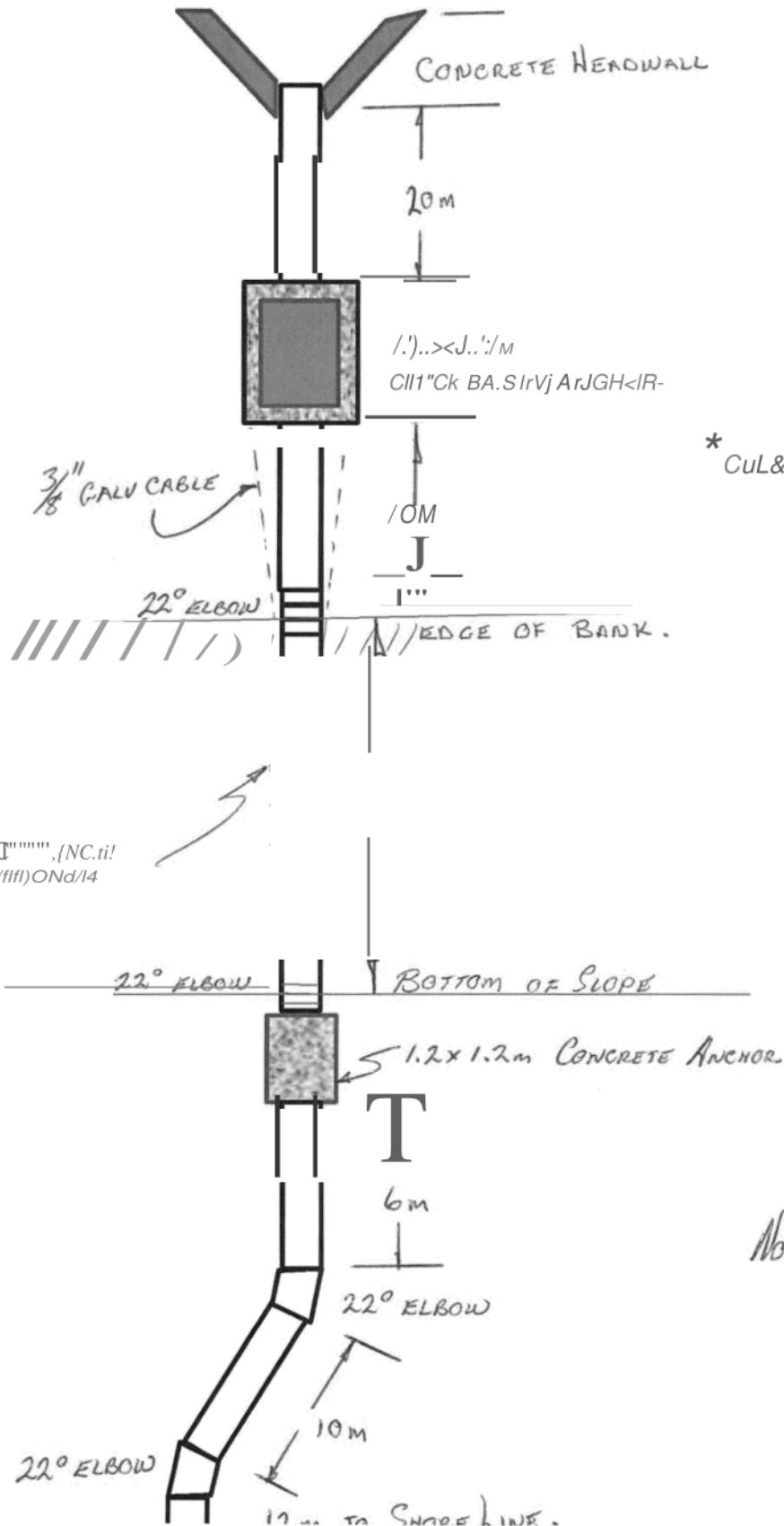


Alders Road Culvert Layout



* CuL&1eR.1 ?iP-t: -rof>e: Tu.s's 2.eo0
 780 MM 'b1A'Mf TI::IL
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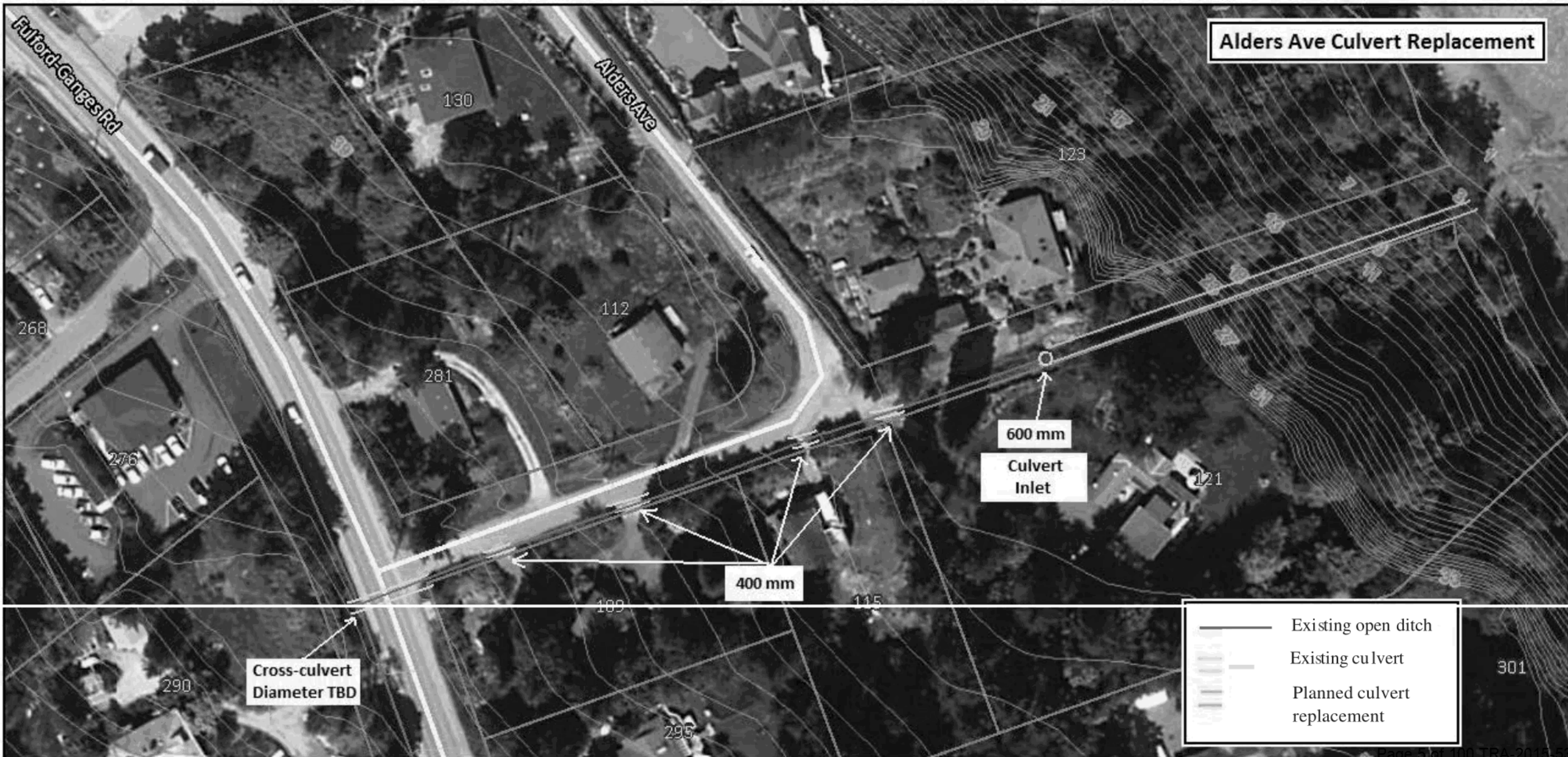
NOTE: NOT TO SCALE.



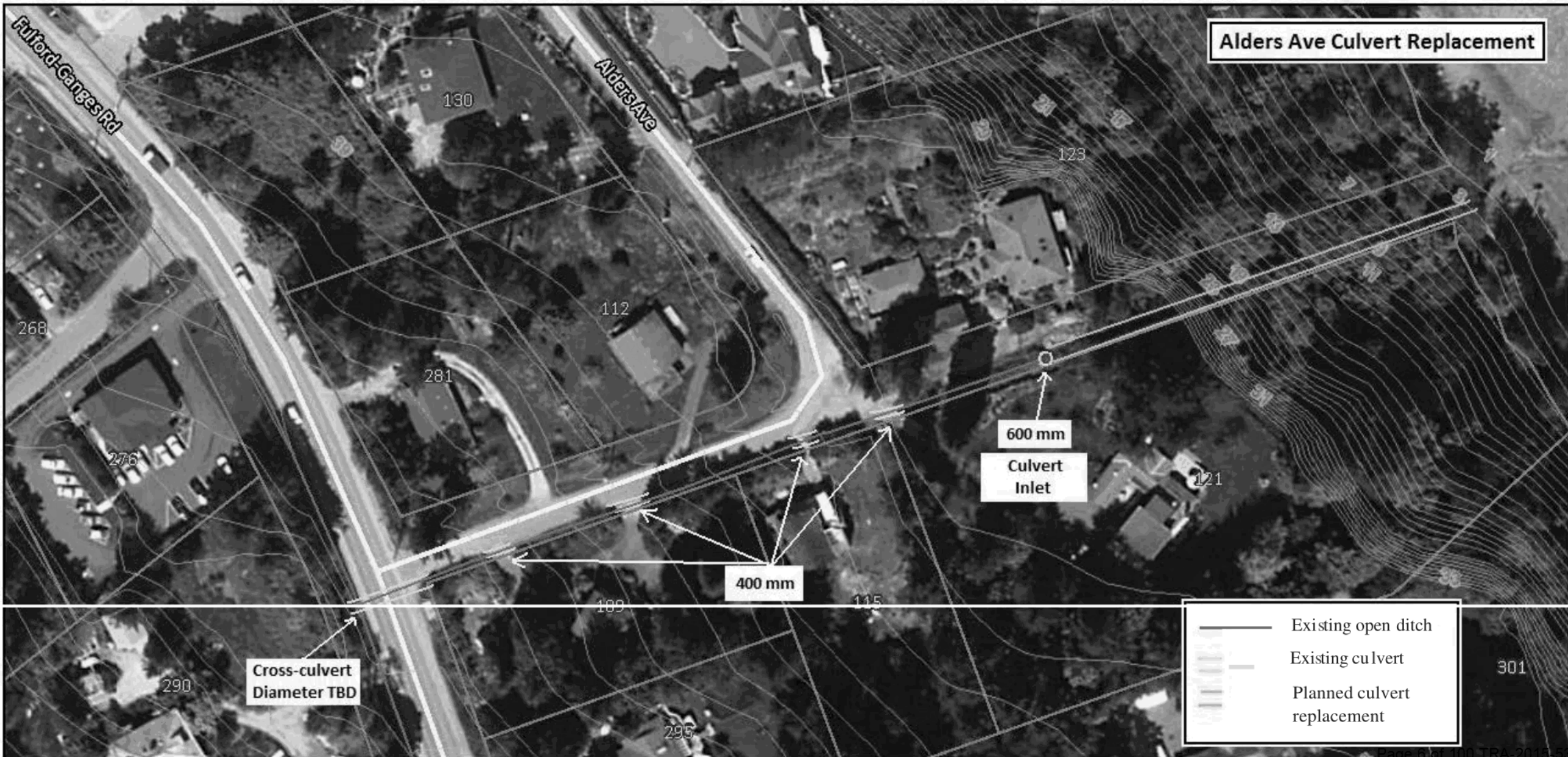




Alders Ave Culvert Replacement



Alders Ave Culvert Replacement



Database of Estimating Spreadsheet

Labour Rates Effective as of Jan 1, 2003

- Note All Internal Equipment is based on $\frac{1}{2}$ of Full Rate -

LABOUR

	HOURLY RATE	OTHER	TRAVEL	TOTAL (incl. burden)
<u>SUPERVISORY</u>				

SUPER FOREMAN	s.17,s.21			
------------------	-----------	--	--	--

TRADES

TJB				
TJW				
TJM				
SSC				
			\$0.00	
			\$0.00	

OPERATORS/LABOURERS

BRIDGEMAN2	s.17,s.21			
GRADEMAN				
SIGNMAN				
DRI				
OPE				
OPD				
OPC				
MO3				
MO4				

EQUIPMENT

	OPR COST	EQUIP COST	TOTAL
<u>TRUCKS</u>			
PICKUP	s.17,s.21		
CLOSE TRUCK			
PATCH TRUCK			
SIGN TRUCK			
5 TON DUMP			
TANDEM DUMP			
TRUCK AND PUP			
LOWBED			
EDGER			
TANDEM TRACTO			
			\$0.00

LIFTING EQUIPMENT

17 TON STINGER	s.17,s.21		
30 TON HIAB			
15 TON HIAB			
5 TON HIAB			
BUCKET TRUCK			
			\$0.00
			\$0.00

CLEANING EQUIPMENT

FLUSH TRUCK	s.17,s.21		
SWEEPER			
			\$0.00
			\$0.00

EXCAVATING and GRADING EQUIPMENT

EXCAVATOR	s.17,s.21		
BACKHOE			
LOADER			
GRADER			
			\$0.00
			\$0.00

MOWING EQUIPMENT

BOOMMOWER	s.17,s.21		
-----------	-----------	--	--

BURDEN

OVERHEAD	s.17,
----------	-------

MARK UP

LABOUR	s.17,s.2
EQUIPMENT	1
MATERIAL	
SUBTRADES	
HIRED EQUIPMENT	
INTERNAL EQUIPMENT	

MATERIAL

	OPR COST	EQUIP COST	TOTAL
TCP			s.17,s.21
EX400			
EX300			
EX200			
EX150			
EX60			
84" PACKER			
66" PACKER			
56" PACKER			
DBL DRUM			
D-6			
D-5			
D-4			
SCISSOR LIFT			
MOVE			
PUMP TRUCK			
GRADER			
SUPER B			
ROAD MULCH			
PIT RUN			
3" MINUS			
CRB			
CTB-1			
CTB-2			
CMB			
CBN			

SMALL MOWER	s.17,s.21	
VERSATILE		\$0.00
		\$0.00

MISCELLANEOUS EQUIPMENT

COMPRESSOR	s.17,s.21	
PUP		
LOWBED TRAILER		
BEAVER TAIL		
MESSAGE BOARD		
		\$0.00
		\$0.00
		\$0.00
		\$0.00
		\$0.00
		\$0.00
		\$0.00
		\$0.00
		\$0.00

PROJECT: Alders Road Culvert install Revised
PROJECT# Saltspring island

BID ITEM:

QUANTITY 1.00 M³

PRODUCTION 1.00 M³/HR

DURATION 1.0 HRS

		UNITS	LABOUR RATE	EQUIP RATE	MAN HOURS	LABOUR COST	EQUIP COST	MTL COST	TOTAL COST	% MARKUP	TOTAL PRICE	UNIT PRICE
LABOUR												
	TJB	80.0	s.17,		80.0	s.17,s.21				s.17,s.21		
	TJB	80.0	s.21		80.0							
	TJW	80.0			80.0							
	SUPER	80.0			80.0							
	TJB	0.0										

EQUIPMENT

				s.17,s.21			s.17,s.21		s.17,s.21			
	15 TON HIAB	20.0				\$0.00						
	TOOLVAN	40.0	\$0.00			\$0.00						
ex 200	EXCAVATOR	0.0										
	PICKUP	40.0	\$0.00			\$0.00						
	BACKHOE	40.0	s.17,s.21		40.0	s.17,s.						
	TANDEM DUMP	40.0	\$0.00			\$0.00						
	COMPACTOR	40.0	\$0.00			\$0.00						
	MINI EXCAVATO	40.0	\$0.00			\$0.00						
	\$0.00	0.0	\$0.00									

HIRED EQUIPMENT

				s.17,s.21								
CULVERT	SHIPPING	1500.0	LS									
	FLAGGERS	10.0	HRS									
	BARGE	0.0	HRS									

	SILT FENCE	500.0	FT	s.17,s.21					s.17,s.21			
SUBTRADES	(Item)	(Qty)	(U of M)	(Price)	(Unit)							
	PLASTIC	4.0	ROLLS	s.17,s.					s.17,s.21			
	ANCHOR AND M	200.0	FT	21								
	GRASS SEED	50.0	LB									
	FERRIES	10.0	trips									
	HOTELS	16.0	days									
	FILTER CLOTH	2.0	rolls									
	GEO GRID	6.0	ROLLS									
	COCONUT MAT	83.0	m2									

MATERIAL	(Item)	(Qty)	(U of M)	(Price)	(Unit)							
BOSS 2000	750mm	110.0	m	s.17,s.								
CONCRETE HEAD W	HEADWALL	1.0	PCS	21								

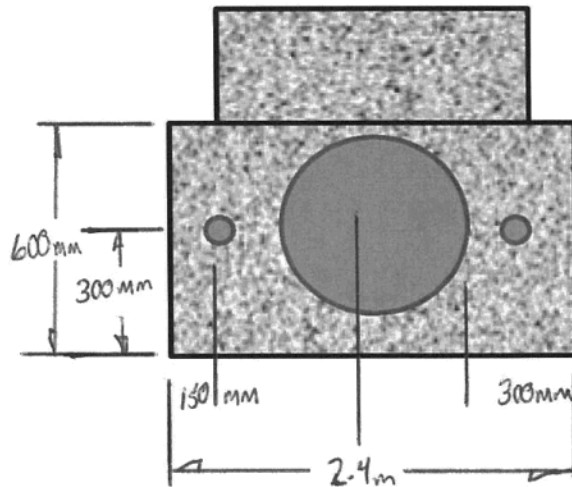
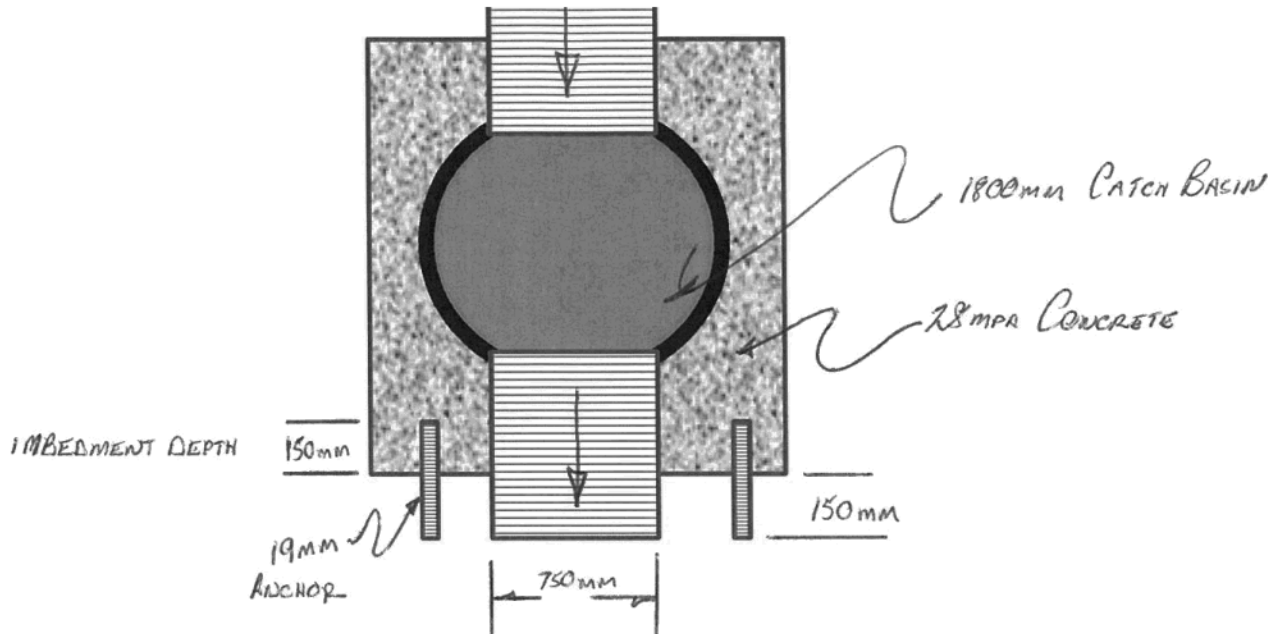
GRILL	GRILL	1.0	PCS									
CATCH BASIN	CATCH BASIN	1.0	PCS									
	CONCRETE BAS	1.0	PCS									
	CONCRETE LID	1	PCS									
	REDI MIX	4	M3									
	CABLE	800.0	FT									
	CROSBY CLIPS	36.0	PCS									
	COLLAR ANCHO	18.0	PCS									
	22 elbow	8.0	PCS									
	CULVERT BASE	24.0	PCS									

0

s.17,s.21

\$ 126,203.32 \$ 126,203.32

Alders Road Culvert Anchorage System



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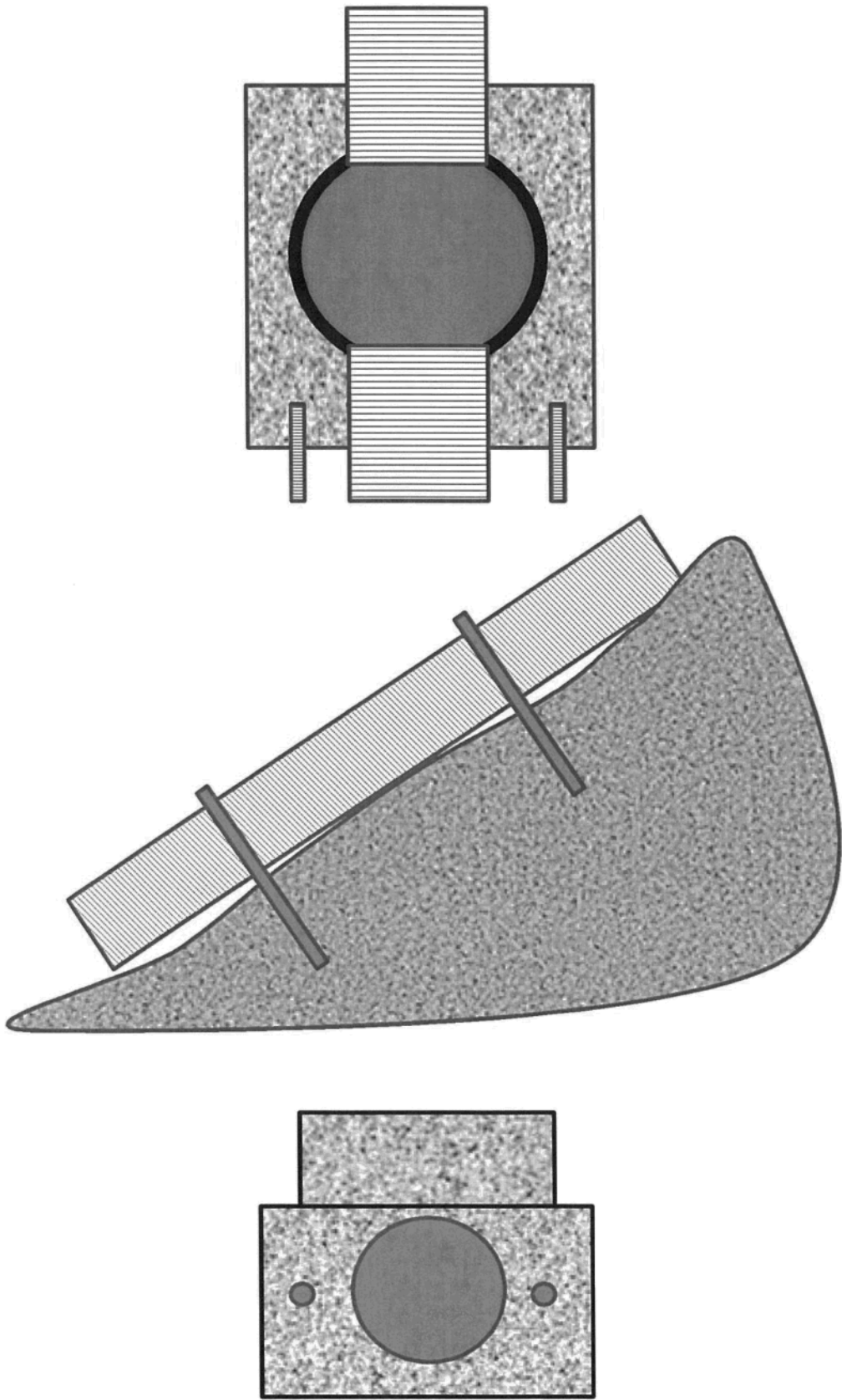
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Alders Road Culvert Anchorage System





















Pearson, Michael TRAN:EX

From: Dave McKerrell <dave.islandmarine@gmail.com>
Sent: Monday, May 13, 2013 11:30 AM
To: Coulter, Colin TRAN:EX
Subject: Alders Ave Saltspring Isl
Attachments: To Colin Coulter.pdf

Hello Colin

A pleasure talking to you this morning. I have attached a couple of pictures disclosing my safety concerns about the re-bar left on Alders Ave. Anything that can be done will be appreciated

Regards

--

David McKerrell



Microsoft Word Document: To Colin Coulter.pdf



Microsoft Word Document: To Colin Coulter.pdf

#2- 156 Alders Ave Saltspring Island BC V8K 2K5 250 537 9710 ext 3 fax 250 537 1725
International 011.250.537.9710



Microsoft Word Document: To Colin Coulter.pdf

<http://islandmarine.ca/>

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Thank you.

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Thursday, March 28, 2013 1:26 PM
To: Spillett, Ryan TRAN:EX
Cc: Ray, Rachelle TRAN:EX
Subject: Alders Ave Slide
Attachments: IMG-20130328-00001.jpg; IMG-20130328-00002.jpg; IMG-20130328-00003.jpg;
IMG-20130328-00004.jpg; IMG-20130328-00005.jpg

Here are a few photos to give you a better idea of what we're dealing with...

We can discuss in more detail later

Colin Coulter, BSc.

Operations Technician/Area Manager
Vancouver Island District - South Island
Ministry of Transportation & Infrastructure
Tel: 250-952-4481 Cell: 250-812-7305

Please consider the environment before printing this email

Pearson, Michael TRAN:EX

From: David Turenne <dturenne@mainroad.ca>
Sent: Wednesday, September 25, 2013 11:01 AM
To: Coulter, Colin TRAN:EX
Subject: Alders Culvert Update

Hi Colin,

I hope all is well, I want to let you know where we are at on the Culvert project on SSI.

- All pipes are in place and water is flowing.
- The rip rap and barrier at the outlet are finished.
- The concrete anchor at the bottom of the hill was poured yesterday.
- We used extra wire rope straps to hold the pipe tight and create a good seal.
- We will be attaching the pipe with the dywidag bars by muffler clamps to the cable and bars for extra support.
- We are currently anchoring the dywidag rods and plates and should be done tomorrow.
- Hydroseeding is tentatively scheduled for Friday, however the weather is not looking good.
- Luke feels he will be substantially done by Friday and depending on weather next week.

We may want to look at erosion control depending on how well the hydroseeding takes and maybe some planting if needed.

The budget still looks good at this point but I am waiting for all the invoices to come in, we should be just under the estimate.

Regards,

David

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Wednesday, September 11, 2013 9:46 AM
To: Gaib, Sarah E TRAN:EX
Cc: "David Turenne" (dturenne@mainroad.ca); Spillett, Ryan TRAN:EX
Subject: Alders photos
Attachments: Capital F-20130910-00106.jpg; Capital F-20130910-00108.jpg; Capital F-20130910-00109.jpg; Capital F-20130910-00110.jpg

Attached are a few photos from the first section of culvert installation.

The right-of-way boundaries are now staked and the next phase of work on the slope is imminent.

Colin

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Wednesday, August 21, 2013 2:53 PM
To: 'dturenne@mainroad.ca'
Cc: Coulter, Colin TRAN:EX
Subject: Alders Rd culvert replacement Work Procedures Draft
Attachments: Alders Rd culvert replacement Work Procedures Draft.docx

Dave,

I've written up a draft version of the work procedures document. I have highlighted some items in red which I would like confirmation of. Please let me know your thoughts/comments.

Best,
Sarah

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Thursday, August 29, 2013 1:16 PM
To: Coulter, Colin TRAN:EX
Cc: "David Turenne" (dturenne@mainroad.ca)
Subject: Alders Road - rain data

<http://www.victoriaweather.ca/station.php?id=120>

Colin,

Fulford elementary has a live rain gauge. As long as the maintenance contractor is only working on the bench at the top of the slope and hasn't encountered any issues with water flow I am okay with the rain fall amount so far. Rain is likely to continue to fall for the next ~24 hours. After tomorrow it looks like the things should dry out for work on the slope.

Sarah Gaib, M.Eng., P.Eng.

Senior Geotechnical Engineer

Geotechnical, Materials & Pavement Engineer Section

B.C. Ministry of Transportation & Infrastructure

Office: 250-356-0390 Cell: 250-213-2044

sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: David Turenne <dturenne@mainroad.ca>
Sent: Friday, August 2, 2013 5:14 PM
To: Coulter, Colin TRAN:EX
Cc: Spillett, Ryan TRAN:EX
Subject: Alders Road Culvert Install
Attachments: Alder Road Culvert Layout.pdf; Alders Culvert Layout.pdf; ALDERS ROAD CULVERT estimate SSI.xlsx; Quote 20012447 Alders Rd SSI 750mm 320 Kpa.pdf; Pipe Anchoring on Slope (2).pdf

Follow Up Flag: Follow up
Flag Status: Completed

Hi Colin,

As discussed here is some of the details of the latest design proposal.

I need to order this Boss 2000 right away, so will go ahead with the 750mm Boss 2000, invoice attached.

The layout is a rough draft based on my field measurements.

The Cost Estimate will be between \$17,521 based on this layout, see attached breakdown I will give you a better breakdown on cost as we finalize any changes from your Geotech people.

Regards,

David

Pearson, Michael TRAN:EX

From: David Turenne <dturenne@mainroad.ca>
Sent: Friday, April 12, 2013 2:37 PM
To: Coulter, Colin TRAN:EX
Cc: Rick Gill; Leon Bohmer; Tim Carr
Subject: Alders road Culvert Rehab

Hi Colin,
As discussed yesterday,
Mainroad is working on Quotes for 2 different approaches to rehab this Drainage corridor while waiting for MOTI recommendations.

Brief History;

- Mainroad was informed on March 25th that there was erosion problems at this location
- We checked it out and Contacted MOTI as per our procedures.
- MOTI got geotechnical advise and Mainroad started working on a plan to repair .

Proposal Draft #1 (subject to MOTI Direction)

- Install 140 m of 600mm Plastic Boss 2000 Culvert Pipe(CSA B182.8 B&G) to replace the existing pipe.
- New Concrete Headwall with Galvanized Trash Grid
- 4' Concrete Catch Basin with concrete base and lid at the top of the bank
- Anchorage cables and Collar cable supports
- Geo- grid and Fliter Cloth as well as Coconut Mat to prevent further erosion
- Culvert base supports
- Revegetation of grasses and small shrubs
- Silt fence

Procedure;

- Redirect flows at the top of Alders Road (to be done next week)
- Cover exposed bank to prevent further erosion(to be done on Monday April 15th 2013)
- Remove old pipe
- Install new Headwall and pipe in the current location
- Install 600mm pipe along the flat right away to a 4' Catch Basin in the existing depth
- Add an elbow to the outlet of the CB and install 600mm Boss 200 pipe to the waterfront
- Anchor the new pipe with Stainless steel aircraft cable and collar supports.
- Vegetate the bank to prevent further erosion
- Excavate the lower reach to the Ocean.

The estimate is ^{s.17,s.21} for 600mm and ^{s.17,s.21} for 750mm Pipe.

I am working on another option of running some new pipe at the top and a Rip rap swale down the bank and to the ocean.

I am meeting with G&E to explore this option on Monday, 830 boat.

Let me know if you want to meet at the site, I will pick you up.

If you have any questions please call.

Regards,

David

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Monday, August 26, 2013 12:34 PM
To: Coulter, Colin TRAN:EX
Cc: Gerraghty, David E TRAN:EX; Spillett, Ryan TRAN:EX; 'David Turenne' (dturenne@mainroad.ca)'
Subject: Alders Road Culvert Replacement - Safe Entry Document
Attachments: Safe Entry Document.pdf - Adobe Acrobat Pro.pdf

Colin,

Please find attached the safe entry documents for the culvert replacement below Alders Road. Please ensure a paper copy is onsite with the site foreman.

Best,
Sarah Gaib, M.Eng., P.Eng.
Senior Geotechnical Engineer
Geotechnical, Materials & Pavement Engineer Section
B.C. Ministry of Transportation & Infrastructure
Office: 250-356-0390 Cell: 250-213-2044
sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: David Turenne <dturenne@mainroad.ca>
Sent: Tuesday, August 13, 2013 4:42 PM
To: Coulter, Colin TRAN:EX
Subject: Alders Road Dissipator at the outlet end

Hi Colin,
Check this out for the end of the pipe and see what you think.
I have ordered the head wall and a Precast Catchbasin that is 1.8m wide we will add some redi mix to it to create the anchorage for the cables.
I think the precast will be quicker therefore cheaper. It will allow us to change the direction of flow at that point to align the pipe better going over the bank.
I have 5 lengths of 750 coming next week and the full order following that.
In conclusion we should be able to start late next week.
Regards,
David

From: Greg Walters [mailto:gwalters@langleyconcretegroup.com]
Sent: Tuesday, August 13, 2013 4:18 PM
To: David Turenne
Subject: RE: Order inquiry

Hi David,
We have the 3 block dissipater system, that sounds like what you are looking for. Here is a link
http://www.langleyconcretegroup.com/uploads/tech_drawings/Headwalls/HW14-15-ED.pdf
There will be additional cost and time to get this, but is defiantly something we can do.

Greg Walters
Lombard Pre-Cast
Inside Sales/Dispatch
tel (250)478-9581
fax (250)478-0353



gwalters@langleyconcretegroup.com
www.langleyconcretegroup.com

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From: David Turenne [mailto:dturenne@mainroad.ca]
Sent: Tuesday, August 13, 2013 3:59 PM
To: Greg Walters
Subject: RE: Order inquiry

Hi Greg,
Go for the inlet grillage.
No problem we can pick up in your yard.

Also do you have a Diffusor for the end of a long run of smooth wall pipe that would slow the erosion at the outlet end?
D

From: Greg Walters [<mailto:gwalters@langleyconcretegroup.com>]
Sent: Tuesday, August 13, 2013 3:53 PM
To: David Turenne
Subject: RE: Order inquiry

Hi David,
We have the inlet or outlet grillage(galvanized bars) for the head wall, which ever you need. As for dropping it off at your yard, it comes on a super b so, we would need to know if it could make it in there. There is also an additional s.17,s. drop fee. You would need to come pick up the 1800 anyways, as that product is made here. So it might be best to take it all from our yard. As for the rest I will get the ball rolling on that order for you.
Thanks,

Greg Walters
Lombard Pre-Cast
Inside Sales/Dispatch
tel (250)478-9581
fax (250)478-0353



gwalters@langleyconcretegroup.com
www.langleyconcretegroup.com

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From: David Turenne [<mailto:dturenne@mainroad.ca>]
Sent: Tuesday, August 13, 2013 3:22 PM
To: Greg Walters
Subject: RE: Order inquiry

Hi Greg,
This looks good, please order this ASAP and can we get it dropped off at our yard- 2895 Westshore parkway Victoria BC.
V9B 0B2
We have forklifts and a 17ton Hiab Truck for offloading.
Also, is there a galvanised screen or bars in the front of the headwall so kids cannot crawl in the pipe?
Your PO # is 01-16814
Please quote job # C197 260X for the Alders Road Project.
Regards,
David

From: Greg Walters [<mailto:gwalters@langleyconcretegroup.com>]
Sent: Tuesday, August 13, 2013 2:38 PM
To: David Turenne
Subject: Order inquiry

Hey David,
I called over to our plant in Chilliwack we have the 14-15 Headwall for 750 pipe available and we could have it in by next week. The 1800 product is all available here and we could have that ready for you this week.
Here is a quick run down of the pricing.

1-Headwall 14-15(750) - s.17,s. 21 to Lombard
1-1800mmx1.22m Manhole s.17,s.21
1-Flat base for 1800
1-1800mmx0.3m manhole
1-Concrete lid for 1800
1-Gasket for 1800
1-Tr-18 Cast Iron Frame+Cover
Less your Discount

Greg Walters
Lombard Pre-Cast
Inside Sales/Dispatch
tel (250)478-9581
fax (250)478-0353



gwalters@langleyconcretegroup.com
www.langleyconcretegroup.com

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Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Thursday, April 4, 2013 3:34 PM
To: Coulter, Colin TRAN:EX
Subject: Alders work

Hi Colin,

Peter Bullock stopped by the office this morning for a chat as his company is doing some work in Saanich. The work there is finishing on Friday and the equipment is on the move on Monday. So there is an opportunity to take advantage of the machine and save on mobilization. The machine could go over to Salt Spring on Monday and install some anchors at the top of the slope for anchoring the replacement culvert. The cost would be no more than s.13,s.17 and the work completed in a couple of hours. This work could be done later s.13,s.17

s.13,s.17

So let me know if you think there is at all the possibility of

taking advantage of this and I will let Peter know.

Sarah Gaib, M.Eng., P.Eng.

Senior Geotechnical Engineer

Geotechnical, Materials & Pavement Engineering Section

B.C. Ministry of Transportation & Infrastructure

Office: 250-356-0390 Cell: 250-213-2044

sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Tuesday, April 2, 2013 11:01 AM
To: 'Tim Carr'
Cc: 'djohnson@mainroad.ca'; Spillett, Ryan TRAN:EX
Subject: FW: Alders Ave Slide
Attachments: IMG-20130328-00001.jpg; IMG-20130328-00002.jpg; IMG-20130328-00003.jpg; IMG-20130328-00004.jpg; IMG-20130328-00005.jpg

Hi Tim,

For your information, here are a few photos from our site visit last week to the slide near Alders Ave on Salt Spring.

There are 5 sections of culvert (I believe 600mm) that were disjointed and damaged. The pipes were suspended using a steel cable system which seemed to be anchored by the surrounding trees. There were also several plywood supports between the pipes and ground. I suspect that there may have been a leak in one of the joints, or it may have been the heavy rains from earlier this year that caused the embankment to wash out. It is not clear exactly when this event occurred, but the ground was completely saturated when we visited on Thursday last week.

The culvert is still intact from the inlet at the end of the ditch line on Alders Ave to the top of the bank. Water continues to run out of the intact pipe and down the surface of the embankment. The water has now channelized and is still running out to the ocean.

Based on Sarah Gaib's observations, she does not believe that there is any immediate threat to the adjacent properties, however the pipes will have to be replaced before the next wet season in the fall. Sarah will be contacting some manufacturers to inquire about our options for supporting the culvert system. There will likely not be a need for major reconstruction or remediation of the embankment.

Access for equipment and materials is going to be the greatest challenge as the slope is extremely steep. There is a narrow footpath that provides access from the private property at 123 Alders Ave down to the bottom of the bank, however it would not be suitable for any sort of heavy equipment. There would be an opportunity to access the site from the water, but obviously cost would be a major consideration.

The good news is that it does not appear that any immediate action is required. Next time you head over to SSI let me know and we can go have a look and try to put a rough cost estimate together.

Thanks,
Colin

Colin Coulter, BSc.
Operations Technician/Area Manager
Vancouver Island District - South Island
Ministry of Transportation & Infrastructure
Tel: 250-952-4481 Cell: 250-812-7305
Please consider the environment before printing this email

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Thursday, April 4, 2013 9:56 AM
To: 'tcarr@mainroad.ca'; 'djohnson@mainroad.ca'
Subject: Fw: Alders follow up

FYI - below is some interesting history I dug up on the Alders road allowance.

Doesn't sound like an armoured ditch will be an option.

Colin

From: Gaib, Sarah E TRAN:EX
Sent: Thursday, April 04, 2013 08:48 AM
To: Coulter, Colin TRAN:EX
Subject: RE: Alders follow up

I think it may create more issues. The top 15m of the slope is upwards of 45 degrees and it would take a lot of work (disturbance of the slope) to create the rock armouring. So there is the risk of destabilizing the slope which is marginally stable to begin with. Our ROW there appears to be about 12m wide all the way down to the beach based on the CRD site. We have to be aware of the adjacent land owners and causing destabilization on their properties as well. I will discuss the option with Don but I'm not too comfortable with that option.

Thanks for confirming the diameter.

From: Coulter, Colin TRAN:EX
Sent: Thursday, April 4, 2013 8:40 AM
To: Gaib, Sarah E TRAN:EX
Subject: RE: Alders follow up

I can confirm that the culvert size is 600 mm.

Tim and Dale from Mainroad wanted to inquire about the possibility of constructing a rock-armoured ditch as an alternative to replacing the culvert. This was my initial thought as well upon viewing the site. The obvious deterrent to this option is the potential for additional minor slides to obstruct the open waterway. Do you see this as an option?

Thanks,

Colin

From: Gaib, Sarah E TRAN:EX
Sent: Wednesday, April 3, 2013 11:35 AM

To: Coulter, Colin TRAN:EX
Subject: RE: Alders follow up

Thanks Colin. Wow! Car bodies? I have never heard of that but I guess it's work a try if you're desperate. Don't know about dumping material over the bank either. I guess that explains the garbage within the soil.

I will add this history to my write up.

From: Coulter, Colin TRAN:EX
Sent: Wednesday, April 3, 2013 11:26 AM
To: Gaib, Sarah E TRAN:EX
Subject: RE: Alders follow up

I am planning to head over tomorrow and will measure and email you the culvert size. I estimated 600mm but I will confirm tomorrow.

I wasn't able to find any specifics regarding the current culvert install, but there is some interesting history in the road file for Alders. Not surprisingly, slides seems to have been an ongoing occurrence for many decades at this site.

In 1969, the ministry placed several car bodies on the bank and covered them with fill in an effort to mitigate erosion! They also installed a new flume at this time. I have no idea if the car bodies are still there.

Starting in 1976, there was a lengthy dialogue between the property owner at 123 Alders and the ministry with regards to drainage and erosion. It appears that a culvert to the ocean had been constructed previously, but it was washed out in similar fashion to what we are dealing with now. When the culvert was reconstructed, the pipe was initially not extended out to the ocean. In addition, the ministry encroached onto private property, ultimately forcing the purchase of an additional 0.11 acres of property. As part of the compensation agreement, the ministry was to upgrade the driveway culvert at 123 Alders, cover all drainage pipe with fill, and landscape the area.

It appears that the pipe outfall was again extended to the ocean in 1978. Suitable fill materials from other projects and maintenance were to be transported and dumped down the bank on an ongoing basis. There were additional slides in 1978 and 1982. In 1982, the drainage system was re-aligned and tightened to stop leakage which was contributing to slippage.

I don't have any information from 1982 to present, but I will ask Andy and others if they have any more background.

There seems to be an extensive history of what not to do!

Colin

From: Gaib, Sarah E TRAN:EX
Sent: Tuesday, April 2, 2013 3:57 PM
To: Coulter, Colin TRAN:EX
Subject: RE: Alders follow up

Okay great. thanks. do you think you can ask one of the mainroad guys to measure the diameter? It may be possible to simply measure at the inlet. I didn't have a tape measure with me on Thursday.

From: Coulter, Colin TRAN:EX
Sent: Tuesday, April 2, 2013 3:54 PM
To: Gaib, Sarah E TRAN:EX
Subject: RE: Alders follow up

Hi Sarah,

It was Gord McPhee from Mainroad who we met on site.

s.22 but I will ask if he has any information on the culvert when he returns. I expect the install probably pre-dates Andy's time on Salt Spring. I will also check the road file for Alders Ave and let you know if there is anything of interest.

Colin

From: Gaib, Sarah E TRAN:EX
Sent: Tuesday, April 2, 2013 3:45 PM
To: Coulter, Colin TRAN:EX
Subject: Alders follow up

Hi Colin,

Can you remind me of the name of the fellow from Mainroad who met us on site last week? As well, have you asked Andy if he was aware of the culvert? I am looking at options for repairing.

Sarah Gaib, M.Eng., P.Eng.
Senior Geotechnical Engineer
Geotechnical, Materials & Pavement Engineering Section
B.C. Ministry of Transportation & Infrastructure
Office: 250-356-0390 Cell: 250-213-2044

sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Thursday, April 4, 2013 5:04 PM
To: Spillett, Ryan TRAN:EX
Subject: Fw: Alders work

FYI - seems unlikely we'd be able to approve funding and a contract for this work in time for mobilization on Monday.

The s.17 does not include the cost of the replacement pipe install, only soil anchors to support the drainage system.

We can discuss tomorrow if this is a possibility.

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Monday, April 15, 2013 9:11 AM
To: Coulter, Colin TRAN:EX
Subject: FW: Salt Spring Island - Alders Road

Please see Mike's comments below regarding survey requirements for a drainage assessment.

From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 6:21 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

I believe they would stay the same, just less work; the ditch bottom profile may be tricky if there are branches upstream – I'll leave that to the surveyor. The cross-sections could possibly be eliminated but I would like to see some pictures looking upstream from the culvert.

Mike

From: Gaib, Sarah E TRAN:EX
Sent: Friday, April 12, 2013 2:11 PM
To: Feduk, Michael TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Thanks for the response Mike.

Just to let you know it's not an actually creek or drainage course. It is all road drainage. Uphill of the culvert inlet is an open ditch that collects water from Alders Road and extends up to Fulford Ganges Road. Please see the attached map for location. So would the survey requirements remain the same?

Sorry for any confusion.

<< File: AldersRoad.pdf >> _____
From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 1:51 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Hi Sarah

To come up with a size we would like to have:

- Highway cross-section (perpendicular to centreline) over culvert
- Stream profile extending upstream ~ 100m along the thalweg of the channel with shots on every break; downstream to the ocean – you likely need this for your work also.
- Inlet and outlet invert elevations; confirm there is no break in the invert through the culvert (use a flashlight);

- Culvert diameter – at inlet and outlet. (confirm pipe shape is consistent with no crushing); culvert length; confirm material is all csp;
- A few cross-sections of the channel extending upstream to the right of way;
- A hand drawn site plan or sketch showing these details

Its difficult to give these instructions without seeing the site or having good air photos, so this may be more or less than we actually need.

Mike

From: Gaib, Sarah E TRAN:EX
Sent: Thursday, April 11, 2013 3:47 PM
To: Feduk, Michael TRAN:EX
Subject: Salt Spring Island - Alders Road

Mike,

What type of survey information would you require for the drainage assessment? Colin is hoping to get the RoW limits identified, so we could pick up the data at the same time.

This is a photo of the outlet below the crest of the slope take yesterday.

<< File: Capital G-20130410-00006.jpg >>

Thanks,

Sarah Gaib, M.Eng., P.Eng.
Senior Geotechnical Engineer
Geotechnical, Materials & Pavement Engineering Section
B.C. Ministry of Transportation & Infrastructure
Office: 250-356-0390 Cell: 250-213-2044
sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: David Turenne <dturenne@mainroad.ca>
Sent: Tuesday, August 27, 2013 6:00 PM
To: Coulter, Colin TRAN:EX
Cc: s.22
Subject: Re: Alders culvert install

Hi Colin, i agree, if we can get to the solid ground it would be better. Lets discuss with Luke and find the most efficient solution.

s.22 so you can communicate with Mike or Luke. Emails attached.

Regards,
David

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 27, 2013 5:31 PM
To: David Turenne
Subject: Re: Alders culvert install

Thanks Dave. I was on site briefly today and spoke with Luke. The excavation looks good so far.

They are a little concerned about the stability of the loose compost material deposited at the top of the slope for placing culvert and securing the iron anchors. The plan is to push the loose material to one side and create a pathway, but they don't know how deep the compost is. I think the pipe will be good and stable with the cable anchors in place, but it is not exactly the ideal material to build on.

Colin

From: David Turenne [mailto:dturenne@mainroad.ca]
Sent: Tuesday, August 27, 2013 12:37 PM
To: Coulter, Colin TRAN:EX
Subject: Re:Alders culvert install

Hi Colin,
Just an update.

Luke has removed the old culvert from the top and is digging to prep for the cb/anchor. The excavator arrives tomorrow to assist with excavation.

we have 5 lengths of pipe and the cb and headwall. s.22
please call.

but if you have any questions

Regards,
David

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 27, 2013 12:23 PM
To: 'wmlsinc@shaw.ca'
Cc: David Turenne
Subject: Re: Crane Road Legal Survey

That won't be a problem. The crew will likely be finished working at the top of the slope early next week.

The project supervisor is aware that the survey is scheduled for next Friday, Sept 6th.

Colin

From: Wolfe-Milner Land Surveying Inc. [mailto:wmlsinc@shaw.ca]
Sent: Tuesday, August 27, 2013 11:09 AM
To: Coulter, Colin TRAN:EX
Subject: Re: Crane Road Legal Survey

Hi Colin

I have found out that my field assistant is unable to work next Thursday. Would the next day (Friday) work?

Brian

----- Original Message -----

From: Coulter, Colin TRAN:EX
To: 'Brian Wolfe-Milner'
Cc: 'David Turenne'
Sent: Friday, August 23, 2013 2:12 PM
Subject: RE: Crane Road Legal Survey

Hi Brian,

I chatted with David today, and he thinks we'll be pretty safe to book the survey for Thursday, Sept 5th. Hopefully that still works for you.

Let me know if there are any other issues.

Thanks,
Colin

From: Coulter, Colin TRAN:EX
Sent: Wednesday, August 21, 2013 8:47 AM
To: 'Brian Wolfe-Milner'
Cc: 'David Turenne'
Subject: RE: Crane Road Legal Survey

Given that this will be a short week due to the Labour Day weekend, it would probably be best to err on the side of caution and delay until the following week.

I've CCed Project Manager David Turenne for his thoughts.

Dave – assuming the initial work is completed by Friday, September 6th (9 working days), do you think it is likely that excavation on the slope would begin the following Monday, September 9th, or do you anticipate that the remaining materials will not have arrived by then?

Brian – A contract is not required for a job of this scope since Wolfe-Milner is on the Ministry's BCLS approved roster. We do ask that you invoice this job separately from the other request for Mountain Road. You may send the invoice for Crane Road to the Saanich Area Office here:

Suite 240 – 4460 Chatterton Way Victoria, BC V8X 5J2

Thanks,
Colin

From: Brian Wolfe-Milner [<mailto:wmlsinc@shaw.ca>]
Sent: Tuesday, August 20, 2013 12:14 PM
To: Coulter, Colin TRAN:EX
Subject: Re: Crane Road Legal Survey

Hi Colin

I would prefer to schedule it for Thursday , Sept 5. Would this work?

Will there be a contract for this project? I am fine without one if that suits you.

Regards
Brian Wolfe - Milner

Brian's iPhone

On 2013-08-20, at 11:37 AM, "Coulter, Colin TRAN:EX" <Colin.Coulter@gov.bc.ca> wrote:

Hi Brian,

Any update on scheduling for the Crane Road survey? Our contractor hopes to begin working at the top of the embankment this Monday, August 26th. The initial phase is expected to take about 8-10 working days to complete.

The second phase of construction will be on the slope itself. Ideally I'd like to have the right-of-way boundaries marked before then if possible. There may be a window between Sept 5-13 when the survey could be completed, though the second phase could begin as early as September 9th if all materials have arrived by then.

Assuming that Wolfe-Milner is booked through the end of this week, I think the safest bet would be to aim for Friday, September 6th.

Give me a call when you are able and we can discuss in further detail.

Thanks,

Colin Coulter, BSc.
Operations Technician/Area Manager
Vancouver Island District - South Island
Ministry of Transportation & Infrastructure
Tel: 250-952-4481 Cell: 250-812-7305

From: Coulter, Colin TRAN:EX
Sent: Monday, July 29, 2013 4:49 PM
To: 'Wolfe-Milner Land Surveying Inc.'
Subject: RE: Crane Road Legal Survey

Yes that will work. I'm hoping to begin construction on the RoW towards late Aug/early Sept, depending on the shipping of materials, availability of the contractor, etc. The works are in no way dependent on having the survey completed, but we'll just need to ensure that there won't be any scheduling conflict.

I'll keep you informed of the scheduling on our end.

Thanks very much for the quick response today,

Colin

From: Wolfe-Milner Land Surveying Inc. [<mailto:wmlsinc@shaw.ca>]
Sent: Monday, July 29, 2013 2:48 PM
To: Coulter, Colin TRAN:EX
Subject: Re: Crane Road Legal Survey

Hello Colin

I will be in the field tomorrow so will not be able to meet with you. We will put in in the schedule which would be mid to late August. Will this work for you?

Brian G. Wolfe-Milner, B.C.L.S.
Wolfe-Milner Land Surveying Inc.
241 Fulford Ganges Road
Salt Spring Island, B.C.
V8K 2K7
250-537-5502
wmlsinc@shaw.ca.

----- Original Message -----

From: [Coulter, Colin TRAN:EX](#)
To: 'Wolfe-Milner Land Surveying Inc.'
Sent: Monday, July 29, 2013 2:31 PM
Subject: Crane Road Legal Survey

Hi Brian,

I do apologize as well for not following up on this request. There was some uncertainty as to whether or not this survey would be required, but I can now confirm that we would like to proceed if you are still available to complete the work.

To refresh your memory, we are just looking to delineate the Crown land from private land in order to appease any potential concerns of the adjacent property owners. This would consist of marking the right-of-way boundaries for Crane Road, including the 20ft strip of land referenced in Plan 3441OS if possible. I understand this inclusion may not have been incorporated into the original cost estimate.

If Wolfe-Milner is still available we'd like to have this survey completed as soon as possible. I'll

be on Salt Spring tomorrow, so give me a call on my cell if you need any more information.

Thank you,

Colin Coulter
Operations Technician/Area Manager
Vancouver Island District - South Island
Ministry of Transportation & Infrastructure
Tel: 250-952-4481 Cell: 250-812-7305

From: Wolfe-Milner Land Surveying Inc. [mailto:wmlsinc@shaw.ca]
Sent: Wednesday, June 26, 2013 4:05 PM
To: Coulter, Colin TRAN:EX
Subject: Re: Mountain Road

Hi Colin

My apologies for not getting back to you earlier about this.

We have had issues in this area over the years because of the land slips occurring which move and make unreliable any survey posts along the waterfront. We would likely have to set up the boundaries by working from Alders Road and perhaps the properties to the south east of Alders.

My estimate for budgeting purposes, to clearly mark the boundaries of Crane Road would be s.17,s. to s.17,s.

Please let me know if you have any questions.

Regards

Brian G. Wolfe-Milner, B.C.L.S.
Wolfe-Milner Land Surveying Inc.
241 Fulford Ganges Road
Salt Spring Island, B.C.
V8K 2K7
250-537-5502
wmlsinc@shaw.ca

----- Original Message -----

From: Coulter, Colin TRAN:EX
To: 'wmlsinc@shaw.ca'
Cc: Spillett, Ryan TRAN:EX
Sent: Tuesday, June 04, 2013 12:43 PM
Subject: Re: Mountain Road

Hi Brian,

Thank you for the additional information. None of the records I came across referenced a plan number for the 0.11 acre property acquisition.

There was a fairly significant slide within the Crane Road dedication earlier this year. As a result, the ministry will need to replace a section of culvert that was damaged. The purpose of the survey is to confirm and mark the limits of provincial property to ensure that our contractor does not mistakenly construct on private property again, and also to confirm whether or not any of the damage from the slide lies outside the R/W.

Thanks again,

Colin

From: Wolfe-Milner Land Surveying Inc. [mailto:wmlsinc@shaw.ca]
Sent: Sunday, June 02, 2013 11:04 AM
To: Coulter, Colin TRAN:EX
Subject: Re: Mountain Road

Colin

Before I look at working out a quote I did some digging and found some information that might be enlightening.

I have a note about a gazette notice of Feb 2, 1977 and Road surveys 5064. I have a copy of Plan 3441OS which illustrates a strip 20 feet wide and 0.11 acres. Perhaps you have this plan already. I am not clear what type of legal survey you require. The road has already been established by dedication so are you looking at a right of way plan for the 0.11 acre strip?
I will be out of the office Monday but back in on Tuesday.

Regards

Brian G. Wolfe-Milner, B.C.L.S.
Wolfe-Milner Land Surveying Inc.
241 Fulford Ganges Road
Salt Spring Island, B.C.
V8K 2K7
250-537-5502
wmlsinc@shaw.ca

----- Original Message -----

From: Coulter, Colin TRAN:EX
To: 'wmlsinc@shaw.ca'
Cc: Spillett, Ryan TRAN:EX ; O'Brien, Debbie TRAN:EX
Sent: Friday, May 31, 2013 4:56 PM
Subject: RE: Mountain Road

Hello Brian,

If possible, I am also interested in obtaining a quote for a legal survey of the R/W boundaries of Crane Road, which is a dedicated public road off of Alders Avenue. Crane Road is approximately 100 m in length, however only 40 m is open road. It was established by Plan 4747 (June 1939). The terrain is very steep with limited accessibility as much of the R/W slopes towards Ganges Harbour.

Our records show that an additional 0.11 acres of property was being negotiated for a drainage easement or outright purchase in 1978 due to an accidental encroachment by the ministry onto Lot 7 (121 Alders Ave). Details of this possible boundary amendment are quite sketchy, so I will have to do some more digging before determining whether or not it will be feasible to survey.

Please let me know if you require any additional information, and whether or not Wolfe-Milner may be available to complete this work. You certainly wouldn't have to travel far from the office!

Thanks very much,

Colin Coulter, BSc.
Operations Technician/Area Manager
Vancouver Island District - South Island
Ministry of Transportation & Infrastructure
Tel: 250-952-4481 Cell: 250-812-7305
Please consider the environment before printing this email

From: O'Brien, Debbie TRAN:EX
Sent: Tuesday, May 28, 2013 4:37 PM
To: 'Wolfe-Milner Land Surveying Inc.'
Subject: RE: Mountain Road

Hi, Brian:

Thank you very much for getting back to me so quickly.

I have attached the gazette notices, and also the SRW plan that was included with the notice of road closure. We would like to re-establish only what was shown in the notice of closure. You are correct in that the road does go through a very small triangular portion of Section 31, and we would want to have this included. I am aware that there may be a portion of Mountain Road that is not established, and we do not want to touch that hornet's nest, all we want to do is reinstate what was identified in the notice of closure.

Providing an estimate first thing next week is more than I hoped possible, so I thank you for this.

Regards,
Debbie O'Brien
Senior District Development Technician
Vancouver Island District
Ministry of Transportation & Infrastructure
Phone: (250) 751-3268

From: Wolfe-Milner Land Surveying Inc. [<mailto:wmlsinc@shaw.ca>]
Sent: Tuesday, May 28, 2013 3:35 PM
To: O'Brien, Debbie TRAN:EX
Subject: Re: Mountain Road

Hi Debbie

I notice that it is Ecological Reserve through parts of Sections 39 and Section 32. It also appears according to the survey plan of the reserve to be in a small part of the NW 1/4 of Section 31. I did see a reference on my office key plans to an Order in Council #612 and a gazette notice of March 19, 1986 (May 8 issue). These might relate to establishing the reserve although it could relate to the road.

Do I assume the survey would be a right of way survey 20 metres in width following and including the existing road (even though it might not entirely be within Plan 1353RW) and extend from the west boundary of Plan 2715 to the east boundary of Strata Plan VIS3073? This would connect the existing road to road dedications at each end.

It might be helpful if you could email the two gazette notices.
I will be away from the office for the rest of the week but work out an estimate first thing next week.

Brian G. Wolfe-Milner, B.C.L.S.
Wolfe-Milner Land Surveying Inc.
241 Fulford Ganges Road
Salt Spring Island, B.C.
V8K 2K7
250-537-5502
wmlsinc@shaw.ca

----- Original Message -----

From: O'Brien, Debbie TRAN:EX
To: 'Wolfe-Milner Land Surveying Inc.'
Sent: Tuesday, May 28, 2013 2:41 PM
Subject: Mountain Road

Hi, Brian:

The Ministry was going through a process to close a portion of Mountain Road through parts of Section 39 and Section 32, South Salt Spring Island, as established by Plan 1353 R/W in conjunction

with a gazette notice published January 27, 1965 and slightly altered by gazette notice dated March 8, 1965 (to exclude the beacon sites).

We received some additional information after the process had begun, and then went to our Properties Branch to stop the closure, but the gazette notice had already been published to close the road. We cannot just reinstate the original gazette notice, and must have a legal survey plan registered in order to re-establish this road right of way. We would like to obtain an estimate from you for the cost of re-establishing this road right of way as public road.

Would you please provide me with a cost estimate to survey and register a new plan to establish Mountain Road through these section, at your earliest convenience.

Thank you very much for your time.

Regards,
Debbie O'Brien
Senior District Development Technician
Vancouver Island District
Ministry of Transportation & Infrastructure
Phone: (250) 751-3268

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 27, 2013 4:31 PM
To: 'dturrene@mainroad.ca'
Subject: Re: Alders culvert install

Thanks Dave. I was on site briefly today and spoke with Luke. The excavation looks good so far.

They are a little concerned about the stability of the loose compost material deposited at the top of the slope for placing culvert and securing the iron anchors. The plan is to push the loose material to one side and create a pathway, but they don't know how deep the compost is. I think the pipe will be good and stable with the cable anchors in place, but it is not exactly the ideal material to build on.

Colin

From: David Turrene [mailto:dturrene@mainroad.ca]
Sent: Tuesday, August 27, 2013 12:37 PM
To: Coulter, Colin TRAN:EX
Subject: Re:Alders culvert install

Hi Colin,
Just an update.

Luke has removed the old culvert from the top and is digging to prep for the cb/anchor. The excavator arrives tomorrow to assist with excavation.

we have 5 lengths of pipe and the cb and headwall.^{s.22}
please call.

Regards,
David

but if you have any questions

Sent from my BlackBerry 10 smartphone on the Rogers network.

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 27, 2013 12:23 PM
To: 'wmlsinc@shaw.ca'
Cc: David Turrene
Subject: Re: Crane Road Legal Survey

That won't be a problem. The crew will likely be finished working at the top of the slope early next week.

The project supervisor is aware that the survey is scheduled for next Friday, Sept 6th.

Colin

From: Wolfe-Milner Land Surveying Inc. [mailto:wmlsinc@shaw.ca]
Sent: Tuesday, August 27, 2013 11:09 AM
To: Coulter, Colin TRAN:EX
Subject: Re: Crane Road Legal Survey

Hi Colin

Page 050

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Page 051

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Page 052

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Page 059

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DUPLICATE

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Tuesday, August 20, 2013 1:30 PM
To: 'David Turenne'
Cc: Spillett, Ryan TRAN:EX; Coulter, Colin TRAN:EX
Subject: RE: Alders road Anchorage System

Hi Dave,

So I've completed the calculations for the force on the pipe at the bend and the 2.5m long concrete block is adequate to offset it. For some added restraint, some additional dywidag rods either side of the bend could be installed (they would get incorporated into the concrete anchor) and the pipe could be buried using onsite material and staying within Ministry RoW.

Sarah

From: David Turenne [<mailto:dturenne@mainroad.ca>]
Sent: Monday, August 19, 2013 2:10 PM
To: Gaib, Sarah E TRAN:EX
Cc: Spillett, Ryan TRAN:EX; Coulter, Colin TRAN:EX
Subject: RE: Alders road Anchorage System

Hi Sarah,
Thank you for your feedback.
I have adjusted the drawing to reflect your comments.
I will order the anchors and make sure the concrete is formed to your recommended sizes.
The first attachment is for the anchorage pad at the bottom of the slope and the second attachment is for the Catch Basin at the Top of the slope.
Regards,
David

From: Gaib, Sarah E TRAN:EX [<mailto:Sarah.Gaib@gov.bc.ca>]
Sent: Monday, August 19, 2013 12:32 PM
To: David Turenne
Cc: Spillett, Ryan TRAN:EX; Coulter, Colin TRAN:EX
Subject: RE: Alders road Anchorage System

Hi Dave,

Thanks for the details. The top catch basin anchorage looks good. I'm confused as to the 2nd detail on the sheet. I'm assuming it's the concrete anchor going at the base of the hill? Or perhaps it's the catch basin anchor. Regardless if the pipe is 750mm diameter how can the block be only 600mm high? I have calculated a force that the pipe will be subject too at the base from the water crashing down, I want to make sure this concrete block is going to be sized adequately. Can you confirm your proposed concrete block size at the base? With 1.2m high by 1.2m wide I am looking at the anchor being 2.5m long.

As well, the dywidag rods over the pipe segments should be installed every 3m instead of 4m as you have. 3m spacing allows for placement of a rod at each collar if the pipe segments are 6m long. I'm good with 1.5m embedment.

Sarah

From: Coulter, Colin TRAN:EX
Sent: Friday, August 16, 2013 4:31 PM
To: 'David Turenne'
Cc: Gaib, Sarah E TRAN:EX; Spillet, Ryan TRAN:EX
Subject: FW: Alders road Anchorage System

Thanks David.

Sarah/Ryan – for your perusal.

From: David Turenne [<mailto:dturenne@mainroad.ca>]
Sent: Friday, August 16, 2013 12:15 PM
To: Coulter, Colin TRAN:EX
Cc: Mike Lee
Subject: Anders road Anchorage System

Hi Colin,
Here is a draft of what we talked about.
Regards,
David

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 13, 2013 4:57 PM
To: Gaib, Sarah E TRAN:EX
Cc: Spillett, Ryan TRAN:EX; Gillespie, Don G TRAN:EX; Janusson, Wayne B TRAN:EX
Subject: RE: Alders Road Culvert Install

I completely agree, and was in the process of sending you a note to the same effect. I have not been able to determine whether or not is a requirement to obtain engineering signoff for a project of this scope, but given the history of slope instability at this site it would definitely be wise to do so.

Is this sign off something you are prepared to provide, contingent on you acquiring the additional design details you would require? Time is of the essence, so I do not believe hiring an outside consultant would be an option at this point.

The Mainroad Project Manager is David Turenne at 250-880-1981. He would be your best point of contact for material specs. I'll pass along the message that we'll be looking for engineer approval.

I'll be on Salt Spring tomorrow, but give me a call on my cell and we can chat about it some more.

Regards,
Colin

From: Gaib, Sarah E TRAN:EX
Sent: Tuesday, August 13, 2013 3:55 PM
To: Coulter, Colin TRAN:EX
Cc: Spillett, Ryan TRAN:EX; Gillespie, Don G TRAN:EX; Janusson, Wayne B TRAN:EX
Subject: RE: Alders Road Culvert Install

Hi Colin,

Thanks for providing an update on the project. I suggest that an engineer needs to sign off on a work plan given the reliance of the culvert stability on the anchoring system and the site conditions (work on unstable slope).

Sarah Gaib, M.Eng., P.Eng.
Senior Geotechnical Engineer
Geotechnical, Materials & Pavement Engineer Section
B.C. Ministry of Transportation & Infrastructure
Office: 250-356-0390 Cell: 250-213-2044
sarah.gaib@gov.bc.ca

From: Coulter, Colin TRAN:EX
Sent: Monday, August 12, 2013 12:55 PM
To: Gaib, Sarah E TRAN:EX
Subject: FW: Alders Road Culvert Install

Hi Sarah,

FYI - Here's the latest design/cost estimate for the Alders culvert replacement. Sorry for the delay, I was away last week.

The 750 mm Boss 2000 pipe has now been ordered. I spoke to Armtech myself and they told me that the Boss 1000 was discontinued due to lack of demand.

Let me know if you have any concerns or suggested alterations regarding the design. The joints will be bell and spigot with heat shrink wrap and the anchors will consist of galvanized cable with concrete anchors at both the top and bottom of the slope. Iron anchors will also be used to secure the pipe in place, however we aren't sure yet if it will be possible to achieve a 1500 mm embedment depth.

My only major concern is the velocity at which runoff will be traveling through the pipe with smooth walls. We can consider adding a concrete diffuser at the outlet if erosion becomes an issue.

The Contractor is hoping to begin with the CB install and culvert replacement at the top of the slope as soon as the pipe starts to arrive in 2-3 weeks. It will likely take another week or two before the full shipment is received.

Thanks,
Colin

From: David Turenne [<mailto:dturenne@mainroad.ca>]
Sent: Friday, August 2, 2013 5:14 PM
To: Coulter, Colin TRAN:EX
Cc: Spillett, Ryan TRAN:EX
Subject: Alders Road Culvert Install

Hi Colin,
As discussed here is some of the details of the latest design proposal.
I need to order this Boss 2000 right away, so will go ahead with the 750mm Boss 2000, invoice attached.
The layout is a rough draft based on my field measurements.
The Cost Estimate will be between \$17,521 based on this layout, see attached breakdown I will give you a better breakdown on cost as we finalize any changes from your Geotech people.
Regards,
David

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Monday, April 15, 2013 8:58 AM
To: Coulter, Colin TRAN:EX
Cc: Spillett, Ryan TRAN:EX
Subject: RE: Alders road Culvert Rehab

Colin,

Thanks for the information. Building a riprap swale down the bank isn't an option given the steep slope and marginal stability to begin with.

I've recommended a Boss 1000 as it is corrugated on the inside and therefore well suited to steepened slopes because it helps to reduce the flow velocities. Mike Feduk may have a recommendation too as to the pipe type. I will forward a separate email to you with his survey requirements so he can complete a drainage assessment.

Sarah

From: Coulter, Colin TRAN:EX
Sent: Friday, April 12, 2013 4:11 PM
To: Spillett, Ryan TRAN:EX
Cc: Gaib, Sarah E TRAN:EX
Subject: FW: Alders road Culvert Rehab

Hi Ryan,

I received this proposal from Dave Turenne today regarding repairs to the Alders Ave slide area. I have made it clear that we are not yet in a position to make any final decisions regarding scope or costs.

I have asked Mainroad to hold off on making any alterations to the connecting watercourses until we are able to determine if the adjacent drainage systems have the capability to take on additional outflow. The only action I have authorized is for tarps to be placed over the slide area in order to minimize the absorption of rainwater on the slope. I have been assured that this will not impact the ability for culvert outflow to reach the ocean.

We can discuss in more detail next week,

Colin

From: David Turenne [<mailto:dturenne@mainroad.ca>]
Sent: Friday, April 12, 2013 2:37 PM
To: Coulter, Colin TRAN:EX
Cc: Rick Gill; Leon Bohmer; Tim Carr
Subject: Alders road Culvert Rehab

Hi Colin,

As discussed yesterday,

Mainroad is working on Quotes for 2 different approaches to rehab this Drainage corridor while waiting for MOTI recommendations.

Brief History;

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Withheld pursuant to/removed as

DUPLICATE

Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Tuesday, August 13, 2013 5:13 PM
To: 'David Turenne'
Cc: Gaib, Sarah E TRAN:EX; Spillett, Ryan TRAN:EX
Subject: RE: Alders Road Dissipator at the outlet end

Hi Dave,

Thanks for the update.

I've CCed Sarah Gaib who is the Geotechnical Engineer that completed the initial inspection after the Alders slope failure was discovered. Given the history of slope instability at this site, we would like to obtain engineering signoff on the work plan.

Obviously time is extremely tight at this point, but I am hoping that you will be able to go through the design and material specs with Sarah, just to ensure that there are no major concerns that I may be overlooking.

I would like to coordinate a conference call either tomorrow or on Thursday, if possible. I'll be over on Salt Spring tomorrow, but will be available on my cell.

Give me a shout tomorrow and we'll work out the details.

Thanks,
Colin

From: David Turenne [mailto:dturenne@mainroad.ca]
Sent: Tuesday, August 13, 2013 4:42 PM
To: Coulter, Colin TRAN:EX
Subject: Alders Road Dissipator at the outlet end

Hi Colin,
Check this out for the end of the pipe and see what you think.
I have ordered the head wall and a Precast Catchbasin that is 1.8m wide we will add some redi mix to it to create the anchorage for the cables.
I think the precast will be quicker therefore cheaper. It will allow us to change the direction of flow at that point to align the pipe better going over the bank.
I have 5 lengths of 750 coming next week and the full order following that.
In conclusion we should be able to start late next week.
Regards,
David

From: Greg Walters [mailto:gwalters@langleyconcretegroup.com]
Sent: Tuesday, August 13, 2013 4:18 PM
To: David Turenne
Subject: RE: Order inquiry

Hi David,

Page 067

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Page 068

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Pearson, Michael TRAN:EX

From: Coulter, Colin TRAN:EX
Sent: Thursday, April 25, 2013 1:25 PM
To: Feduk, Michael TRAN:EX
Cc: Gaib, Sarah E TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

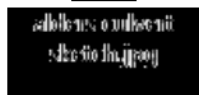
Hi Mike,

I will be arranging a legal survey for this section of RoW, and would like to determine whether or not there is value in including the geographic survey information required for a drainage assessment. **s.13,s.17**
s.13,s.17. That being said, I also want to take the necessary steps to ensure that we maximize the lifespan of the replacement culvert.

The entire length of culvert will have to be replaced from the existing inlet at the end of Alders Road. The open ditch which runs along Alders includes four driveway culverts which were upgraded by the ministry within the past two years. I will have to measure the driveway culverts to confirm the diameter, but I am fairly certain they are 400 mm.

There is also a cross-culvert which directs storm water from the ditch along Fulford-Ganges Road onto Alders Ave. I will also need to confirm the diameter of this cross-culvert, but one would expect the pipe to be 400 mm as well.

I have attached a sketch to give you a general idea of the layout:



Since outflow capacity is limited by the 400 mm driveway culverts, I have reason to believe that a 600 mm pipe will be more than a sufficient size. I am not particularly familiar with the typical applications of a drainage assessment beyond determining the appropriate pipe diameter. If you feel that a drainage assessment is warranted given the information I have provided than by all means we can get the survey information you require.

If we decide to proceed, can you please confirm the survey information you will require?

Thanks very much,

Colin Coulter
Operations Technician/Area Manager
Tel: 250-952-4481 Cell: 250-812-7305
colin.coulter@gov.bc.ca

From: Gaib, Sarah E TRAN:EX
Sent: Monday, April 15, 2013 9:11 AM
To: Coulter, Colin TRAN:EX
Subject: FW: Salt Spring Island - Alders Road

Please see Mike's comments below regarding survey requirements for a drainage assessment.

From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 6:21 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

I believe they would stay the same, just less work; the ditch bottom profile may be tricky if there are branches upstream – I'll leave that to the surveyor. The cross-sections could possibly be eliminated but I would like to see some pictures looking upstream from the culvert.
Mike

From: Gaib, Sarah E TRAN:EX
Sent: Friday, April 12, 2013 2:11 PM
To: Feduk, Michael TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Thanks for the response Mike.

Just to let you know it's not an actually creek or drainage course. It is all road drainage. Uphill of the culvert inlet is an open ditch that collects water from Alders Road and extends up to Fulford Ganges Road. Please see the attached map for location. So would the survey requirements remain the same?

Sorry for any confusion.

<< File: AldersRoad.pdf >>

From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 1:51 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Hi Sarah

To come up with a size we would like to have:

- Highway cross-section (perpendicular to centreline) over culvert
- Stream profile extending upstream ~ 100m along the thalweg of the channel with shots on every break; downstream to the ocean – you likely need this for your work also.
- Inlet and outlet invert elevations; confirm there is no break in the invert through the culvert (use a flashlight);
- Culvert diameter – at inlet and outlet. (confirm pipe shape is consistent with no crushing); culvert length; confirm material is all csp;
- A few cross-sections of the channel extending upstream to the right of way;
- A hand drawn site plan or sketch showing these details

Its difficult to give these instructions without seeing the site or having good air photos, so this may be more or less than we actually need.
Mike

From: Gaib, Sarah E TRAN:EX

Sent: Thursday, April 11, 2013 3:47 PM
To: Feduk, Michael TRAN:EX
Subject: Salt Spring Island - Alders Road

Mike,

What type of survey information would you require for the drainage assessment? Colin is hoping to get the RoW limits identified, so we could pick up the data at the same time.

This is a photo of the outlet below the crest of the slope take yesterday.

<< File: Capital G-20130410-00006.jpg >>

Thanks,

Sarah Gaib, M.Eng., P.Eng.

Senior Geotechnical Engineer

Geotechnical, Materials & Pavement Engineering Section

B.C. Ministry of Transportation & Infrastructure

Office: 250-356-0390 Cell: 250-213-2044

sarah.gaib@gov.bc.ca

Pearson, Michael TRAN:EX

From: Gaib, Sarah E TRAN:EX
Sent: Tuesday, July 9, 2013 4:07 PM
To: Coulter, Colin TRAN:EX
Cc: Pearson, Michael TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Follow Up Flag: Follow up
Flag Status: Completed

Hi Colin,

I was just wondering yesterday how things were progressing. So thanks for the update.

The Boss 1000 is more appropriate for the application. The corrugations will reduce velocities and the potential for erosion at the outlet.

I've double checked and the 750mm diameter is available but not the 800mm diameter.

Given the existing system was 400mm, even without a drainage assessment installing a 750mm diameter is a great improvement. Without doing the drainage assessment there is a risk we aren't accounting for everything but s.17
s.17 I think our greater concern is to re-establish the drainage pipe before the fall rain returns. The drainage system will be rebuilt to a larger capacity than what was there essentially without maintenance since the 1980's.

All work should be done during dry conditions (now is perfect) and every effort should be made to minimize disturbance to the existing slope and its vegetative cover.

I'm in the office for the remainder of the week should you wish to discuss further.

Best,
Sarah

From: Coulter, Colin TRAN:EX
Sent: Tuesday, July 9, 2013 3:49 PM
To: Gaib, Sarah E TRAN:EX
Cc: Pearson, Michael TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Hi Sarah,

Just wanted to touch base - it's been a while since we've discussed this project. Everything has been relatively static for the past few months, but we are now finally in a position to complete a legal survey of the site.

At this point I have only requested that survey pins be placed to delineate the property boundaries. In your estimation, are there any other measurements we should be obtaining at the time of survey?

There does not appear to be much of an appetite to complete a detailed drainage assessment. We've discussed the possibility of increasing the culvert size to 800 mm to allow for any increases in runoff resulting from future development. The original proposal was to increase the size to 600 mm only. The existing entrance culverts along Alders Ave are actually 500 mm in size, not 400 mm as I had originally thought.

Do you have any thoughts on this proposal to replace the damaged 400 mm CSP with 750 mm HDPE (I don't believe there is an 800 mm size available), and to forego a drainage assessment?

Mainroad indicated that their supplier only carries Boss 2000 pipe. My preference would be to use the corrugated Boss 1000 if we are able to locate a supplier, which I believe you were inquiring about back in April? Mainroad is prepared to begin ordering materials as soon as MoT gives the go ahead.

It does not appear that it will be possible to utilize any nearby private property to access the site, however the contractors are confident that they will be able to transport the necessary equipment and materials down from the top of the slope.

I am also looking into the possibility s.13,s.17

s.13,s.1 for Salt Spring. Our contract year ends in late September, but Mainroad has indicated that they would be willing to utilize some of next years' budget in advance. Still, I would estimate that the total available funding for this culvert rehab will be no more than s.13,s.17

Let's discuss some more when you are able.

Thanks,

Colin Coulter

Operations Technician/Area Manager
Tel: 250-952-4481 Cell: 250-812-7305
colin.coulter@gov.bc.ca

From: Feduk, Michael TRAN:EX
Sent: Friday, April 26, 2013 12:17 PM
To: Lee, Gar TRAN:EX; Coulter, Colin TRAN:EX
Cc: Gaib, Sarah E TRAN:EX; Pearson, Michael TRAN:EX; Chung, Dickson TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

<< File: alders culvert sketch.jpg >>

Here it is

From: Lee, Gar TRAN:EX
Sent: Friday, April 26, 2013 12:14 PM
To: Feduk, Michael TRAN:EX; Coulter, Colin TRAN:EX
Cc: Gaib, Sarah E TRAN:EX; Pearson, Michael TRAN:EX; Chung, Dickson TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Can you send the attachments?

To: Coulter, Colin TRAN:EX
Subject: FW: Salt Spring Island - Alders Road

From: Gaib, Sarah E TRAN:EX
Sent: Monday, April 15, 2013 9:11 AM
To: Coulter, Colin TRAN:EX
Subject: FW: Salt Spring Island - Alders Road

Please see Mike's comments below regarding survey requirements for a drainage assessment.

From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 6:21 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

I believe they would stay the same, just less work; the ditch bottom profile may be tricky if there are branches upstream – I'll leave that to the surveyor. The cross-sections could possibly be eliminated but I would like to see some pictures looking upstream from the culvert.
Mike

From: Gaib, Sarah E TRAN:EX
Sent: Friday, April 12, 2013 2:11 PM
To: Feduk, Michael TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Thanks for the response Mike.

Just to let you know it's not an actually creek or drainage course. It is all road drainage. Uphill of the culvert inlet is an open ditch that collects water from Alders Road and extends up to Fulford Ganges Road. Please see the attached map for location. So would the survey requirements remain the same?

Sorry for any confusion.

<< File: AldersRoad.pdf >>

From: Feduk, Michael TRAN:EX
Sent: Friday, April 12, 2013 1:51 PM
To: Gaib, Sarah E TRAN:EX
Cc: Cossette, Daniel TRAN:EX
Subject: RE: Salt Spring Island - Alders Road

Hi Sarah

To come up with a size we would like to have:

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- A few cross-sections of the channel extending upstream to the right of way;
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Its difficult to give these instructions without seeing the site or having good air photos, so this may be more or less than we actually need.

Mike

From: Gaib, Sarah E TRAN:EX
Sent: Thursday, April 11, 2013 3:47 PM
To: Feduk, Michael TRAN:EX
Subject: Salt Spring Island - Alders Road

Mike,

What type of survey information would you require for the drainage assessment? Colin is hoping to get the RoW limits identified, so we could pick up the data at the same time.

This is a photo of the outlet below the crest of the slope take yesterday.

<< File: Capital G-20130410-00006.jpg >>

Thanks,

Sarah Gaib, M.Eng., P.Eng.
Senior Geotechnical Engineer
Geotechnical, Materials & Pavement Engineering Section
B.C. Ministry of Transportation & Infrastructure
Office: 250-356-0390 Cell: 250-213-2044
sarah.gaib@gov.bc.ca

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Sold by:

Armtec Nanaimo
1848 Schoolhouse Road
Nanaimo BC V9X 1T4
250-754-1238

Bill-To-Party

MAIN ROAD SOUTH ISLAND
2895 West Shore Parkway
Victoria BC V9B 0B2

Ship-To-Party

MAIN ROAD SOUTH ISLAND
David (250)391-7310 Ext 2101
2895 West Shore Parkway
Victoria BC V9B 0B2

Information

Document Number	20012447
Document Date	07/30/2013
Customer No.	105323
Validity End Date	08/30/2013
Salesperson	Lorne Mielty
Quoted To	David ext. 2101/(250)391-7310
Payment Terms	Net 30 days
Purchase Order No.	Alders Road SSI
Delivery Terms	COL COLLECT
Total Weight	4,500 KG
Delivery Date	08/30/2013
Currency	CAD

Item	Material/Description	Quantity	Unit Price	Amount
10	Entered by Cheryl 437408 B2000 CSA B182.8 B&G - 320kPa 750Dia 6m	s.17,s.21		s.17,s.21
			per M	
			Sub Total	
			GST	
			PST	
			Total Amount	\$
GST / HST #		PST / QST #		
855644746		Saskatchewan # 2443711 Prince Edward Island # 201926 Manitoba # 855644746M T0004 Quebec # 1207557290		

All returns of material are subject to a minimum restocking charge of 20%. Any refund is subject to receipt in its original condition. Purchaser is responsible for freight costs associated with the return. Service charge of 2% per month (24% per annum) on overdue accounts.

**Geotechnical, Materials and Pavement
Engineering Section**

4B – 940 Blanshard St.
Victoria, B.C. V8W 9T5
Phone: (250) 387-7735

August 26, 2013

Colin Coulter
Operations Technician/Area Manager, Vancouver Island District
BC Ministry of Transportation & Infrastructure
Suite 240 - 4460 Chatterton Way
Victoria, BC V8X 5J2

**RE: SAFE ENTRY REQUIREMENTS
CULVERT REPLACEMENT ON SLOPE BELOW ALDERS ROAD
SALT SPRING ISLAND**

This letter provides geotechnical stipulations for safe work requirements within the vicinity of the slope at the above-noted site. Safe Work Procedures are required for the replacement of a culvert on a steep slope.

SITE CONDITIONS

The Site is located downslope of Alders Road between the houses at 121 and 123 on Salt Spring Island. There are no utilities crossing the slope.

An inspection of the area was completed by Sarah Gaib, P.Eng. (MoT Geotechnical Group-Victoria), Colin Coulter (MoT Area Manager) and Gord McPhee (Mainroad Contracting) on March 28, 2013. The conditions of the slope as observed at the time of inspection were as follows:

- Pieces of the existing culvert had failed and now at the bottom of the slope. The failure likely began as a leak in a joint causing the soil supporting the culvert to become saturated and fail. The resulting loss of support under the culvert caused it to collapse under its own weight.
- The Site is composed of a flat bench area at the top of a soil slope which extends down to the beach.
- The soil slope is 45° near the crest and while very steep it shows no indication of current movement. The slope flattens out towards the bottom to roughly 20°. The

overall height is approximately 35m. The slope is covered with small trees, shrubs and ferns.

- A small zone of failed material was located about halfway down the slope and the failure scarp measured approximately 2m deep, 8m down the slope by 10m across the slope. Much of the failed material had slumped down slope approximately 10m. Perhaps up to a third of the material has been transported further down slope by the surface drainage over time. At the time of the site visit the exposed slide scarps appeared dry and stable. There were no seepage zones identified.
- The slope appeared to be stable under current conditions. The existing tension cracks were the result of a soil failure caused by a leaky pipe. The pipe failure didn't appear to be the result of an unstable slope.
- The soil profile appeared to be composed of a loose, approximately 1m thick, heavily organic silty sand layer with some gravel and cobbles. This top layer was only present on shallower angle slopes, $<20^\circ$. Below this was a compact to dense, silt and sand layer with some cobbles. A burned log, an old bottle and a clay pot were found embedded in this layer near the base of the slope suggesting it is old landslide material or perhaps fill material end dumped over the edge at some point in the past. No exposed bedrock is present along the slope face.

PURPOSE

The purpose of this instruction is to provide the engineering portion of the work procedures required for the culvert replacement on the slope below Alders Road. The intent is to replace the entire drainage system extending from the existing headwall at the end of the open ditch on Alders Road to the proposed outlet at the ocean. The work will require the coordinated efforts of the Ministry and Mainroad Contracting Ltd. It is a requirement that each party participate in the creation of work instructions specific to their area of expertise:

Ministry – Engineering instructions, creation of the work procedures required to protect the safety of the workers during the various phases of construction.

Mainroad Contracting Ltd. – Follow work procedures, site supervision.

CONSTRUCTION SEQUENCING

PHASE 1 – WORK ON BENCH (week of August 26th)

- Work is essentially limited to the flat bench area at the top of the slope.
- Using a D60 excavator to excavate out the existing headwall and buried portion of existing pipe.
- Install new headwall, concrete catch basin and buried portion of pipe along the bench area.
- No person shall work within a 1.0m setback of the crest of the slope without the use of fall protection gear.

- No personal shall work on the slope without the use of fall protection gear.
- Any work over the slope by personal must use fall protection gear.
- The duration of the work is expected to be 3 days.

PHASE 2 – WORK ON SLOPE (week of September 3rd)

- Work is to occur on the slope.
- No equipment on the bench shall be placed within 1.0m of the crest of the slope.
- A D60 excavator will be used to grade the slope for placement of the culvert.
- No labours shall work within a 1.0m setback of the crest of the slope without the use of fall protection gear.
- No labours shall work on the slope without the use of fall protection gear.
- No material is to be removed or added to the slope.
- All work shall be done in a manner to minimize disturbance of the 45° slope and existing vegetative cover.
- Any bare spots shall be hydro-seeded at the completion of the work.
- The duration of the work is expected to be 4 days.

STIPULATIONS FOR REGRADING WORK

Personal and equipment entry onto the slope will be required to conduct the above works. This requirement is expected to continue until mid-September 2013. Worker and equipment presence within the subject site area is permissible providing that the following requirements are met:

1. Weather - Work is only to progress if no heavy rain has occurred in the 3 days prior to the work. If while completing the work, the site is subject to heavy rain, the work shall cease for 3 days. Heavy rain shall be defined as 10 mm per day or more forecast for Victoria Airport.
2. Due to a high fire risk there should be no smoking on the site.
3. Daily Site Inspections – at the beginning of every shift and half way through the shift, a site walk over should be conducted by the Mainroad site representative, or designate. Any noted changes to the surface of the site such as cracking, sloughing, or other indications of slope distress beyond acceptable standards are to be documented and reported to the MoT Geotechnical Engineer contact.
4. Equipment - The proposed approach is to have a D60 excavator working on the bench above the slope. The D60 will be winched down the slope using a tow truck for work on the bottom half of the slope. The equipment is to work outwards and down the slope. Material moved will be packed by the weight of the equipment.
5. Worker presence below moving construction equipment working on the slope is not permitted at any time.
6. Workers on the slope or within 1.0m of the slope edge above must use fall protection gear.
7. Proper site protocols are to be established for safely working around the slope, as well as, safe egress from the site in the event of slope instabilities or unsafe site conditions. The

Mainroad site representative shall identify marshalling points at the top and the bottom of the slope outside of the work area.

The MoT contact Geotechnical Engineer is Sarah Gaib, P.Eng. (1-250-213-2044) or Don Gillespie, P.Eng. (1-250-213-8369).

A copy of this letter must be kept on the job site. This conditional permission to access the above site expires on September 15th, 2013, unless a written extension is obtained from the MoT Geotechnical Engineer prior to the expiry date.



Written By:
Sarah Gaib, P.Eng.
Senior Geotechnical Engineer



Reviewed By:
Don Gillespie, P.Eng.
Geotechnical Manager

Cc: Ryan Spillett (A/Operations Manager, MoT)
David Gerraghty (Manager Geotechnical & Materials Engineering, MoT)
Dave Turenne (Road Manager, Mainroad Contracting Ltd.)

Reference Photos:

Photo showing soil slope Phase 2 work area from near the bottom, looking up at failed culvert section.



Photo showing bench area above slope, work area for Phase 1.





Request Number: SI-14-001

Maintenance Service Area: 01 - South Island

Maintenance Contractor: Mainroad South Island

Emergency Work

☒

Additional Work

☐

Location: (Include Highway or Road or Intersection) Crane Road r/w at Alders Ave, Salt Spring Island

Scope of Work: Culvert replacement project

Work Description: (To be as detailed as possible)

Replace approximately 100 m CSP culvert which was destroyed by a slope failure.

Replacement to consist of Boss 2000 pipe, new headwall, catch basin, concrete anchor with steel cables, outlet diffuser, and site remediation.

TOTAL ESTIMATED COST s.13,s.17

Direct Cost Plus: ☐ Unit Price: ☐ Combination: ☒Date: / /
YYYY MM DDDate: / /
YYYY MM DD

DISTRICT TRANSPORTATION/OPERATIONS MANAGER

Colin Coulter

250-952-4481

AREA MANAGER CONTACT NAME

TELEPHONE

AUTH

TENTATIVE SIGNATURE

Rick Gill

250-880-1976

TELEPHONE

RESP

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S/L

6	2	1	7	7
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STOB

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PROJECT NO.

5	5	1	6	3	0	1
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☐ Multi-line coding attached

CPS Coding:

Product/Info 1: 16301ALDERS

Business Type: CONSTRUC

Work Activity/Info 2: OTHER CONS

Cost Type/Info 3:

PAYMENT DETAILS

Final Price: \$ (Attach backup documentation)

Distribution: Original – District Copy – Contractor Copy – Region

April 12, 2013

Colin Coulter
Operations Technician/Area Manager Salt Spring Island
Vancouver Island District
Ministry of Transportation & Infrastructure

Re: Alders Road Culvert Washout

An existing corrugated steel pipe (CSP) failed on the slope below the houses at 121 and 123 Alders Road sometime in early 2013. The failure likely occurred during or shortly after a heavy rain event. The site appears to encompass a marginally stable slope under normal conditions.

This letter summarizes site conditions and includes recommendations related to the recent activity.

Location:

The location is the slope below the houses located at 121 and 123 Alders Road on Salt Spring Island. The Ministry appears to have a right-of-way (RoW) between the 2 properties approximately 12m wide according to CRD online maps.

Site Observations:

A site visit was completed on March 28th, 2013 and included Sarah Gaib P. Eng. (MoT Senior Geotechnical Engineer), Colin Coulter (MoT Area Manager), Gord McPhee (Mainroad Contracting) and a representative from each of the two properties.

A MoT open ditch runs down the south side of Alders Road carrying surface drainage. The ditch continues down to a relatively level grassy area between the properties at 121 and 123 Alders Road. This 12m wide area appears to be Ministry RoW. The grade of the ditch at this spot is perhaps 1 or 2% and just enough to keep the water moving but when there is heavy rain the neighbours report the ditch filling up and the water ponding. The homeowner at 123 Alders has a sump pump in the basement that kicks in suggesting the entire groundwater table responds quickly to high precipitation events.

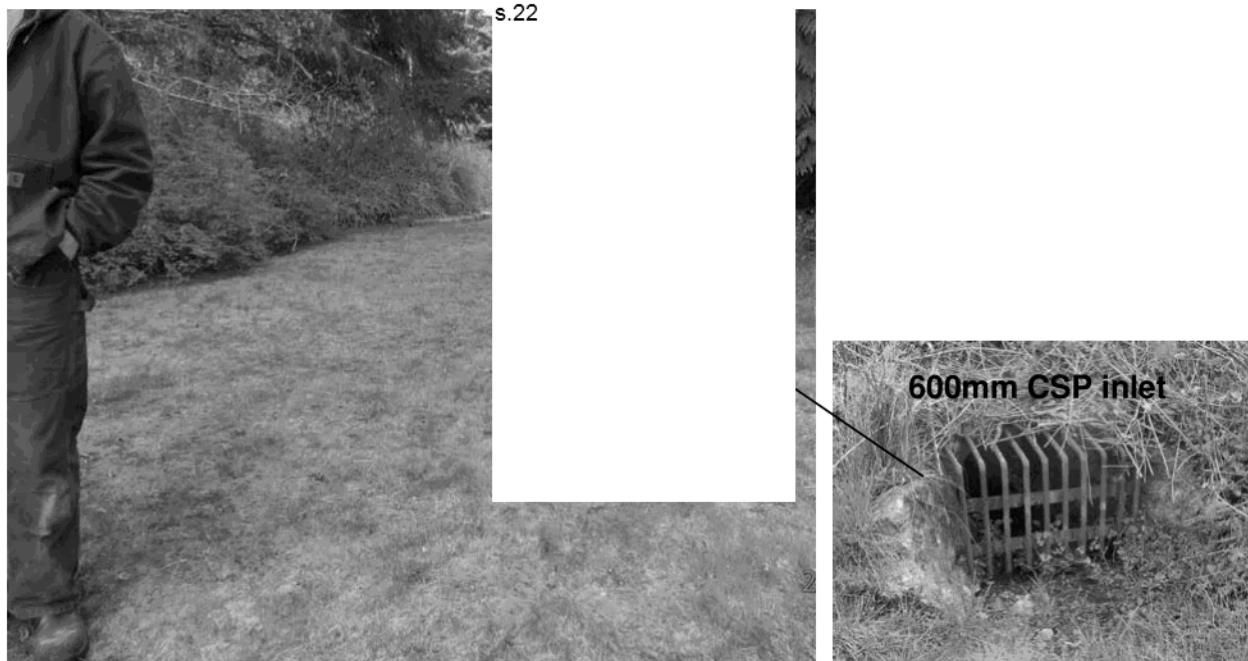


Photo 1: View of flat area at top of slope, looking west towards Alders Road

A 600mm (23.6 inch) diameter CSP extends from the open ditch on Alders Road down the slope to the beach. The inlet has a concrete headwall and trash rack (for safety purposes not debris). Every few years the maintenance contractor cleans sediment out of the ditch to maintain proper flow.

According to online CRD mapping, the overall slope height is about 35m. The top segment of the CSP starts at the inlet and is buried in the crest of the slope. It appears to outlet approximately 10m down from the crest and is still intact but the remaining segments were piled up on the slope below. A small volume of water running out of the top intact segment was running down the slope surface.

The top 15m of the slope is 45° and shallows out to ~24° down the remainder of the slope. At the beach, there is a vertical step of about 1.5m down to the beach and it appears to be due to ongoing erosion at high tide.

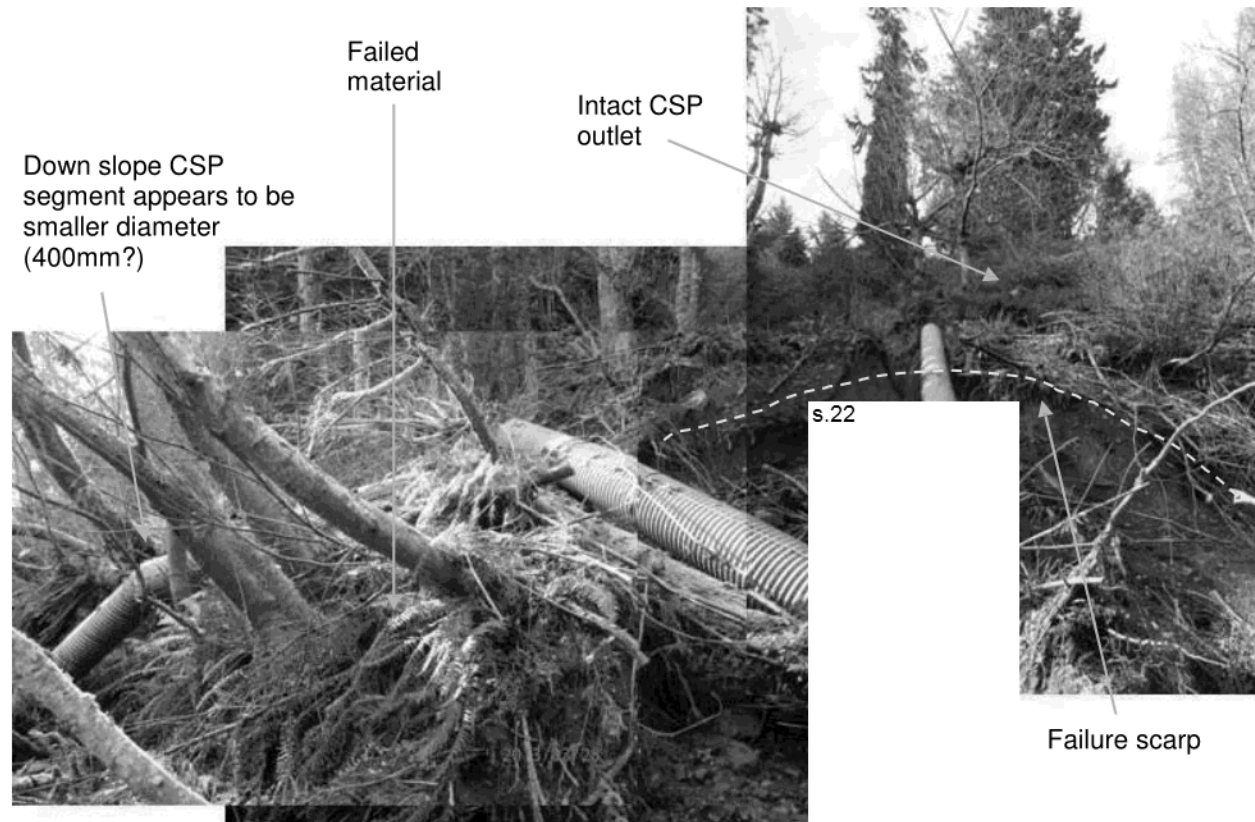


Photo 2: View of slope looking upwards to the west. Failed CSP segments in the foreground

The entire slope appears to be marginally stable with over steepened areas lacking vegetation and discrete offsets in the slope. The slope was covered in vegetation ranging from trees to various shrubs and ferns. Many of the trees, both young and old, had inclined trunks at the base but vertical orientation above suggesting slow ongoing creep. The trees shown in Photo 2 on the left side which are inclined throughout their length are the result of the recent slough.

A small zone of failed material was located about halfway down the slope and the failure scarp measured approximately 2m deep, 8m down the slope by 10m across the slope suggesting a failure volume of approximately 160m³. Much of the failed material had slumped down slope approximately 10m. Perhaps up to a third of the material has been transported further down slope by the surface drainage over time. At the time of the site visit the exposed slide scarps appeared dry and stable. There were no seepage zones identified although it is expected that they do exist especially after heavy rain.

The soil profile at the failure zone appeared to be composed of a loose, approximately 1m thick, heavily organic silty sand layer with some gravel and cobbles. Below this was a compact to dense, silt and sand layer with some cobbles. A burned log, an old bottle and a clay pot were found embedded in this layer suggesting it is old landslide material or perhaps fill material end dumped over the edge at some point in the past.

The failed segments of CSP appeared to be in reasonably good condition. There was no indication of corrosion, just some moss on the outside bottom. Large blocks of timber (cedar? fir?) had been used to prop up the CSP in spots. These pieces were soft and spongy but still intact. The ends appeared to be crumpled from the failure. Cables had been used to secure

the culvert. Those pieces of cable that were viewed appeared to be in reasonably good condition as well.



Photo 3: View of CSP

The property at 123 Alders (to the north of the failure) had a number of enclosed drains which collect water from the perimeter system and sump pump. The system is enclosed and carries the water down to the beach. No leaks or surface water was noted.

A follow-up site visit by Colin Coulter on April 10th concluded the existing top segment of CSP buried in the crest of the slope is in fact sufficiently corroded to cause water leakage. The water was flowing below the culvert and had eroded a significant step at the outlet.

Failure Event:

The homeowner of 123 Alders noted the drainage system was intact when he left on vacation during the first week of January. Upon his return, during the 3rd week of March, he found the CSP to have failed and notified the Ministry. It is unclear when exactly the failure occurred.

It is speculated that there was a leak in the CSP. It is unclear if the leak was recent or it has been ongoing for some time. It is also unclear if the leak was the result of a capacity issue, corrosion or ongoing movement loosening a connection. One of the timber blocks used to support the CSP could have failed causing the pipe to shift and due to its significant weight, causing a leak at one of the joints.

As a result of the water running down the slope surface, a zone of material became saturated and a relatively small slope slough occurred about midway up the slope. The loss of foundation support along a length of the CSP would have caused it to buckle.

Site History:

According to Saanich District Office records the slope has been unstable for some time. In 1969 the Ministry placed several car bodies on the bank and covered them with fill in an effort to

mitigate erosion. A new flume was installed at this time. It is unclear if the car bodies are still there.

Starting in 1976, there was a lengthy dialogue between the property owner at 123 Alders and the Ministry with regards to drainage and erosion. It appears that a culvert down to the ocean had been constructed previously, but it was washed out in similar fashion to what has recently occurred. The culvert was reconstructed but not initially extended down to the ocean. In addition, the Ministry encroached onto private property, ultimately forcing the purchase of an additional 0.11 acres of property. As part of the compensation agreement, the Ministry was to upgrade the driveway culvert at 123 Alders, cover all drainage pipe with fill, and landscape the area.

The pipe outfall was again extended to the ocean in 1978. A note in the District file stated suitable fill materials from other projects and maintenance work were to be transported and dumped down the bank on an ongoing basis. Not surprisingly, there were additional slides in 1978 and 1982. After the 1982 event, the drainage system was re-aligned and tightened to stop leakage which was contributing to slippage.

No information for the site after 1982 has been located.

Recommendations and Construction:

A portion of the existing soil slope below Alders Road became saturated and failed sometime in early 2013 resulting in the existing CSP collapsing on the slope below. The slope down to the beach is marginally stable. Any increase in water flow, surface or groundwater, will lead to further instabilities. The CSP appears to have worked very well for many years since the maintenance contractor wasn't familiar with its existence. It therefore must be restored as soon as reasonably possible and certainly before the wet fall weather, typical of October returns.

Any work on the slope is to be minimal so as not to cause any destabilization. Currently there is no access for a machine, within existing RoW, without causing significant disturbance to the vegetation cover and soil fill unless a spider excavator could be used. A second machine located at the crest of the slope can lower down equipment and material as required to minimize the size of machine required down slope. Indirect access options may include going through adjacent properties #133 and #123 or by barging in a machine and accessing the slope from the bottom.

An HDPE pipe is recommended to replace the failed portion of CSP. The existing inlet and top segment is to be replaced. The BOSS 1000 by Armtec, or equivalent, is a single wall corrugated pipe and is suitable for the site due to its flexibility and ability to conform to steep slopes. A 600mm diameter pipe is available but the Victoria office bridge branch has offered to complete a drainage assessment to ensure a proper sized pipe is reconstructed. Survey information is required to complete the assessment. Please contact Mike Feduk, Senior Hydrotechnical Engineer, to determine the required information. The pipe needs to extend all the way to the ocean. It is understood that the district wants to install a surplus catch basin at the pipe inlet to separate out any debris or sludge.

The replacement pipe should follow the layout of the existing CSP. This would minimize the disturbance to the marginally stable slope. Any work on the slope must occur during the summer months when conditions are dry and the slope is at its most stable state. Pieces of the failed CSP should be removed from the site.

Support anchors should be installed in the bench above the slope, a minimum 5m back from the crest. Materials to be used as anchors could be rebar, dowels or H piles installed to a depth of

of 3m. A second set of anchors could be installed below the crest of the slope by a contractor, such as Morsky, who have the required equipment. ½" steel cables secured to these anchors could run down the slope and hold the HOPE pipe in place. The pipe should be laid on the ground and extend all the way down to the ocean. The placement of the pipe should stay within the Ministry RoW. The Ministry needs to be conscious of any work that is undertaken on the slope as it may be perceived to have a negative effect on the global stability given the historic slide activity at the site.

It is recommended that the oversteepened slide slopes and depression left by the recent slide movement be rebuilt with 19mm to 25mm (¾" to 1") drain rock. This material is free draining granular material, composed of inert, clean, tough durable particles of crushed rock capable of withstanding the deleterious effects of exposure to water, freeze-thaw, handling, spreading and compacting.

Once the district secures the funds to complete the work and the procurement process has been determined, a letter providing written instructions for construction can be provided by this office.

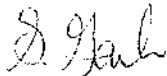
Additionally, the existing open ditch upslope of the CSP inlet, could be lined with a product like the semicircular design Smart Ditch offered by Nilex, to ensure minimal surface ditch water seepage into the ground before entering the culvert. Care would have to be taken when conducting ditching operations if this product is installed.

Closure:

The Ministry geotechnical staff should be kept informed should any further sloughing occur on the slope that the maintenance contractor and/or District staff become aware of.

We trust this letter provides the information you require at this time. If you have any questions or comments, please do not hesitate to contact the undersigned.

Regards,



Written by:
Sarah Gaib, P.Eng., M.Eng.
Sr. Geotechnical Engineer



Reviewed by:
Don Gillespie, P.Eng., PhD.
Manager Geotechnical, Materials & Pavement Engineering

Cc: Wayne Janusson, P.Eng.
Senior Geotechnical Liason Engineer, Nanaimo





Edge of Property Line



PAGE: 1
DATE: 11/29/13

INVOICE
AR02041

TO: MINISTRY OF TRANSPORTATION
240-4460 CHATTERTON WAY
VICTORIA, BC V8X 5J2

CODE
MINITRA

P.O. NUMBER

JOB #
C197

ALDERS CULVERT REPLACEMENT

QUANTITY UNITS DESCRIPTION

UNIT PRICE AMOUNT

1.000 EA

48,000.00 48,000.00

SUBTOTAL: 48,000.00

PST: 0.00

GST/HST: 2,400.00

TOTAL DUE: 50,400.00

TERMS: NET 30

Please make cheques payable to Mainroad South Isl. Cont. LP
If you have any questions concerning this invoice please call:
SHANNON REMPEL (250)391-7310

GST/HST Reg# R825908627

DATE: Dec 9 2013

APPROVED BY:

Mainroad South Isl. Cont. LP
2895 Westshore Parkway
Victoria, BC V9B 0B2
Ph: (250)391-7310 Fax: (250)391-7312

SALTSPRING QUANTIFIED DETAIL 2012-13

Activity Description	Units	Yrly \$
-----	----	-----
100J OVERLAY PATCH ISOLATED	SQM Actual	\$96,575
100K REPLACEMENT PATCH ISOLATED	SQM Actual	\$5,327
100Q SPRAY PATCH ISOLATED	SQM Actual	\$19,975
100R CRACK SEALING	LM Actual	\$14,534
110N SURF TREAT ISOLATED	SQM Actual	\$42,802
130P GRAVEL SURFACE RESHAPE	RKM Actual	\$18,525
130Q GRAVEL SURFACE GRADING	RKM Actual	\$38,200
140M BASE STABILIZATION	RKM Actual	\$11,008
140P DUST CONTROL (INITIAL APP)	RKM Actual	\$41,745
150K SURF GRAV CR ISOLATED	M3 Actual	\$8,913
150P SHOULDER GRAVEL ISOLATED	M3 Actual	\$1,512
160P SHOULDER GRADING	SKM Actual	\$5,199
170P ROAD BASE MAINTENANCE	M3 Actual	\$9,579
250P DITCH MAINT. (MACHINE)	LM Actual	\$43,250
260M CULVERT/FLUME TO400 MM	LM Actual	\$5,341
260N CULVERT/FLUME 401-600 MM	LM Actual	\$4,973
350K ROADSIDE VEGETATION CONTROL MO	SKM Actual	\$112,639
350L MOWING(HAND CUTTING)	SQM Actual	\$6,159
350M BRUSHING (MACHINE)	SKM Actual	\$10,072
350N BRUSHING (HAND CUTTING)	SQM Actual	\$5,155
350P DANGER TREE REMOVAL	EA Actual	\$8,953
350R OVERHEAD BRUSHING	SKM Actual	\$56,040
440K DELINEATOR INSTALL	EA Actual	\$305
440M SIGN INSTALL 1 POST	EA Actual	\$407
440P SIGN FACE TO 1 M2	EA Actual	\$2,035
440Q SIGN FACE 1 M2 TO 3.2 M2	EA Actual	\$254
 Total		 \$569,477

SALTSPRING QUANTIFIED DETAIL 2013-2014

Activity Description		Units		Yrly \$
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100J	OVERLAY PATCH ISOLATED	SQM	Actual	\$86,397
100Q	SPRAY PATCH ISOLATED	SQM	Actual	\$56,268
100R	CRACK SEALING	LM	Actual	\$14,860
130P	GRAVEL SURFACE RESHAPE	RKM	Actual	\$6,968
130Q	GRAVEL SURFACE GRADING	RKM	Actual	\$45,720
140M	BASE STABILIZATION	RKM	Actual	\$8,852
140P	DUST CONTROL (INITIAL APP)	RKM	Actual	\$42,342
150K	SURF GRAV CR ISOLATED	M3	Actual	\$8,371
150P	SHOULDER GRAVEL ISOLATED	M3	Actual	\$901
160P	SHOULDER GRADING	SKM	Actual	\$3,893
170P	ROAD BASE MAINTENANCE	M3	Actual	\$214
250P	DITCH MAINT. (MACHINE)	LM	Actual	\$55,096
260M	CULVERT/FLUME TO400 MM	LM	Actual	\$1,145
260N	CULVERT/FLUME 401-600 MM	LM	Actual	\$3,928
270M	RIP RAP INSTALL >50 KG	M3	Actual	\$22,647
350K	ROADSIDE VEGETATION CONTROL MO	SKM	Actual	\$70,514
350L	MOWING(HAND CUTTING)	SQM	Actual	\$12,542
350M	BRUSHING (MACHINE)	SKM	Actual	\$13,731
350N	BRUSHING (HAND CUTTING)	SQM	Actual	\$25,054
350P	DANGER TREE REMOVAL	EA	Actual	\$3,663
350R	OVERHEAD BRUSHING	SKM	Actual	\$45,120
400M	SPECIALTY FENCES	\$	Actual	\$50,930
440K	DELINEATOR INSTALL	EA	Actual	\$244
440M	SIGN INSTALL 1 POST	EA	Actual	\$3,459
440P	SIGN FACE TO 1 M2	EA	Actual	\$1,908
Total				\$584,766



RECEIVED
DEC 21 2013

PAGE: 1
DATE: 11/29/13

INVOICE
AR02041

TO: MINISTRY OF TRANSPORTATION
240-4460 CHATTERTON WAY
VICTORIA, BC V8X 5J2

CODE
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C197

ALDERS CULVERT REPLACEMENT

QUANTITY	UNITS	DESCRIPTION	UNIT PRICE	AMOUNT
1.000	EA		48,000.00	48,000.00

2221402
002
SUBTOTAL: 48,000.00
PST: 0.00
GST/HST: 2,400.00
TOTAL DUE: 50,400.00
THSER 14618 DYC
03-14

TERMS: NET 30

Please make cheques payable to Mainroad South Isl. Cont. LP
If you have any questions concerning this invoice please call:
SHANNON REMPEL (250)391-7310

GST/HST Reg# R825908627

DATE: Dec 9 2013
APPROVED BY: [Signature]

Mainroad South Isl. Cont. LP
2895 Westshore Parkway
Victoria, BC V9B 032
Ph: (250)391-7310 Fax: (250)391-7312

Colin Carter
Klaus Spillert

PRINT INVOICES	
YES	NO
INVOICES	
11/29/2013	
C. Carter	
10/12/2013	
132	612,177
6906	1,630,1
16301ALDERS WEND CONSTRUCT	
OTHER CONS	

Request Number: SI-14-001Maintenance Service Area: 01 - South IslandMaintenance Contractor: Mainroad South IslandEmergency Work ☒Additional Work ☐Location: (Include Highway or Road or Intersection) Crane Road r/w at Alders Ave, Salt Spring IslandScope of Work: Culvert replacement project

Work Description: (To be as detailed as possible)

Replace approximately 100 m CSP culvert which was destroyed by a slope failure.

Replacement to consist of Boss 2000 pipe, new headwall, catch basin, concrete anchor with steel cables, outlet diffuser, and site remediation.

TOTAL ESTIMATED COST \$ 50,000.00Direct Cost Plus: ☐ Unit Price: ☐ Combination: ☒Date: 2013 / 08 / 02
YYYY MM DD

DISTRICT TRANSPORTATION/OPERATIONS MANAGER

Colin Coulter

250-952-4481

AREA MANAGER CONTACT NAME

TELEPHONE

Date: 2013 / 08 / 02
YYYY MM DD

AUTHORIZED CONTRACTOR'S REPRESENTATIVE SIGNATURE

Rick Gill

250-880-1976

CONTRACTOR'S CONTACT NAME

TELEPHONE

RESP

5	5	1	3	2
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S/L

6	2	1	7	7
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STOB

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PROJECT NO.

5	5	1	6	3	0	1
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☐ Multi-line coding attached

CPS Coding:

Product/Info 1: 16301ALDERSBusiness Type: CONSTRUCWork Activity/Info 2: OTHER CONSCost Type/Info 3:

PAYMENT DETAILS

Final Price: \$ 48,000.00 (Attach backup documentation)

Distribution: Original – District Copy – Contractor Copy – Region