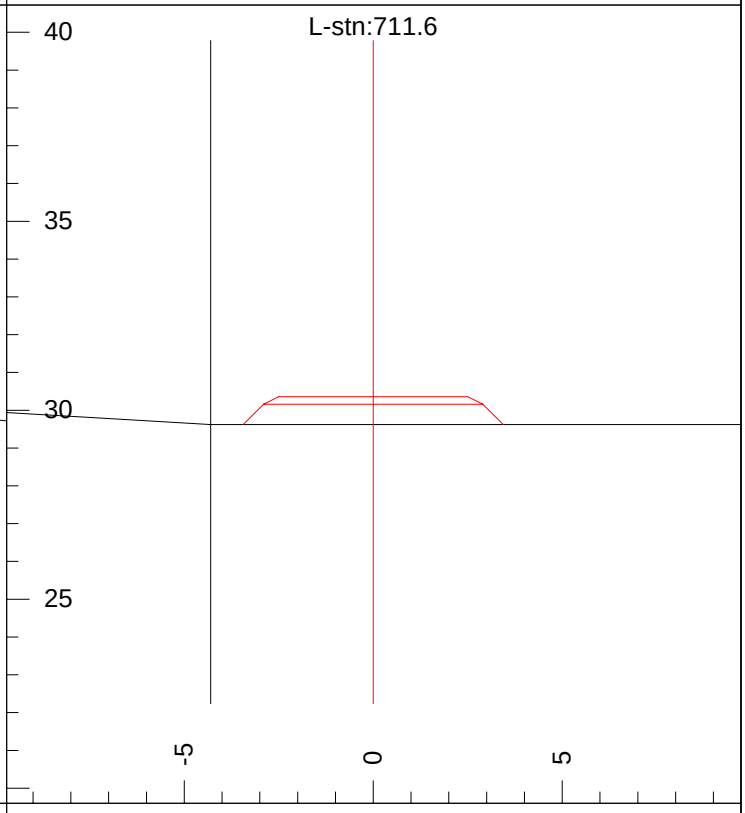
P-Stn:	641.1	Ssl:	22
Cut Dp:	-0.0	Ssr:	-12
Grd.Nxt.	-11	Stk L Y:	0.8
Grd.Lst:	-11	Stk R Y:	-0.4



P-Stn:	685.0	Ssl:	26
Cut Dp:	1.2	Ssr:	-25
Grd.Nxt.	-10	Stk L Y:	2.3
Grd.Lst:	-10	Stk R Y:	0.0



P-Stn:	696.9	Ssl:	22
Cut Dp:	0.5	Ssr:	-10
Grd.Nxt.	-9	Stk L Y:	1.4
Grd.Lst:	-9	Stk R Y:	0.0



P-Stn:	713.7	Ssl:	6
Cut Dp:	-0.5	Ssr:	0
Grd.Nxt.	-7	Stk L Y:	-0.5
Grd.Lst:	-7	Stk R Y:	-0.5

ROADENG Section	Scale 1:200	P. 8
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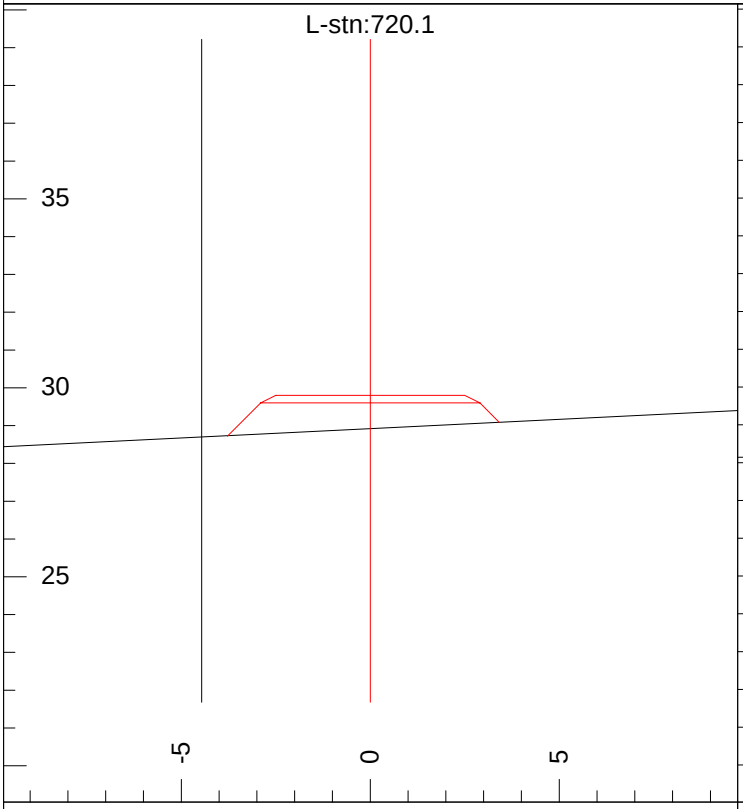
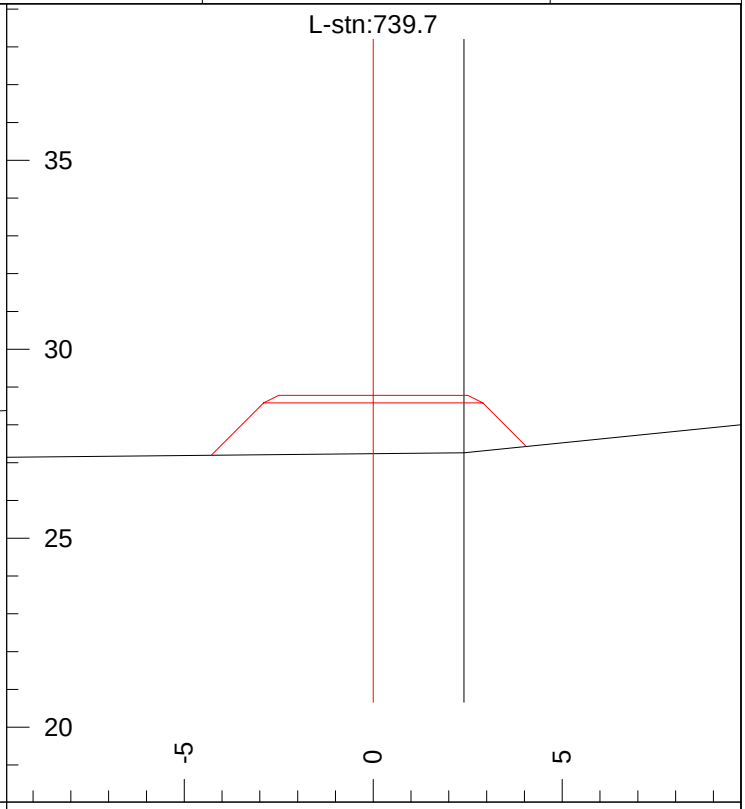
L-stn:720.1



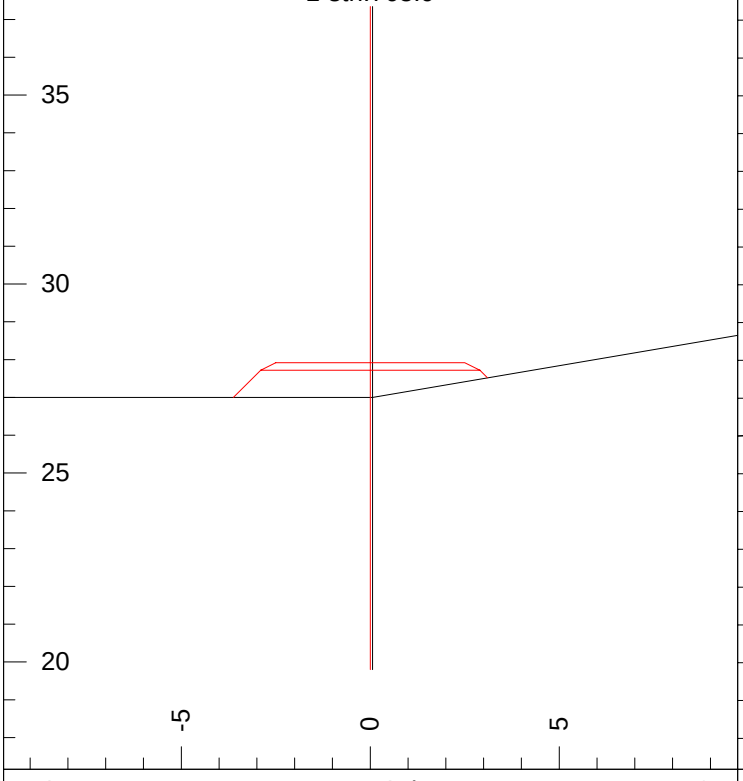
P-Stn:	725.7	Ssl:	-5
Cut Dp:	-0.7	Ssr:	5
Grd.Nxt.	-6	Stk L Y:	-0.9
Grd.Lst:	-6	Stk R Y:	-0.5

L-stn:739.7



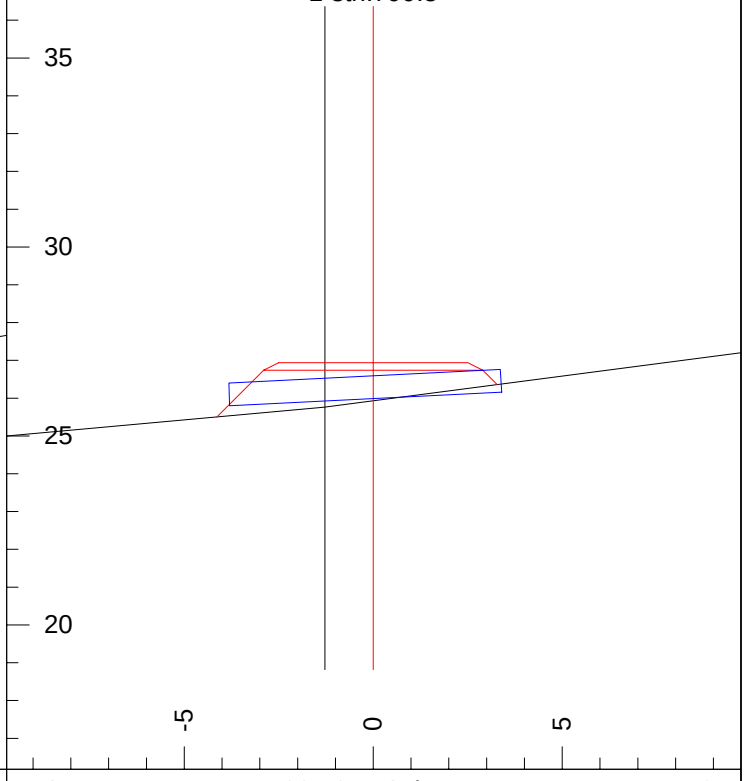
P-Stn:	745.6	Ssl:	-1
Cut Dp:	-1.3	Ssr:	10
Grd.Nxt.	-4	Stk L Y:	-1.4
Grd.Lst:	-4	Stk R Y:	-1.1

L-stn:768.9



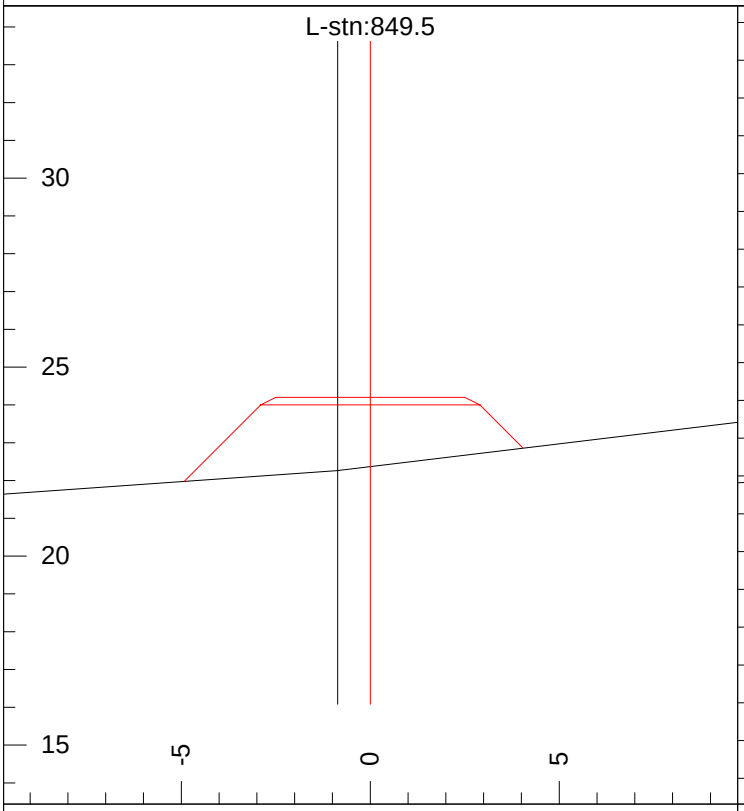
P-Stn:	774.7	Ssl:	0
Cut Dp:	-0.7	Ssr:	17
Grd.Nxt.	-2	Stk L Y:	-0.7
Grd.Lst:	-2	Stk R Y:	-0.2

L-stn:799.8



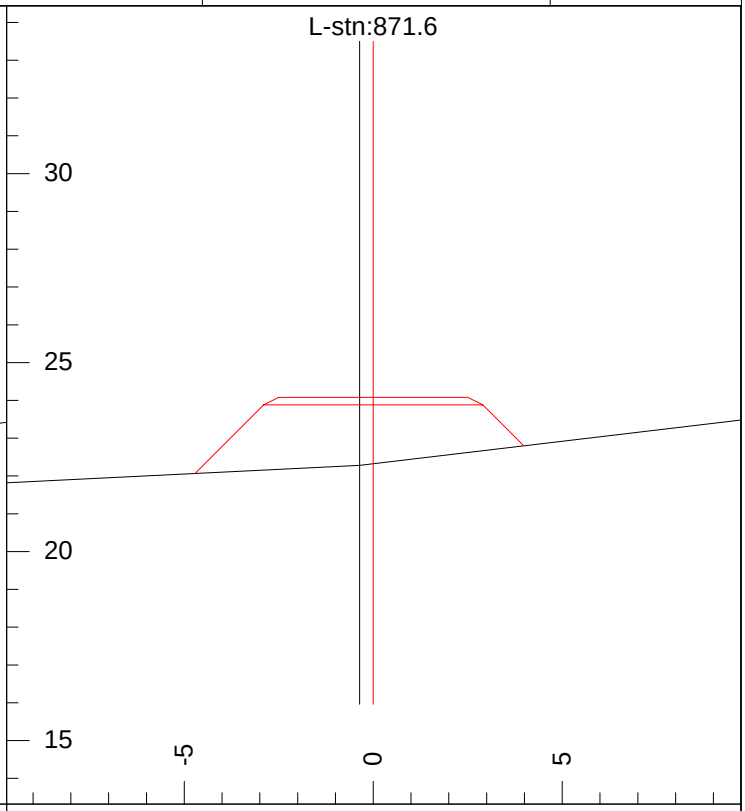
P-Stn:	805.6	Ssl:	-9
Cut Dp:	-0.8	Ssr:	13
Grd.Nxt.	-5	Stk L Y:	-1.2
Grd.Lst:	-5	Stk R Y:	-0.4

L-stn:849.5



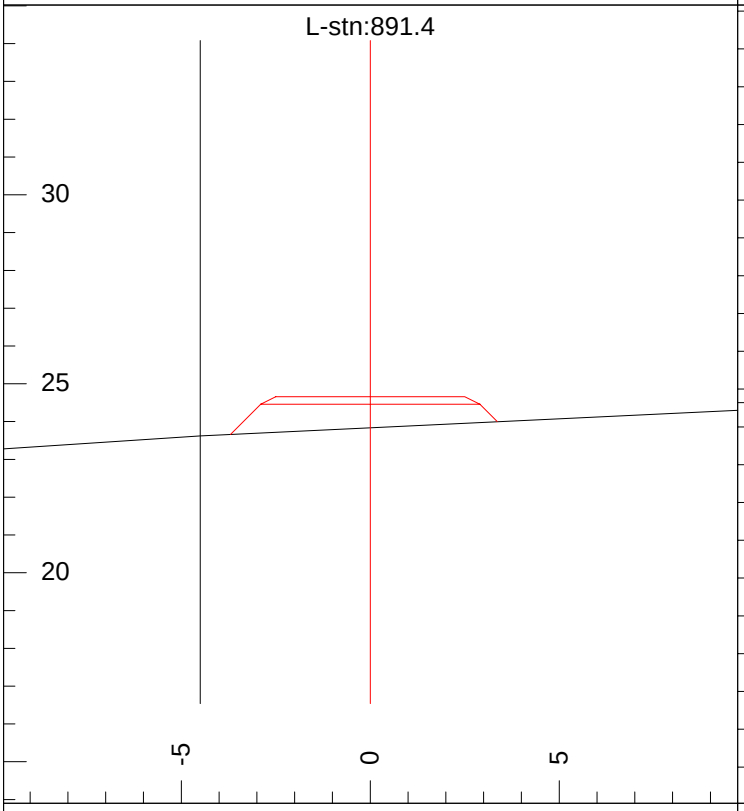
P-Stn:	855.5	Ssl:	-7
Cut Dp:	-1.6	Ssr:	12
Grd.Nxt.	-3	Stk L Y:	-2.0
Grd.Lst:	-3	Stk R Y:	-1.1

L-stn:871.6



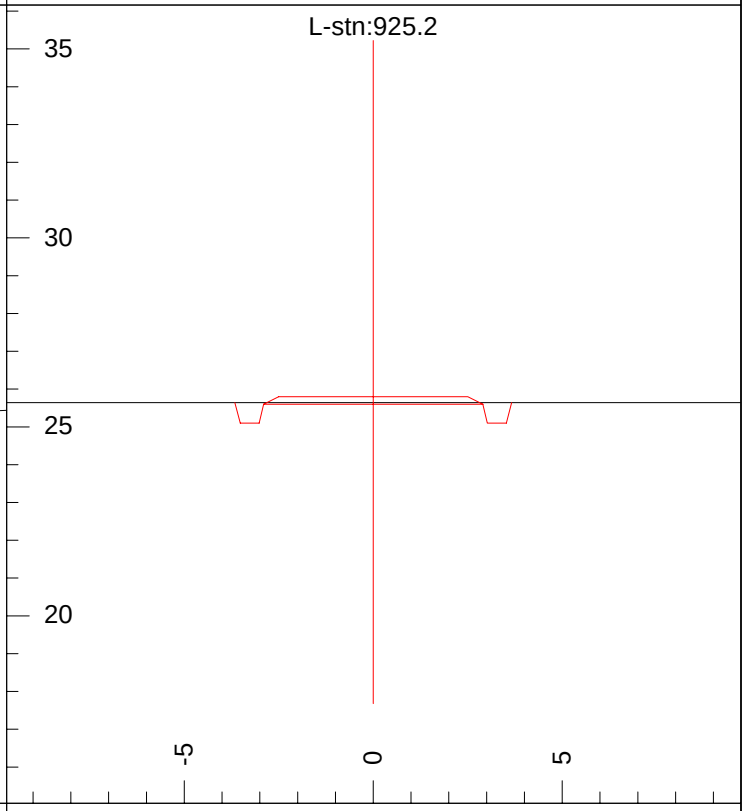
P-Stn:	877.5	Ssl:	-5
Cut Dp:	-1.6	Ssr:	12
Grd.Nxt.	2	Stk L Y:	-1.8
Grd.Lst:	2	Stk R Y:	-1.1

L-stn:891.4



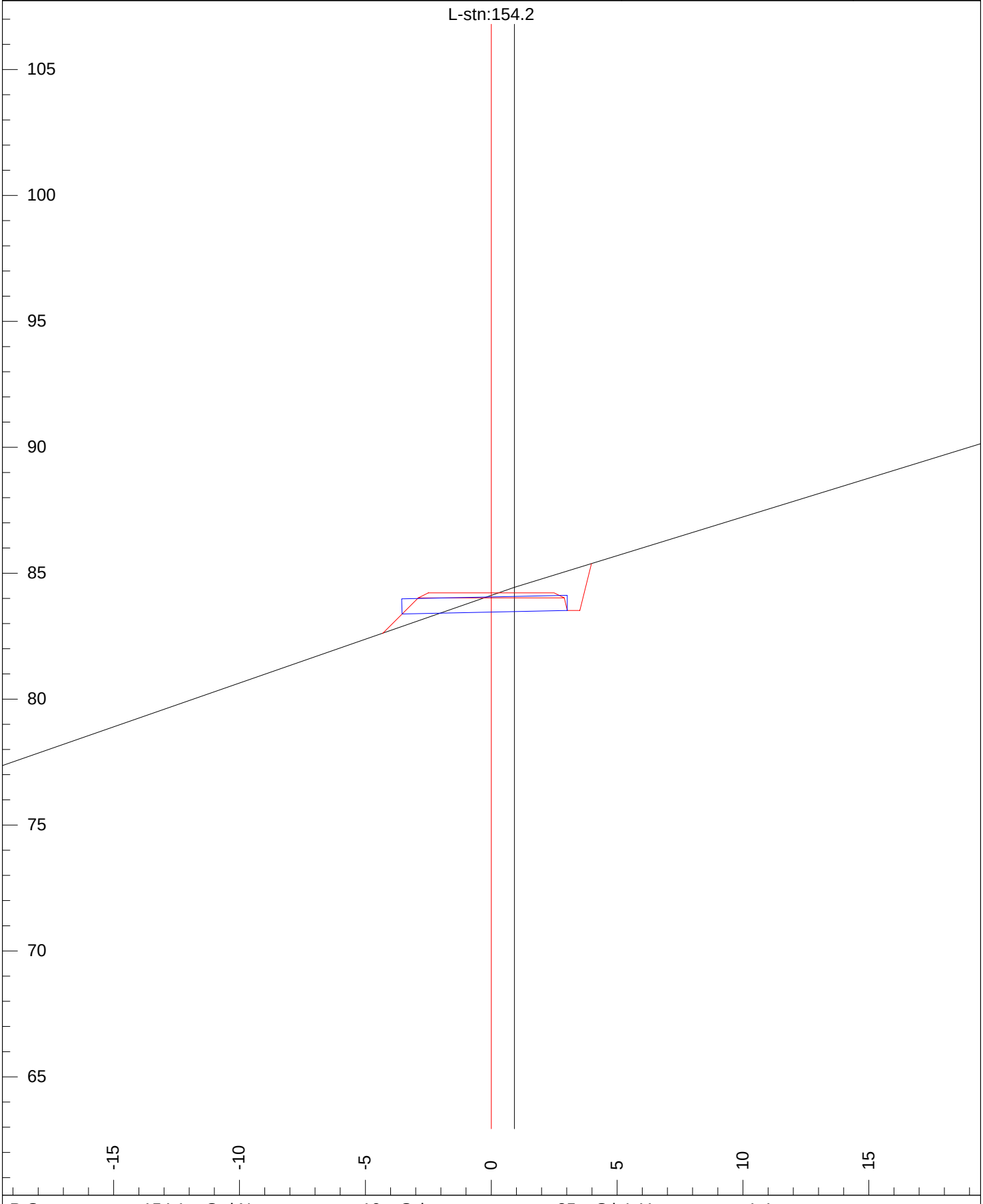
P-Stn:	898.5	Ssl:	-7
Cut Dp:	-0.6	Ssr:	5
Grd.Nxt.	3	Stk L Y:	-0.8
Grd.Lst:	3	Stk R Y:	-0.5

L-stn:925.2



P-Stn:	933.4	Ssl:	0
Cut Dp:	0.0	Ssr:	0
Grd.Nxt.	n/a	Stk L Y:	0.0
Grd.Lst:	3	Stk R Y:	0.0

ROADENG Section	Scale 1:200	P. 1
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8		12/03/22



P-Stn:	154.1	Grd.Nxt.	-10	Ssl:	-35	Stk L Y:	-1.4
Cut Dp:	0.1	Grd.Lst:	-10	Ssr:	31	Stk R Y:	1.4

ROADENG Section	Scale 1:200	P. 2
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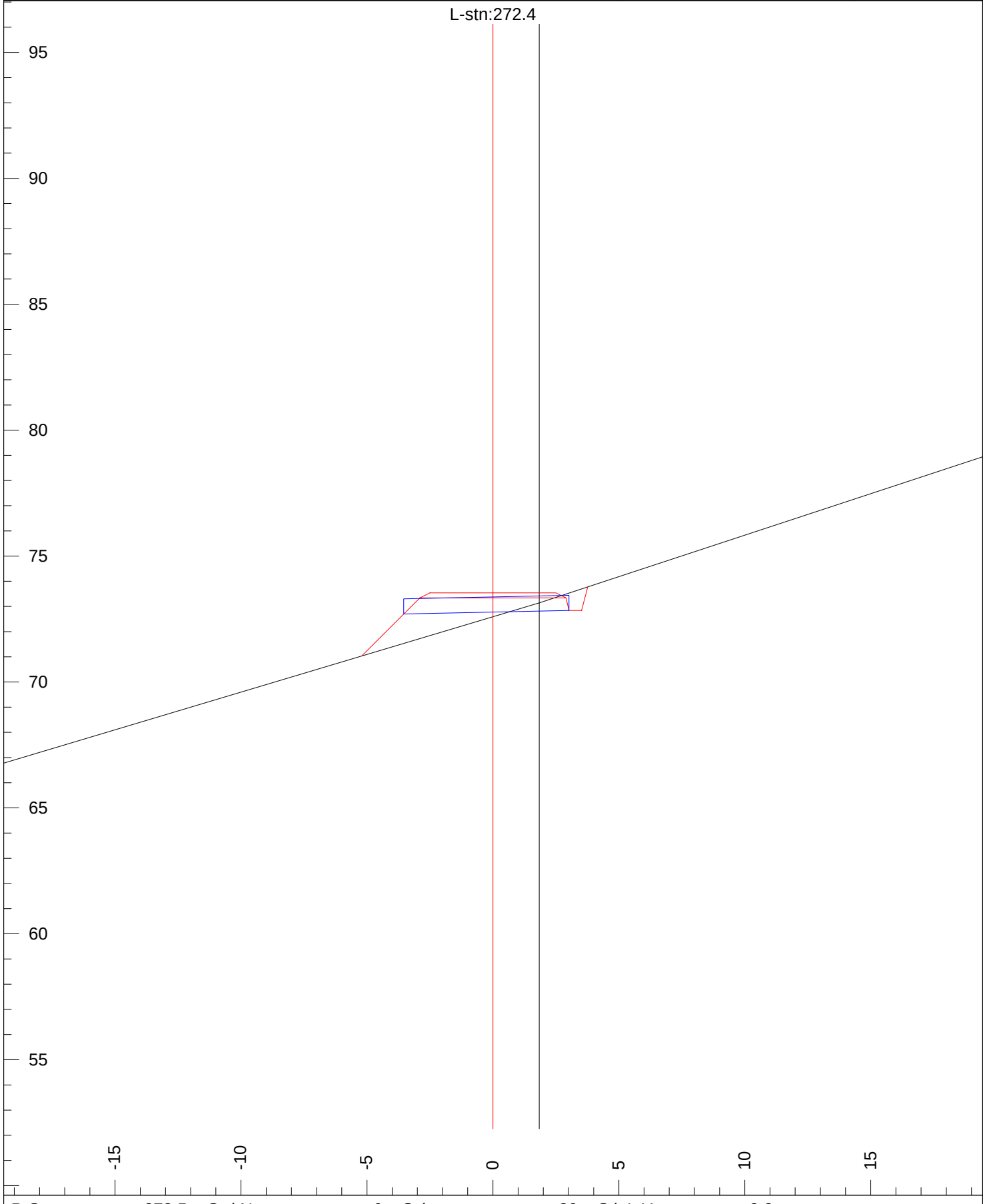
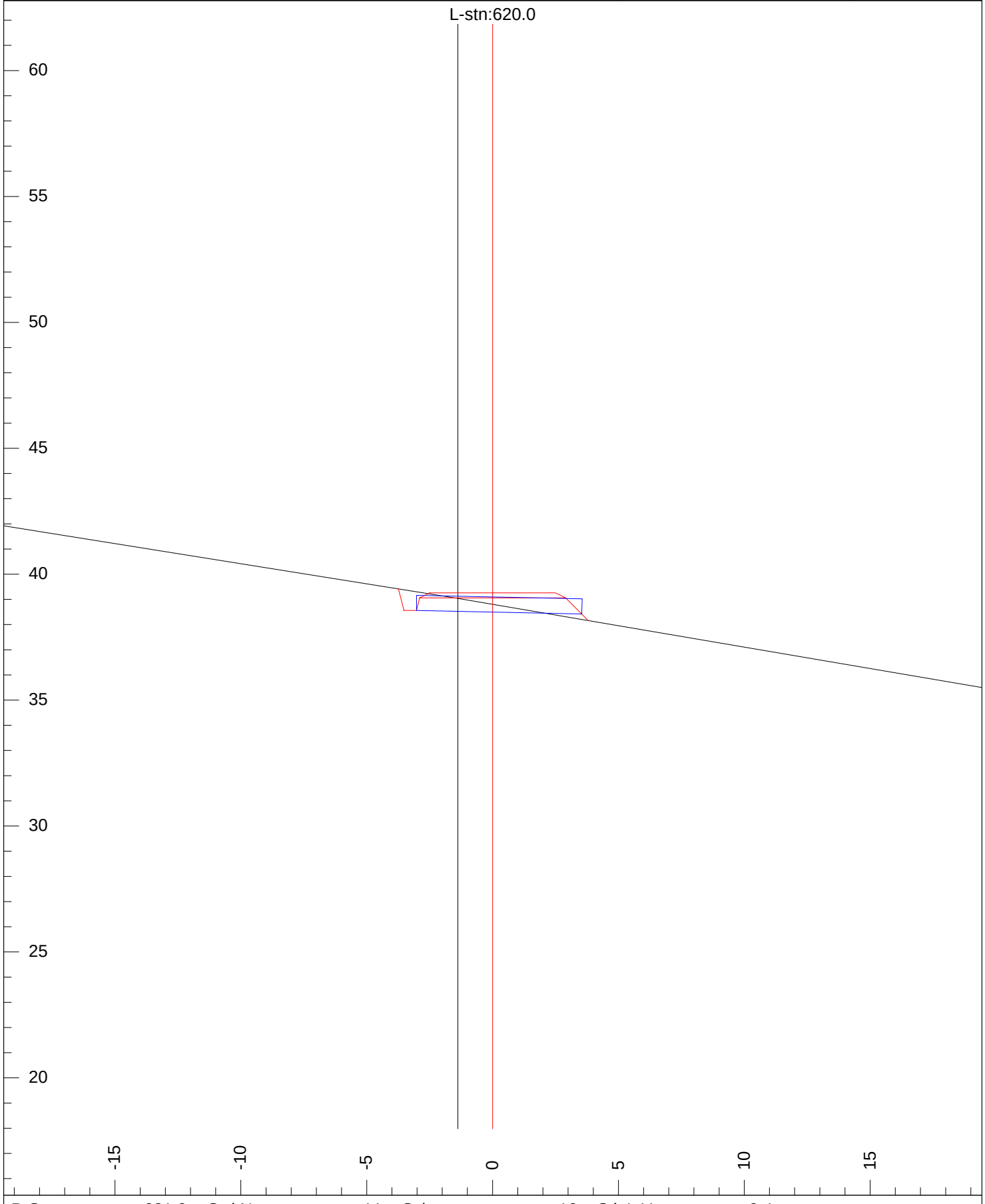


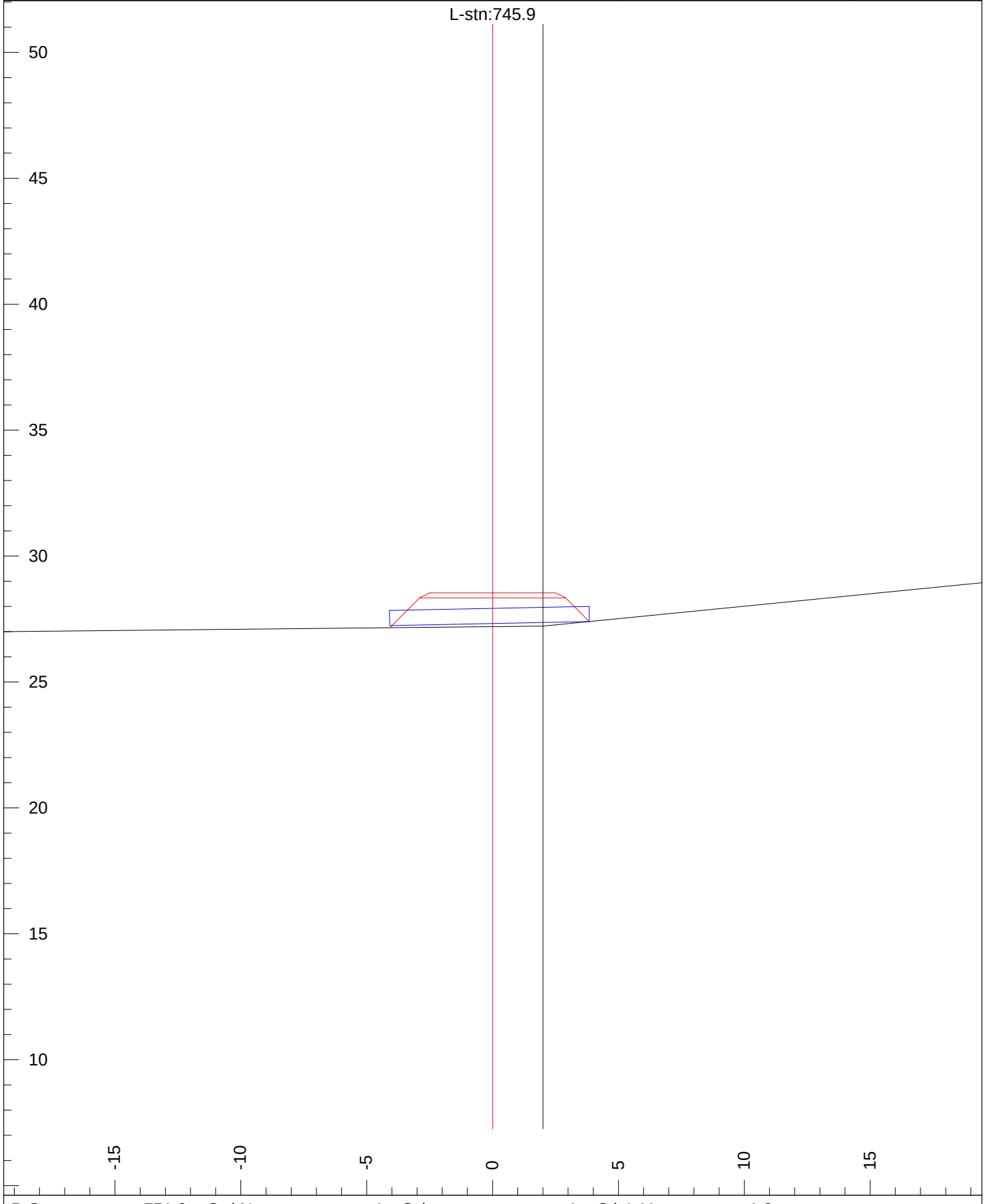
P-Stn:	273.5	Grd.Nxt.	-6	Ssl:	-30	Stk L Y:	-2.3
Cut Dp:	-0.8	Grd.Lst:	-6	Ssr:	33	Stk R Y:	0.4

ROADENG Section	Scale 1:200	P. 3
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8		12/03/22



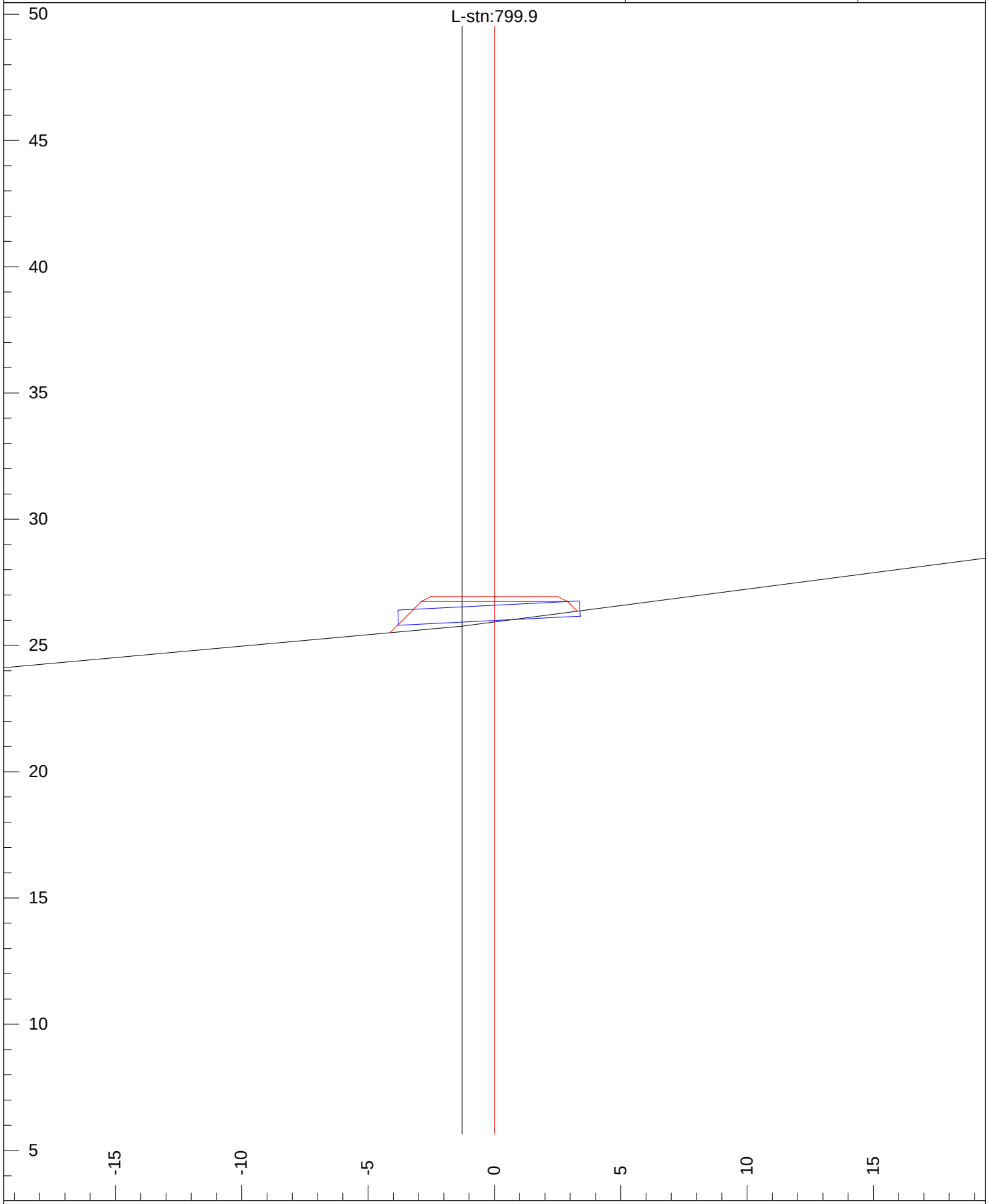
P-Stn:	621.9	Grd.Nxt.	-11	Ssl:	16	Stk L Y:	0.4
Cut Dp:	-0.3	Grd.Lst:	-11	Ssr:	-17	Stk R Y:	-0.9

ROADENG Section	Scale 1:200	P. 4
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8		12/03/22



P-Stn:	751.9	Grd.Nxt.	-4	Ssl:	-1	Stk L Y:	-1.2
Cut Dp:	-1.1	Grd.Lst:	-4	Ssr:	10	Stk R Y:	-0.9

ROADENG Section	Scale 1:200	P. 5
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8		12/03/22

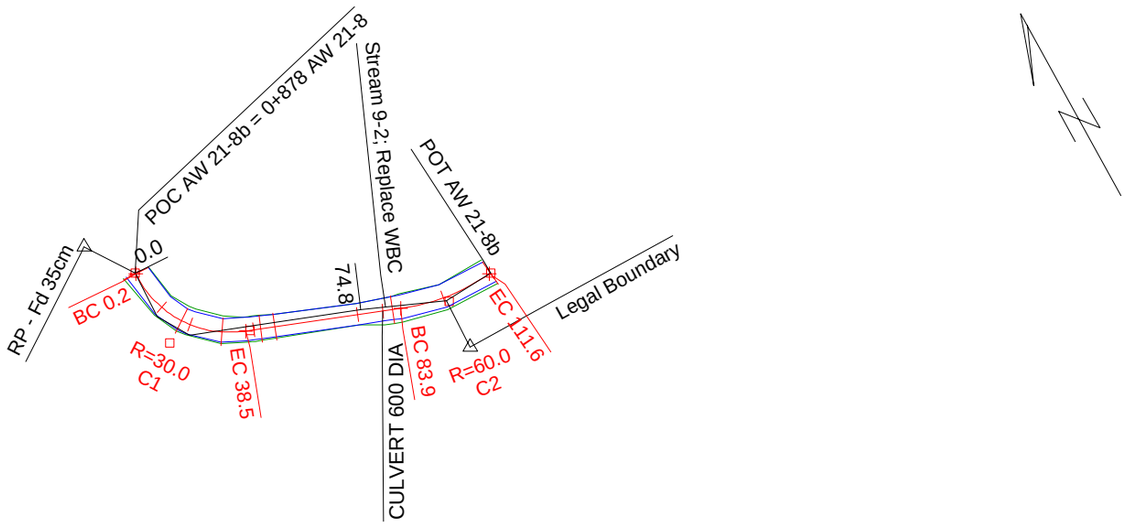


P-Stn:	805.6	Grd.Nxt.	-5	Ssl:	-9	Stk L Y:	-1.2
Cut Dp:	-0.8	Grd.Lst:	-5	Ssr:	13	Stk R Y:	-0.4

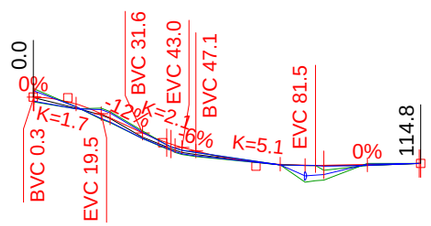
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Ro 12/03/22 \AW 21-

P-Stn m.	Grade %	Lyr1 Gnd	Lyr1 V. cu.m.	Lyr2 Gnd	Lyr2 V. cu.m.	Cut Dp. m.	Cut V. cu.m.	Fill V. cu.m.	Mass H. cu.m.
0.0	-2	OB	0.0		0.0	0.0	0.0	0.2	0.0
0.4	p -7	OB	0.0		0.0	-0.1	0.0	101.3	-0.2
15.3	-11	OB	0.0		0.0	-1.4	0.0	122.3	-101.5
23.7	-11	OB	104.1		0.0	-1.6	104.1	477.8	-223.8
74.6	-11	OB	177.5		0.0	0.2	177.5	74.9	-597.5
117.4	-10	OB	99.6		0.0	-0.1	99.6	89.1	-494.9
154.1	-10	OB	291.9		0.0	0.1	291.9	167.5	-484.5
232.4	p -9	OB	18.0		0.0	0.0	18.0	10.3	-360.1
237.7	p -6	OB	78.8		0.0	0.2	78.8	274.9	-352.5
292.3	-4	OB	84.6		0.0	-0.9	84.6	576.4	-548.6
389.4	p -10	OB	20.2		0.0	-1.4	20.2	127.5	-1040.4
411.5	-17	OB	674.2		0.0	0.2	674.2	1.1	-1147.7
460.7	p -14	OB	86.4		0.0	0.8	86.4	184.7	-474.6
518.1	-11	OB	27.8		0.0	-0.8	27.8	322.0	-572.9
570.6	-11	OB	84.5		0.0	0.1	84.5	73.5	-867.1
621.9	-11	OB	26.5		0.0	-0.3	26.5	26.5	-856.1
642.8	-10	OB	217.4		0.0	0.0	217.4	8.0	-856.1
684.0	p -6	OB	149.4		0.0	1.2	149.4	311.9	-646.7
763.5	-2	OB	0.0		0.0	-0.8	0.0	84.0	-809.2
783.5	p -3	OB	0.0		0.0	-0.7	0.0	108.7	-893.1
805.6	p -6	OB	0.0		0.0	-0.8	0.0	200.4	-1001.8
832.4	-7	OB	0.0		0.0	-1.2	0.0	1.8	-1202.2
832.6	p -2	OB	0.0		0.0	-1.2	0.0	566.1	-1204.0
886.8	3	OB	6.8		0.0	-1.1	6.8	139.5	-1770.1
933.4		OB	0.0		0.0	0.0	0.0	0.0	-1902.8
933.4		OB				0.0			-1902.8

Plan Scale 1:2000



Horiz Scale 1:2000
Vert Scale 1:500



Lyr1 Gnd: OB 400
Lyr2 Gnd: n/a
Ssl: -7 +10 +4 0
Ssr: +16 +7 -4 0 +5

Alberni Valley Community Forest
Licence K2D - Sproat FDU
Road: AW 21-8b
New Construction

Page 1 of 1 | **12/03/22**

South Coast Forest Region
Sunshine Coast Forest District
Mapsheet: NTS 92K2
5m Contour Interval
Decl. 18º 1' E (2011)

Survey: ECON Constulting
Design: Mike Davis, F.I.T.
Signing Forester: Erik Holbek, R.P.F.

Legend

- Plan L-line Location / Profile Subgrade
- P-line Location
- Slope Stakes
- Road Edges
- Reference Shots

Curve Table

	C1	C2
Angle (I)	73.2	26.5
Tangent (T)	22.3	14.1
Curve Len.(L)	38.3	27.7
Radius (R)	30.0	60.0

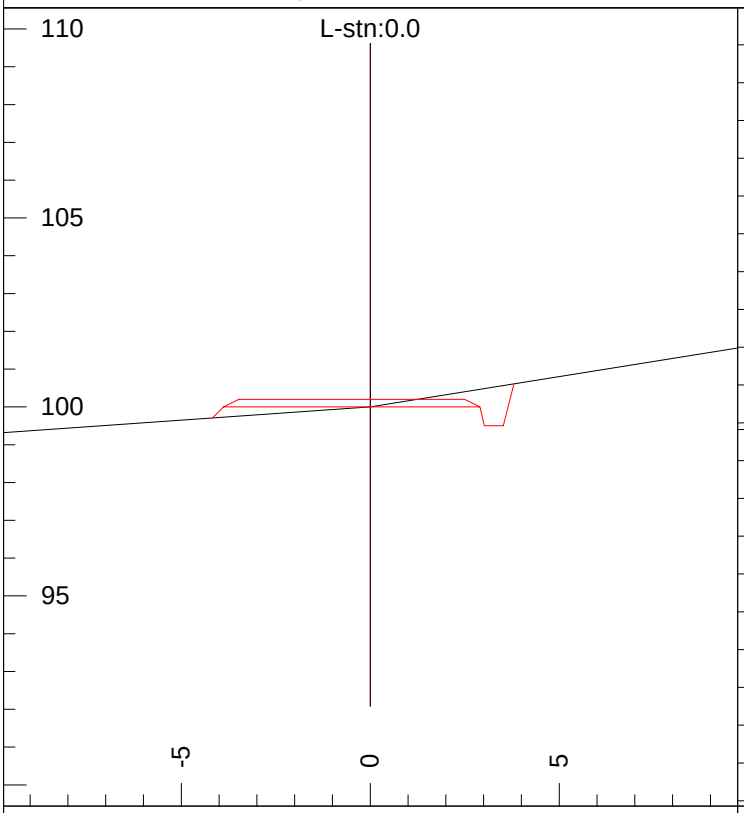
Ground Types	Cut % / Fill%	Expansion Factor (Cut/Fill)
OB	67/50	1.0/1.0
GR	67/67	1.0/0.8
SR	400/100	1.0/0.9

Notes:

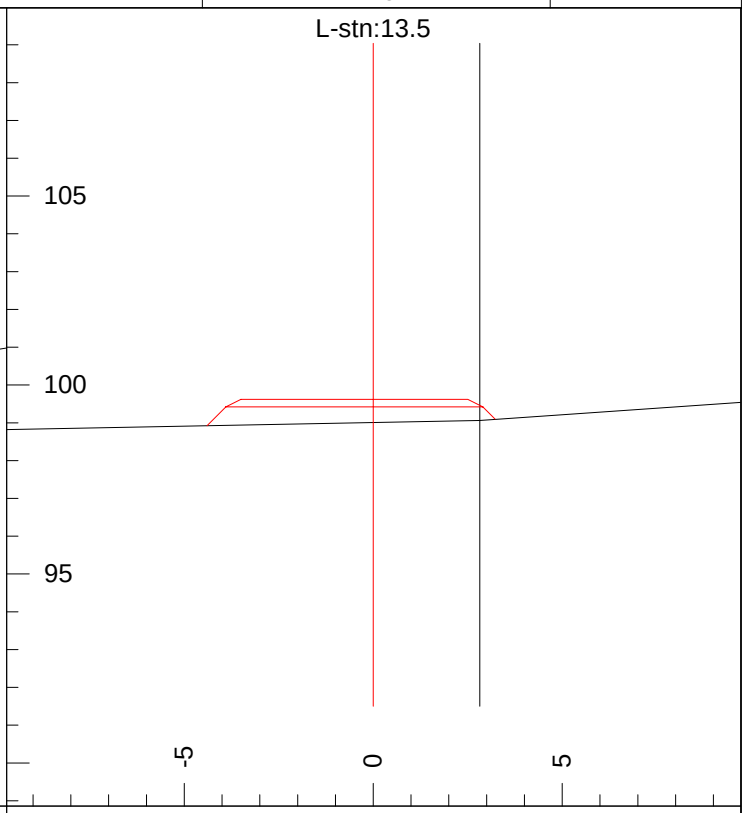
Design File:
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8b.dsn
Traverse Date: 12/02/15 (MD/EH)
Traverse File:
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\rdaw2181b20215md.tr1

ECON Consulting
PO Box 329, Merville B.C., V0R 2M0
ph 250 337 5588
fx 250 337 2063
mail@econ.ca
www.econ.ca

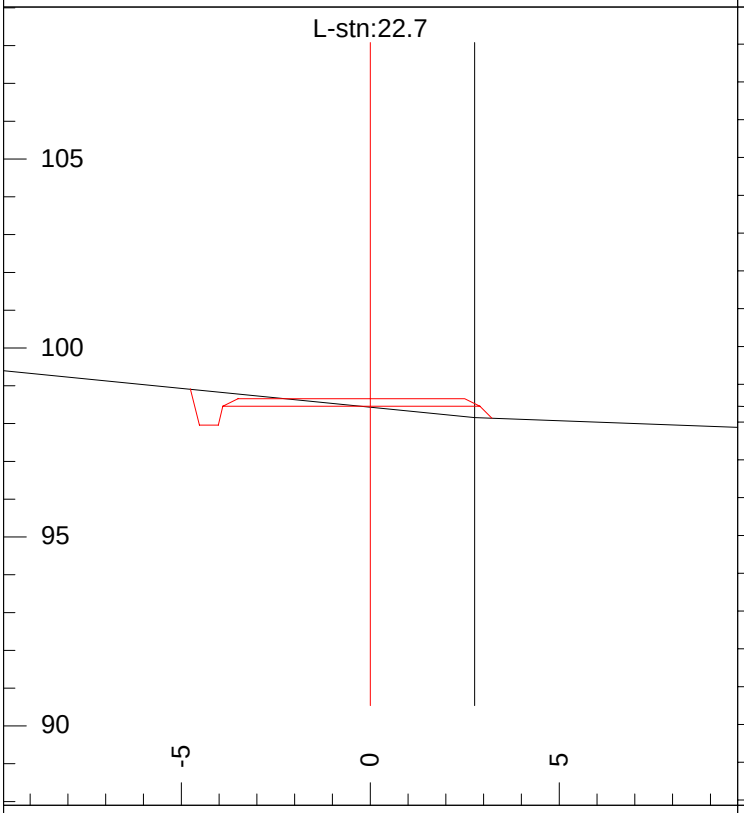
ROADENG Section	Scale 1:200	P. 1
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8b		12/03/22



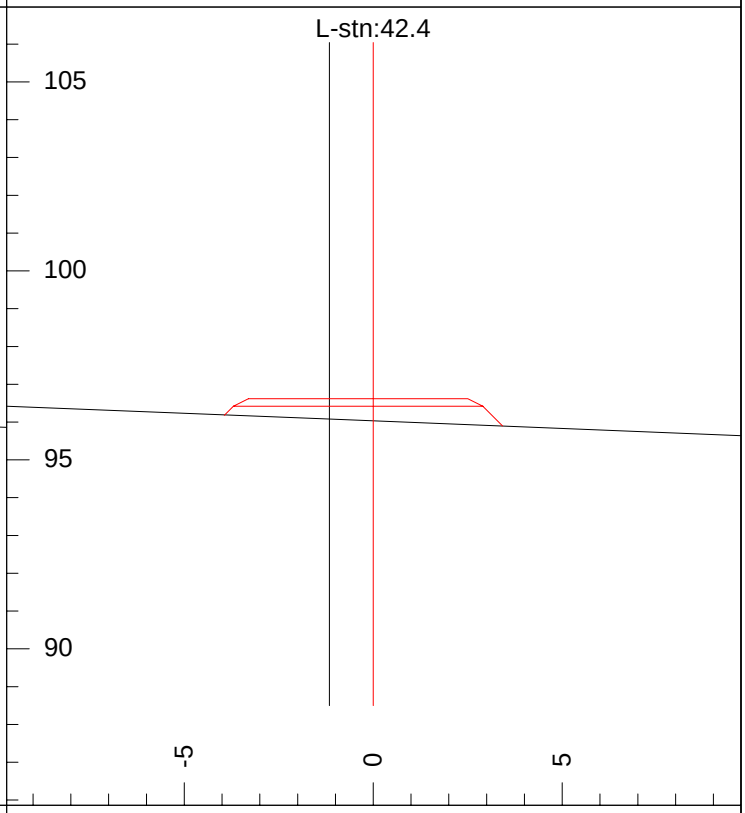
P-Stn:	0.0	Ssl:	-7
Cut Dp:	0.0	Ssr:	16
Grd.Nxt.	0	Stk L Y:	-0.3
Grd.Lst:	n/a	Stk R Y:	0.6



P-Stn:	14.0	Ssl:	-2
Cut Dp:	-0.4	Ssr:	7
Grd.Nxt.	-8	Stk L Y:	-0.5
Grd.Lst:	-8	Stk R Y:	-0.3

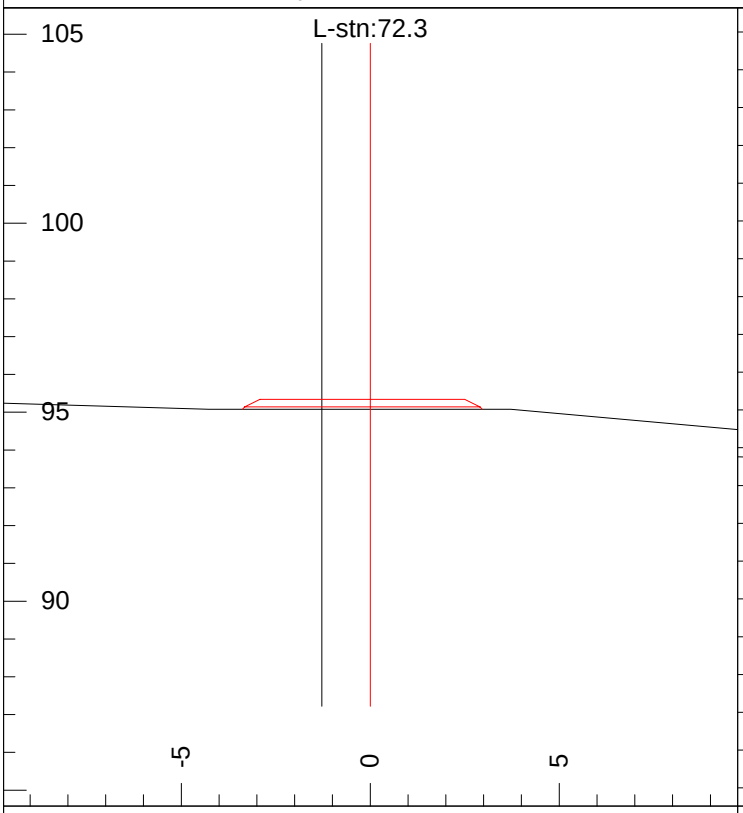


P-Stn:	24.9	Ssl:	10
Cut Dp:	-0.0	Ssr:	-4
Grd.Nxt.	-12	Stk L Y:	0.5
Grd.Lst:	-12	Stk R Y:	-0.3

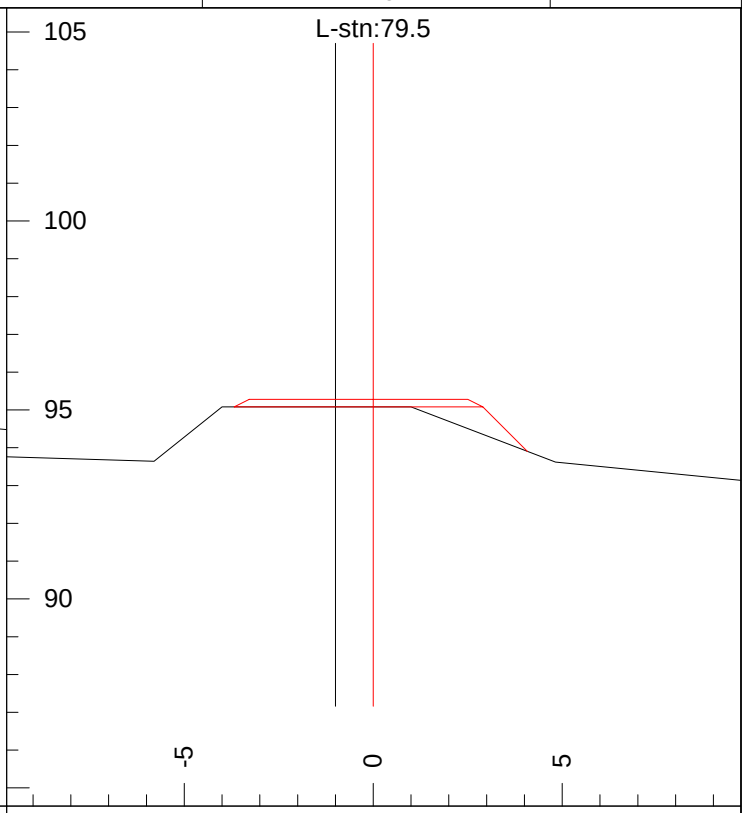


P-Stn:	44.8	Ssl:	4
Cut Dp:	-0.4	Ssr:	-4
Grd.Nxt.	-7	Stk L Y:	-0.2
Grd.Lst:	-7	Stk R Y:	-0.5

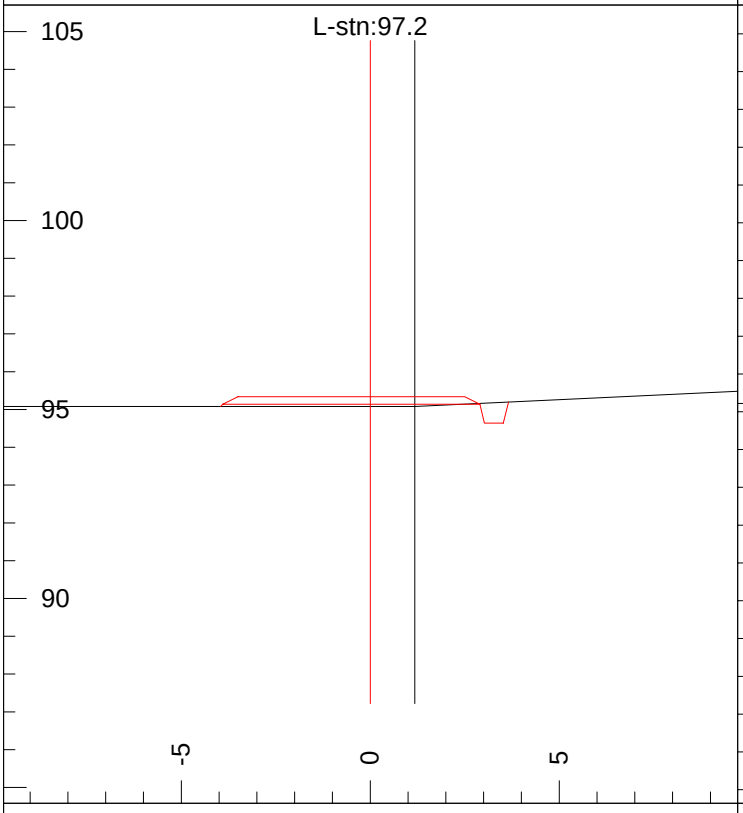
ROADENG Section	Scale 1:200	P. 2
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8b		12/03/22



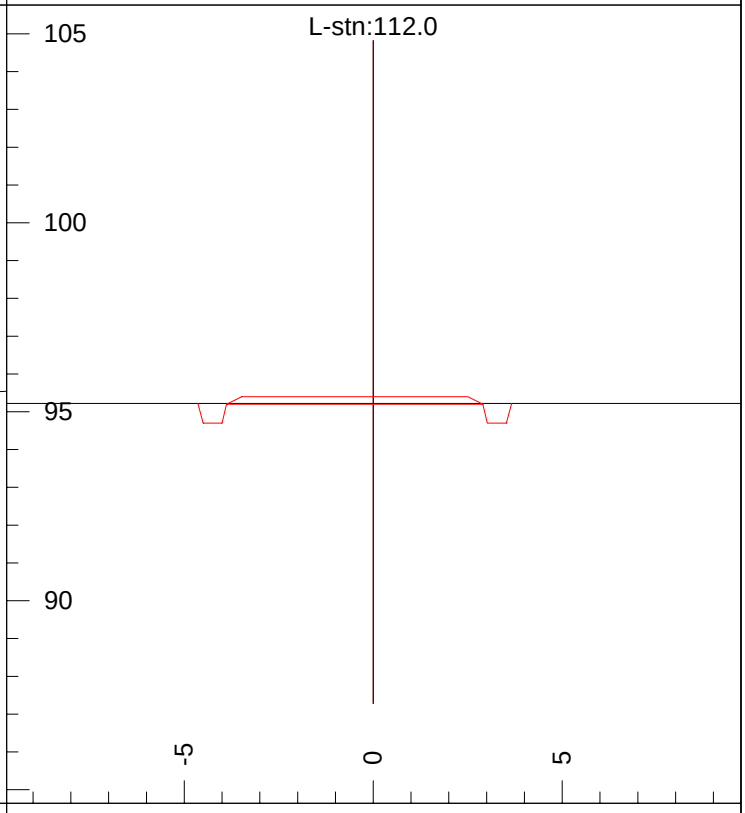
P-Stn:	74.8	Ssl:	0
Cut Dp:	-0.1	Ssr:	0
Grd.Nxt.	-1	Stk L Y:	-0.1
Grd.Lst:	-1	Stk R Y:	-0.1



P-Stn:	82.0	Ssl:	0
Cut Dp:	-0.0	Ssr:	0
Grd.Nxt.	0	Stk L Y:	0.0
Grd.Lst:	0	Stk R Y:	-1.2

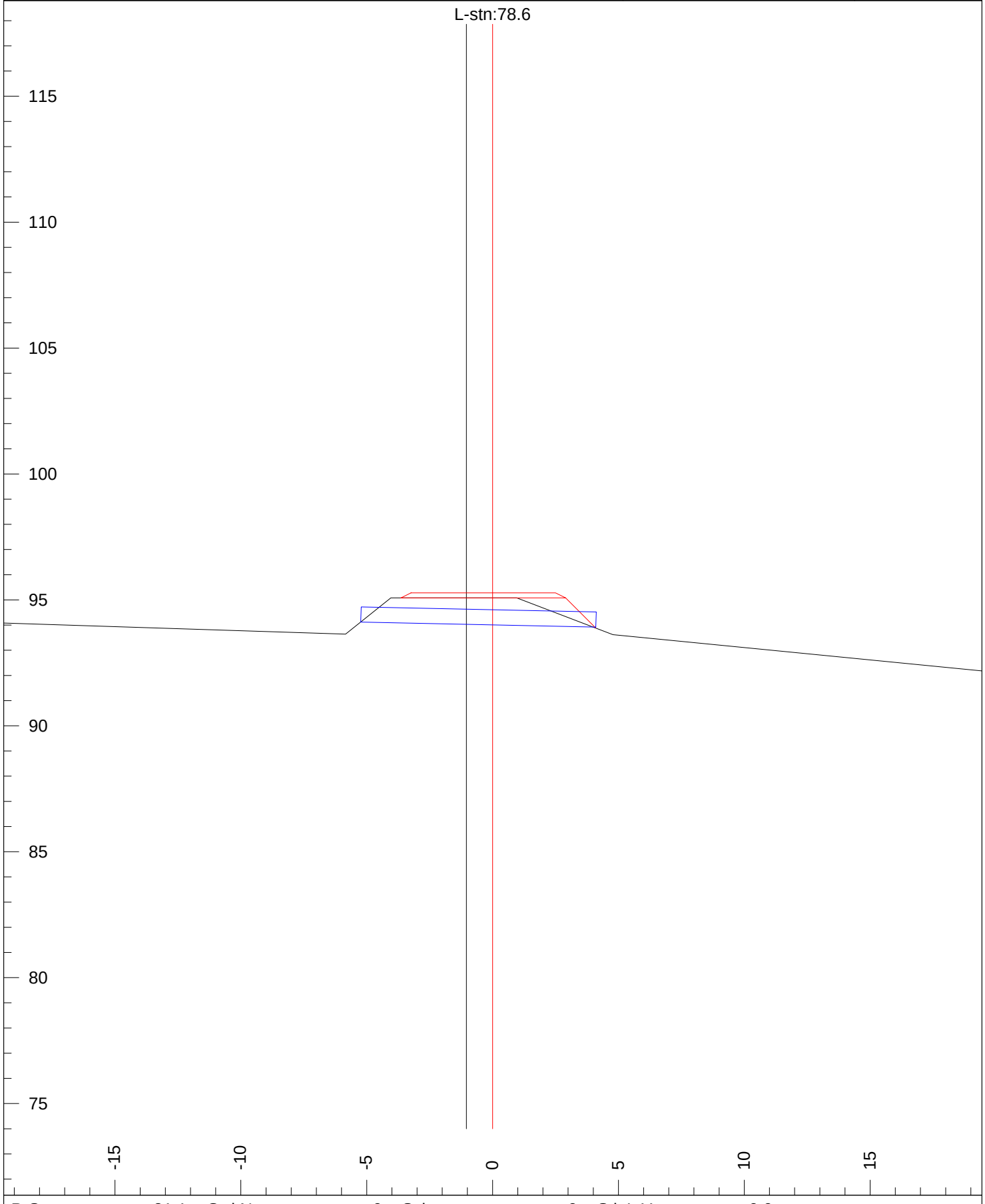


P-Stn:	99.8	Ssl:	0
Cut Dp:	-0.1	Ssr:	5
Grd.Nxt.	0	Stk L Y:	-0.1
Grd.Lst:	0	Stk R Y:	0.1



P-Stn:	114.8	Ssl:	0
Cut Dp:	0.0	Ssr:	0
Grd.Nxt.	n/a	Stk L Y:	0.0
Grd.Lst:	0	Stk R Y:	0.0

ROADENG Section	Scale 1:200	P. 1
D:\CLIENT\Alberni Valley CF\Traverse V4\Road Traverses\Bookhout Creek Network\Road Design\AW 21-8b		12/03/22



P-Stn:	81.1	Grd.Nxt.	0	Ssl:	0	Stk L Y:	0.0
Cut Dp:	-0.0	Grd.Lst:	0	Ssr:	0	Stk R Y:	-1.2

P-Stn m.	Grade %	Lyr1 Gnd	Lyr1 V. cu.m.	Lyr2 Gnd	Lyr2 V. cu.m.	Cut Dp. m.	Cut V. cu.m.	Fill V. cu.m.	Mass H. cu.m.
0.0	0	OB	0.4		0.0	0.0	0.4	0.2	0.0
0.2	p -6	OB	11.8		0.0	-0.0	11.8	27.1	0.2
20.8	-12	OB	10.9		0.0	-0.1	10.9	11.8	-15.0
34.2	p -9	OB	1.5		0.0	-0.3	1.5	22.0	-16.0
45.4	-6	OB	0.0		0.0	-0.4	0.0	8.4	-36.6
49.6	p -3	OB	0.0		0.0	-0.2	0.0	30.8	-44.9
84.0	0	OB	11.0		0.0	-0.0	11.0	15.2	-75.8
114.8		OB	0.0		0.0	0.0	0.0	0.0	-80.0
114.8		OB				0.0			-80.0

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Merville, BC V0R 2M0
Phone 250-337-5588
Fax 250-337-2063
e-mail mail@econ.ca
WEB www.econ.ca

Site Plan

Stocking Standards / Critical Factors

Licence:	K2D/AVCF	Cutting Permit:	002	Block:	B9	Timber Mark:	K2D002

Total Area (ha):	18.48	NAR (ha):	13.94	WTRA (ha):	3.37	NP NAT (ha):	0.14	NP UNN (ha /%):	1.03 / 5.6%	P.A.S. Limit (%):	7

This SP is consistent with AVCF FSP #1, May 10, 2011. The entire area is second growth timber previously harvested in the 1950's.

Block B9 is located within the Sproat Lake Community Watershed.

This block will be harvested and regenerated using a combination of clear-cut and retention silviculture systems with external wildlife tree retention. In SU-A, uniform dispersed retention of 18sph of dominant and co-dominant Fd, with an average inter-tree distance of 25m is prescribed. The purpose of the retention is to mitigate visual quality impact in the upper regions of the block, to provide vertical structure, and to provide for future CWD recruitment. A clear-cut system will be used in SU-B and SU-C.

Block B9 is designed for ground based harvesting as is shown on the harvest plan map. Road access is from road reactivation of Rd AW 21, and new road construction of Rd AW 21-8 and Rd AW 21-8b. An old grade exists between FC S1 & S2 and is suitable for access use or skidding.

STOCKING STANDARDS

SU	Standards ID	NAR (ha)	Biogeoclimatic Ecosystem Classification				Regeneration Method	Preferred Species	Acceptable Species
			Zone	Subzone	Variant	Site Series			
A	1037530	4.18	CWH	xm	2	01	Plant	Fd	Hw, Cw Pw[22]
B	1037530	5.86	CWH	xm	2	01	Plant	Fd	Hw Cw Pw[22]
C	1037534	3.92	CWH	xm	2	$06_5 01_4 07_1$	Plant	Fd Cw Hw	

Note SU A & B are the same EA and have the same stocking standards but are differentiated by the presence of uniform dispersed retention in SU A.

[22] Risk of white pine blister rust. Use blister rust resistant Pw stock and follow blister rust pruning guidelines contained in the FSP.

SU	Regen. Date (yrs)	FG Date Late (yrs)	MITD (m)	TSS (sph)	MSSpa (sph)	MSSp (sph)	Min. FG Ht. by Species		Crop Tree to Brush Ratio (%)
							Species	Ht (m)	
A	3	11	2.0	900	500	400	Fd Hw Cw Pw	3.0 2.0 1.5 2.5	150
B	3	11	2.0	900	500	400	Fd Hw Cw Pw	3.0 2.0 1.5 2.5	150
C	6	11	2.0	900	500	400	Fd Cw Hw	3.0 1.5 2.0	150

SOIL DISTURBANCE

SU	Compaction	Displacement	Surface Erosion	Soil Disturbance Limit (%)
A	H	M	H	5
B	H	M	M	5
C	VH	M	H	5

COMMENTS

The soil disturbance limit is 25% for roadside work areas.

Use puncheon or rubber matting in sensitive areas and **stop work if the following soil disturbances cannot be avoided**: >Wheel/Track Ruts, Compacted Areas, Gouges, Scalps<

Grass seed exposed mineral soil within 1 year of completion of harvest if it is likely that revegetation will reduce likelihood of erosion and/or sediment entering a stream, wetland, or lake.

SU C is a relatively flat water-receiving site with areas of perched water tables during wet season and therefore more sensitive soils – schedule harvest during dry season and do not operate during saturated soil conditions.

RIPARIAN MANAGEMENT

Riparian Class of Feature	S3/S4 S3/S4/NCD NCD S3	Designation on Map	Stream 9-1 Stream 9-2 Stream 9-2a Stream 9-3	Falling and/or Skidding or Yarding Across a Stream	No No/No/Yes No No

Blk B9 is located within a community watershed. Default fish bearing stream classes have been assigned despite the fact that there are no fish bearing stream reaches within the cut block area. The lowest reaches of Bookhout and Clutesi creeks where they flow into Sproat Lake are assumed to be fish bearing.

Stream 9-1 flows from north to south along the western boundary of Blk B9, into Clutesi creek. The bench and upper slope reaches are classified as S4 while the lower reach (~175m) flowing into Clutesi Creek is classified as S3 based on width. A 5m barrier exists above the entrance into Clutesi Creek. A 20m RRZ is established between the block boundary and the S3 reach.

Stream 9-2 starts as an NCD in SU-B to the northwest of FC 5. It continues through SU-C as a default S4, growing into a default S3 below Rd AW 21-8b before draining over a 5m barrier into Clutesi creek. Fall and yard away from S3 and S4 stream reaches. Falling and yarding across the NCD reach of stream 9-2 is permitted. Limit machine crossings and use puncheon in the lower half of the NCD reach.

Stream 9-2a is an NCD and begins as the outlet of the small (.14ha) non-classified wetland below AW 21-8. It crosses AW21-8 and flows towards stream 9-2. Fall and yard away from this area as wet soils are prone to machine displacement (rutting).

Stream 9-3 flows from north to south outside the eastern block boundary of Blk B9, into Bookhout Creek. It is designated as S3 and a minimum 20m RRZ has been established between the block boundary and this reach although actual width varies between 20m and 50m according to topographical break.

Portions of the RMA's of these streams will be harvested as indicated by those portions of green shading within block boundaries. Prescribed activities are deemed to meet FPPR S.52(2).

Avoid debris accumulation at roadsides within the RMA of all streams (indicated in green shading on the attached map). Where permitted, cross-stream yarding (hoe chuck only) should be minimized and logs should be lifted not dragged across the channel as much as possible.

Retain all Cw, deciduous and non-merchantable stems and understory vegetation within the RMA (indicated in green shading on the attached map) for all S4, S3 and S2 streams where safe and operationally practical to do so.

CRITICAL FACTORS AND REGENERATION COMMENTS

Harvesting:

Block boundaries are established with orange flagging and painted, tagged, and double ribboned falling corners. Boundary trees may be harvested when they are adjacent to an existing road or block. All other boundary trees should not be felled or damaged.

The level of retention in SU-A will be 18 sph of healthy, dominant and co-dominant Fd or Pw, evenly dispersed throughout the block at an average inter-tree distance of 25m. Retained trees may have defects such as sweep, forks, or crooks but should have a healthy live crown.

Also retain understory and non-merchantable Cw to the greatest extent possible.

An old grade exists between FC S1 & S2 and is suitable for access use or skidding.

Windthrow:

Moderate windthrow potential exists on the western falling boundary of Blk B9 near FC 13 due to localized wet areas with shallow rooting depth. Existing pockets of wind throw exist below FC S2 and this risk is the primary reason why more retention is not prescribed along stream 9-2. Otherwise windthrow risk has been assessed as low along all boundaries and no wind firming treatments are prescribed.

Root Rot:

No significant root rot infection centers were identified in this block during fieldwork. Endemic spot infections may exist but no treatment is prescribed.

Wildlife Trees:

Retain high value wildlife trees (active nests, dens, extensive cavities, etc) if identified during harvesting and safe to do so. No high value wildlife trees were identified during engineering or SP fieldwork. Dispersed retention will fulfill a wildlife tree recruitment role.

Coarse Woody Debris:

Retain a minimum of 4 logs/ha each being at least 5m in length and 30 cm in diameter at one end.

Visual Quality Objective:

The block falls within an area with a VQO of partial retention (PR). While a portion of the block will be visible from Sproat Lake, a Visual Impact Assessment (VIA) has been completed and shows that this block along with blocks F2 & F3 meets this objective. Dispersed retention within SU and the application of commercial thinning within Block 10 is being used as a strategy to reduce visual impact of the upper portions of the block. Block B9 will not be visible from the campground in Taylor Arm Provincial Park.

Recreation:

The only recreational activity observed in the vicinity of Block B9 during fieldwork was motorized off-road vehicle use (quad and motorbike) on road AW21. Adequate signage will be required at all potential access points during active harvesting and road building operations to ensure the safety of recreational users. Harvesting and road construction will not interfere with motorized recreation opportunities outside of active operations.

Block B9 is located within 10m of the boundary of the east parcel of the Taylor Arm Provincial Park. Recreational facilities in this area of the park include a campground on the north side of the Highway and trail under the highway to a day use area on Sproat Lake. There were no evident signs of recent use in the upper portions of the Park next to the block. An old system of road grades extends through the east side of the park eventually entering Block B9 near FC 8 but these do not appear to be actively used beyond their departure from Bookhout Creek, judging by the old windthrow and debris on them. The north boundary of the Park and block B9 are well removed (300 – 400m) and separated by terrain from the camping areas below. There should be no noticeable impacts from these areas. Operations may be audible from the campground and coordination with BC Parks and scheduling harvesting and road building outside of the highest park use periods is recommended.

Revegetation and Invasive Plants:

Invasive species are present on the Hwy 4 corridor and along AW21. Follow FSP measures for invasive plants. Monitor, and if present treat broom and other invasive species during early establishment. Grass seed exposed mineral soil within 50m of all stream crossings and all contiguous areas of exposed mineral soil greater than 0.1 ha (approximately 30m x 30m)

The existing old grade between FC S1 and FC S2, if used for temporary access is to be seeded with legumes following harvest.

Brush Competition:

Minimal brush competition is expected in SU-A and SU-B. Monitor for ingress of bracken and red alder, and brush mechanically if needed to achieve free growing.

Moderate to heavy brush competition from bracken, salmonberry, and red alder is expected in SU-B. Monitor annually and use mechanical treatment as needed to achieve free growing.

Reforestation: Plant promptly following harvesting to minimize the potential need for future brushing treatments.

Plant Cw within and for 10m around root rot centers if no stumping is carried out.

Browse protection (sinocast cones) is recommended for all planted cedar trees.

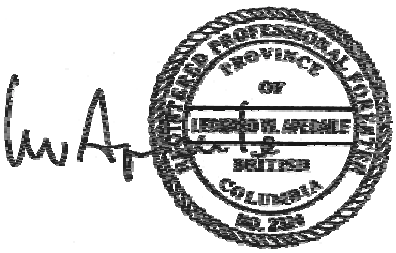
Recommended Planting Prescription:

SU	NAR (ha)	Species	Percent (%)	Stock Type	Stems/ha	Total Stems
A	4.18	Fd	100	410A or Larger	1200 **Total** **1200**	5016 **Total** **5016**
B	5.86	Fd Cw	90 10	410A or Larger	1080 120 **Total** **1200**	6329 703 **Total** **7032**
C	3.92	Fd Cw	70 30	410A or Larger	900 300 **Total** **1200**	3528 1176 **Total** **4704**

Cultural Heritage Resources:

If, during road construction or harvesting, any evidence of traditional use, cultural heritage values, or archaeological features are found notify the AVCF Manager and stop work within a 30m radius of the area.

RPF SIGNATURE AND SEAL



Date (2012/04/03)

I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers
TSA:	38 Arrowsmith
TSB:	A
FIZ:	B
P.S.Y.U.:	471
Inv. Reg.:	5
Comp.:	4B (Sproat), 4C (Taylor)
Drafted:	April 1, 2012
By:	econ

Alberni Valley Community Forest K2D

Sproat FDU

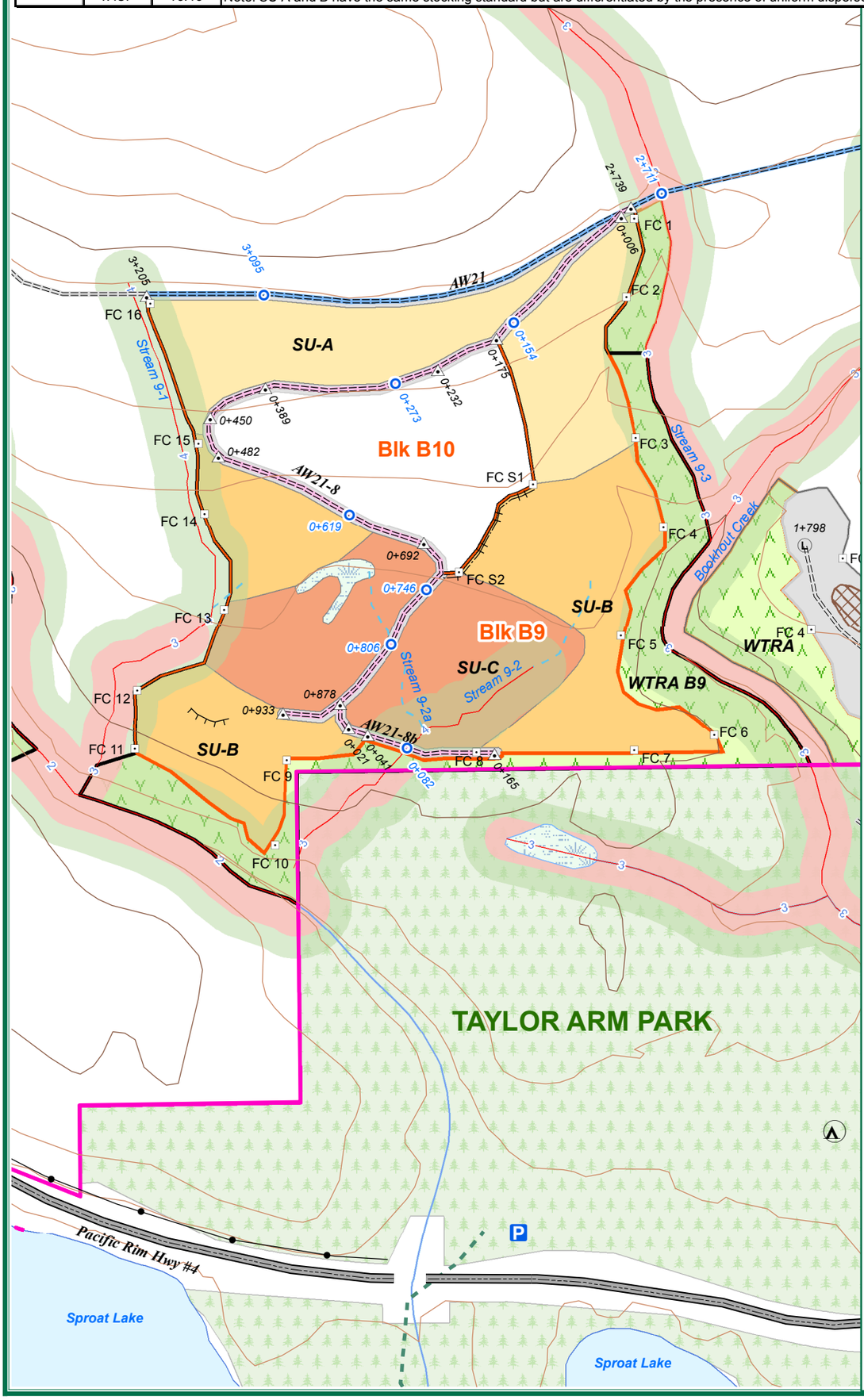
Site Plan
Block B9

N

1:5,000

0 50 100 Meters

Block ID	SU	NAR (ha)	ECO Site CWH xm	SS ID	TSS	MSS	MSS (P)	Prefferred (Min Hgt)	Acceptable (Min Hgt)	MITD
B9	A	4.18	01	1037530	900	500	400	Fd(3.0m)	Hw(2.0m), Cw(1.5m), Pw[22](2.5m)	2.0m
	B	5.85	01	1037530	900	500	400	Fd(3.0m)	Hw(2.0m), Cw(1.5m), Pw[22](2.5m)	2.0m
	C	3.91	$06_5 01_4 07_1$	1037534	900	500	400	Fd(3.0m), Cw(2.0m), Hw(2.0m)		2.0m
	Net	*13.94*	[22] Risk of White Pine blister rust. Free growing Pw must be pruned as per the FSP guidelines.							
	PAS	1.03								
	NPS	0.14								
	WTRA	3.37								
	TAUP	*18.48*	Note: SU A and B have the same stocking standard but are differentiated by the presence of uniform dispersed retention in SU A.							



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- Permanent Landing
- Temporary Landing
- Station
- Culvert
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- Bridge, out
- Quarry
- Designated Crossing
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- Wildlife Tree

Roads & Trails
- Highway
- Road, existing
- Road, engineered
- Road, to be re-activated
- Trail, temp
- Old Grade
- Hiking Trail
- Rock Bluff
- Hydro Line

Stream Classification
- S1-S4 Stream
- S5-S6 Stream
- NCD
- Stream, Not Classified

Other Features
- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Karst
- Non Productive, Rock
- Non Productive, Wetland
- Park

Standard Unit
- SU-A
- SU-B
- SU-C
- TAUP
- Block
- Community Forest

Treatment
- Windthrow Management Area
- Root Rot Management Area

Site Plan

Stocking Standards / Critical Factors

Licence:	K2D / AVCF	Cutting Permit:	002	Block:	B10	Timber Mark:	K2D002

Total Area (ha):	3.86	NAR (ha):	3.15	WTRA (ha):	0.43	NP NAT (ha):	0.0	NP UNN (ha /%):	0.28 / 7.3%	P.A.S. Limit (%):	7

This SP is consistent with AVCF FSP #1, May 10, 2011. The entire area is second growth timber previously harvested in the 1950's.

Block B10 is located within the Sproat Lake Community Watershed.

This block will be harvested in two passes. The initial cut will involve commercial thinning from below by removing small diameter merchantable timber in order to increase growing space and improve the quality, growth rate and piece size of the residual stand. No reforestation is required following commercial thinning. A second pass involving removal of the residual stand and reforestation is expected to occur within 20-30 years.

Commercial Thinning Prescription:

Remove: 49% of Douglas-fir stems (356 sph) and 39% (18m^2) of the basal area. Tree removal should target trees in the smaller diameter classes and trees with poor form and/or vigor. Specific retention specifications by diameter class are attached.

Retain: 100% of Cedar stems (13 sph) and 51% of Douglas-fir stems (361 sph). This equates to an average distance between leave trees of 5.8m or 18'. Retained trees must be of good form and vigor with sufficient live crown (30%) to respond to the increased availability of water, light, and nutrients.

This prescription may be implemented as a strip commercial thinning or as dispersed removal. The specific harvest method will be determined in consultation with the contractor and the AVCF manager.

Strip CT would consist of 100% removal in narrow corridors with some tree removal between. Corridor spacing and inter-corridor removal is dependant on the minimum operable width based on equipment selection. 5m corridors at 12m spacing with 28% removal between corridors will achieve the prescribed retention levels.

Dispersed removal would consist of evenly dispersed removal/retention throughout the block. Basal area retention and inter-tree distance specifications would be used to assure overall retention targets are met.

Net commercial thinning area is 3.1 ha. Block B10 is designed for ground based harvesting. Road access is from road reactivation of Rd AW 21, and new road construction of Rd AW 21-8. An old grade exists between FC S1 & S2 and is suitable for access use or skidding.

STOCKING STANDARDS

SU	Standards ID	NAR (ha)	Biogeoclimatic Ecosystem Classification				Regeneration Method	Preferred Species	Acceptable Species
			Zone	Subzone	Variant	Site Series			
A	TBD	3.15	CWH	xm	1	01	N/A	Fd	Hw Cw Pw

Stocking Standards for Specified Areas (FSP section 6.3 and Appendix 2) apply and will be maintained on the area harvested for twelve months following the completion of harvesting. A post harvest survey is required.

SU	Regen. Date (yrs)	FG Date Late (yrs)	MITD (m)	Target Standard (sph)	Tree Layer	Target (sph)	Minimum Preferred and Acceptable (sph)	Minimum Preferred (sph)
A	N/A	N/A	N/A	1200	1 2 3 4	400 500 700 900	200 250 300 400	200 250 300 400

SOIL DISTURBANCE

SU	Compaction	Displacement	Surface Erosion	Soil Disturbance Limit (%)
A	H	M	M	5

COMMENTS	
	Use puncheon or rubber matting in sensitive areas and stop work if the following soil disturbances cannot be avoided: >Wheel/Track Ruts, Compacted Areas, Gouges, Scalps<
	Grass seed exposed mineral soil within 1 year of completion of harvest if it is likely that revegetation will reduce likelihood of erosion and/or sediment entering a stream, wetland, or lake.
	The permanent access structures exceed the 7% limit for Blk B10. This is due to the small size and configuration of this block and its location between the switch backing sections of Rd AW 21-8, which form its upper and lower boundaries. This creates a relatively high permanent access attribution, which exceeds 7%. AW 21-8 provides long-term access to this area therefore no rehabilitation is prescribed.
	Note also that when B10 is combined with B9, the overall permanent access structures are 5.6%.

CRITICAL FACTORS AND REGENERATION COMMENTS

Riparian Management: There are no streams or wetland features within Block B10.

Harvesting:

Block boundaries are established at Rd AW 21-8 to the north and south-west, and with orange flagging, tags, and tagged, painted and double ribboned falling corners (S2 and S1) along the eastern boundary. Boundary trees may be harvested when they are adjacent to an existing road or block. All other boundary trees should not be felled or damaged.

Harvest corridors for strip commercial thinning will be flagged following discussion with the AVCF manager and successful contractor regarding CT method and machine choice.

Retain understory and non-merchantable Cw to the greatest extent possible.

An old grade exists between FC S1 & S2 and is suitable for access use or skidding.

Windthrow:

Windthrow risk is assessed as low due to high level of retention and no wind firming treatments are prescribed.

Root Rot:

No significant root rot infection centers were identified in this block during fieldwork. Endemic spot infections may exist but no treatment is prescribed.

Wildlife Trees:

Retain high value wildlife trees (active nests, dens, extensive cavities, etc) if identified during harvesting and safe to do so. No specific high value wildlife trees were identified or marked during engineering or SP fieldwork.

Coarse Woody Debris:

Retain a minimum of 4 logs/ha each being at least 5m in length and 30 cm in diameter at one end.

Visual Quality Objective:

The block falls within an area with a VQO of partial retention (PR). The block will be visible from Sproat Lake; a Visual Impact Assessment (VIA) has been completed and shows that this block along with blocks B9, F2 & F3 meets this objective. The commercial thinning prescription for B10 was developed as part of the visual impact mitigation strategy for block B9. Block B10 will not be visible from the campground in Taylor Arm Provincial Park.

Recreation:

The only recreational activity observed in the vicinity of Block B10 during fieldwork was motorized off-road vehicle use (quad and motorbike) on road AW21. Adequate signage will be required at all potential access points during active harvesting and road building operations to ensure the safety of recreational users. Harvesting and road construction will not interfere with motorized recreation opportunities outside of active operations.

Block B10 is well removed (600 – 700m) and separated by terrain from the camping areas below. There should be no noticeable impacts from these areas. Operations may be audible from the campground and coordination with BC Parks and scheduling harvesting and road building outside of the highest park use periods is recommended.

Revegetation and Invasive Plants:

Invasive species are present on the Hwy 4 corridor and along AW21. Follow FSP measures for invasive plants. Monitor, and if present treat broom and other invasive species during early establishment. Grass seed exposed mineral soil within 50m of all stream crossings and all contiguous areas of exposed mineral soil greater than 0.1 ha (approximately 30m x 30m)

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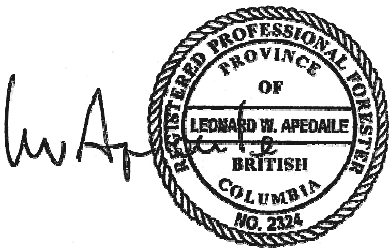

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Alberni Valley Community Forest K2D

Sproat FDU

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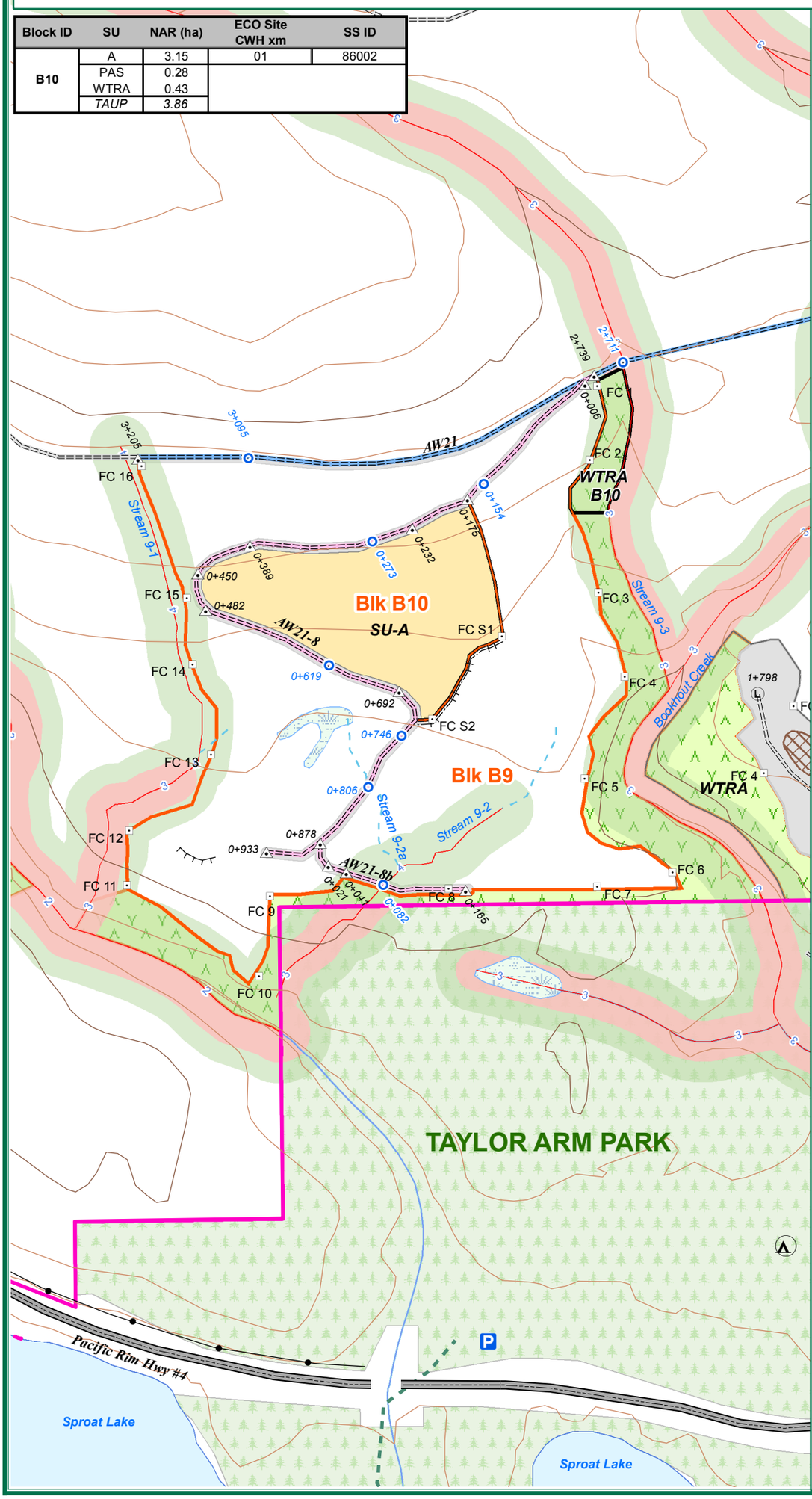
	WTRA	0.43		
	TAUP	*3.86*		



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