

EXISTING INFRASTRUCTURE REVIEW

Drainage & Culvert Review

The existing stormwater infrastructure within the Summer Village is mainly a rural drainage system comprised of open ditches, swales and culverts. There are no underground sewer systems or curb and gutter flow systems presently. There are also areas of undeveloped lands which contain undisturbed natural flow.

The age of the existing infrastructure appears to vary from recent to +50-year-old installations. Culverts along Sunset Drive are more aged than areas upland. Lot approach culverts comprise mainly of 300mm diameter corrugated steel pipes (c.s.p.) and road centerline culverts vary from 500 – 800mm diameter corrugated steel pipes (c.s.p.).

Existing culverts do not include sloped ends or meet current standards for rip rap placement. Most ditches exhibit well grassed flow areas with relatively low to flat grades.

2. Scope of Review

The scope of review for this report is intended to identify issues with the current drainage system through the Summer Village regarding the following:

- Sufficient capacity of flow for a 1 in 25-year precipitation event.
- Proper flow direction that meets the overall drainage plan for the Summer Village.
- Prevents flooding or increase flow rate into adjacent lots.
- Culvert condition.
- Erosion and scour due to drainage.
- Road failures caused by culvert failures.
- Major outfalls into lakes and watercourses.

Upon inspection, the report will:

- Determine replacement and improvement requirements.
- Develop a rating system to quantify the condition of the infrastructure.
- Determine costs of replacements and improvements.
- Provide a scheduled program for these replacements and improvements.



3. Culvert Standards

The design life cycle of C.S.P. culverts are usually in the range of 50 to 75 years. Some may last longer than 75 years, however this is often due to budgeting constraints or culverts that have little to no drainage associated with it.

One of the first strategies to focus on will be to upgrade the minimum size standards of culverts in the Summer Village. Setting a minimum size standard is important as it will provide consistency as well allowing for an ensured flow capacity. It also allows a certain level of accessibility for maintenance such as flushing out silt and/or debris.

Previously, lot approaches used a minimum of 300mm diameter sized culvert. It is desirable to increase this minimum size to 500mm diameter. The following changes in standards is proposed:

	<u>Previous Min.</u>	<u>Proposed Min.</u>
Lot Approach Culverts:	300mm Dia.	500mm Dia.
Road Centerline Culverts:	500mm Dia.	600mm Dia.
Major Flow Culverts:	500mm Dia.	800mm Dia. or 2 - 600mm Dia.
Long Culverts (>20m):		600mm Dia.

Overall, larger diameter culverts require less maintenance and provide better flow dynamics. When considering a replacement program, a cost benefit analysis will indicate that slightly oversizing culverts will always provide better return over the life cycle of the culvert.

4. Inspection

A thorough inspection was completed of the Summer Village's drainage paths and culvert infrastructure. A GPS survey was completed for each culvert providing position, elevation, slope and length. The culverts were inspected for condition, inlet/outlet adequacy and surrounding affects. Photos of the culvert inlet, outlet and inside barrel were taken.

All the inspection survey, notes and photos were compiled onto individual "Culvert Inspection Reports". Each culvert was given a culvert number and drainage flow name.

In summary, a full inventory of the Summer Village's culverts was prepared and documented. See Appendices for these reports.



5. Culvert Rating System

A Culvert Rating System was developed for this Infrastructure review. A rating system was necessary to determine and categorize the priority of improvements and replacements. The rating of a culvert is based on a 26-point system, where a low score indicates that the culvert is in good condition and will not require replacement for many years. A high score indicates that there are substantial concerns with the culvert and some form of improvement or rehabilitation is needed. Even though the maximum score for any culvert is 26, scores generally 10 and above are considered important and likely should be addressed within a 5-year action plan.

Each culvert was given a unique number along with a unique drainage flow name. Numbers are shown as a 2000 series number. Drainage flow names comprise of an alphabet followed by a number.

The Rating System comprises of four main areas:

- Minimum Diameter Compliance
- Flow Capacity
- Affect on Roadway/Approach
- Barrel Condition
- Inlet/Outlet Characteristics

Each of these areas contains a scoring system as follows:

5.1 Minimum Diameter Compliance

For Centreline Culverts, the culvert needs to be at least 600mm diameter. If not, 1 point is added to rating score.

For Approach Culverts, the culvert needs to be at least 500mm diameter. If not, 1 point is added to rating score.

5.2 Capacity

Culvert Capacities for each culvert location are shown on the "Outlet Flow Paths" Drawings and are categorized as follows:

- Negligible Flow
- Inadequate
- 5 Year
- 10 Year



- 25 Year This is the design target for the Summer Village
- 100 Year

The above basically refers to the amount of capacity each culvert has based on the storm modelling of a 5-year to 100-year storm. It should be noted that the capacities are significantly affected by the slope of the culvert since the modelling takes into account the velocity of flow and where restrictions or slowing of flow may occur. The design target used for culverts for the Summer village is a 25-Year storm.

For the rating of culvert capacity, the following scoring was used:

Major Flow Path:	If yes,	add 2 points
Contains Negligible Flow:	If yes,	add 0 points
Contains 25-Year Storm Capacity:	If yes,	add 0 points
Contains 10-Year Storm Capacity:	If yes,	add 1 point
Contains 5-Year Storm Capacity:	If yes,	add 2 points
Contains Inadequate Capacity:	If yes,	add 3 points
Contains Emergency or Caused Past Flooding:	If yes,	add 6 points

Culvert capacity is considered very important in maintaining drainage within the community and hence has the highest potential for adding points to the rating.

5.3 Roadway

This component considers the effects that a culvert may have on other crucial infrastructure elements such as roadways and accesses. In this case, the road condition over the culvert is important since a road closure is not feasible. For this reason, the following items have a high score associated with them:

Contains Severe Cracking due to Sub-Structure: If yes, add 3 points Contains Severe Pot-Holing due to Sub-Structure: If yes, add 3 points Contains Severe Sag/Dip in Road due to Sub-Structure: If yes, add 3 points

5.4 Pipe Barrel

This area evaluates the culvert itself in its performance, stability and overall life. Since any type of structure failure of a culvert will lead to imminent failure, the following items have a moderate score associated with each:

Sag or Bowing of the pipe:	If yes,	add 2 points
Out of Round or Caving In:	If yes,	add 2 points
Settlement of the base:	If yes,	add 2 points
Infiltration of water/cracking/joint separation:	If yes,	add 2 points



Severe Corrosion: If yes, add 2 points Moderate Corrosion: If yes, add 1 point Blockage, partial (>50%) or full: If yes, add 2 points

5.5 Inlet / Outlet

For inlet and outlet areas of the culvert, the following aspects are inspected and rated as follows:

If yes, Inlet/Outlet Damage: add 1 point If yes, add 1 point No Sloped Ends: Sediment Build Up: If yes, add 1 point Erosion above the Pipe: If yes, add 1 point If yes, add 1 point Scour below the Pipe: Needs Rip Rap: If yes, add 1 point Needs Clearing of Trees/Brush: If yes, add 1 point Needs De-Vegetation at Inverts (disrupts flow): If yes, add 1 point

6. Cost Estimates

Cost of improvements and replacements of culverts and drainage systems have been calculated, with some detail, and included within this report. It is important to note that these are preliminary estimates and need further detailed design to better quantify the costs. Also, all costs are calculated to present day values using construction unit prices based on 2017 – 2019 averages. Adjustments for inflation and price fluctuations will be required for all work past 2020. Land acquisition costs, utility relocation costs and traffic accommodation costs, if required, are not included. Drainage improvements to ditches, if necessary, are also not shown (e.g. lowering or widening of ditches).

7. Improvement Strategy

In order to provide a plan for future improvements, it is necessary to use the rating system defined above to determine priorities over a period of time.

The strategy and timing for improvements and rehabilitation is proposed in the following order of priority:

- ➤ Emergency Measures and/or Prevention of Past Flooding Events
- ➤ Improvements to Re-Direct Flow Paths



- Improvements to Major Flow Paths
- ➤ Infrastructure with Remaining Life of <5 Years
- > Improvements to Minor Flow Paths
- ➤ Rehabilitation/Replacement Program for Centerline Culverts
- ➤ Rehabilitation/Replacement Program for Approach Culverts

8. Improvement, Rehabilitation & Maintenance Programming

Due to funding constraints and the timing of when a culvert has reached its design life, it is important to develop an improvement, rehabilitation and maintenance program for the Summer Village.

Using the rating system, the urgency and priority of work required becomes very evident. The order of work is therefore summarized below and is detailed within the Appendices:

<u>List of Major Improvement Projects</u>

Priority #1: PROJECT #1: Old Railway Embankment & 48A Avenue Drainage Improvements

Remove existing culverts within the Old Railway Embankment. Construct Drainage Swale/Channel along east side of the embankment, 300m north of 48A Avenue and 300 - 400m south of 48A Avenue. Install a new 800mm Dia. C.S.P. at 48A Avenue to drain the collected flow to cross under the Old Railway Embankment.

Along 48A Avenue and Sunset Drive, Flow Path D will be upgraded by lowering the ditch profile to the lake and culverts under approaches and roads increased in size to ensure unrestricted flow.

Regrading of the ditch along the west side of the Old Railway Embankment, 400m north of 48A Avenue, will also be completed in order to ensure positive flow to 48A Avenue. The ditch will also be reshaped to construct a higher backslope to restrict flow to the ditch and not into the back of lots.

Recommended Time of Work: 2020 – 2021



Priority #2: Blocked Culverts, Missing Culverts

Rehabilitation or improvement to blocked/plugged/ culverts or locations needing culverts that restrict flow.

Recommended Time of Work: 2020 - 2022

Priority #3: PROJECT #2: Central Drainage Way for the 49A Avenue & 48th Street Area

<u>Phase 1</u>: Obtain 20m easement within the Christian Camp area, north of the 49A Avenue subdivision, for a drainage ditch from the Old Railway Embankment to Sunset Drive.

Relocate existing drainage ditch within the back of two of lots to the new 20m easement.

Flow Path F, from 49A Avenue to the lake, will be upgraded by lowering the ditch profile and culverts under approaches and roads increased in size to ensure unrestricted flow.

Recommended Time of Work: 2020 - 2023

<u>Phase 2</u>: Construct new drainage ditch within the 20m easement from the Old Railway Embankment to existing drainage ditch location. This work is intended to be necessary to drain the Alberta Beach Golf Course and Future Development areas east of the Christian Camp.

Recommended Time of Work: As required with new

development and/or issues with drainage of the golf course.

<u>Phase 3</u>: Within the 49A Avenue and 48th Street subdivision, specific improvements along the Flow Path F will be upgraded by lowering the ditch profile and culverts under approaches and roads increased in size to ensure unrestricted flow. This project is targeted to improve ditch flow in front of lots that are experienced prolonged ponding.

Recommended Time of Work: 2020 - 2023.



Priority #4: PROJECT #3: 56 Avenue Drainage Improvements

Re-Grading of existing ditches. Remove existing 400mm culverts and replace with 800mm CSP. Improve other culverts and end treatments within drainage path. Add or resize culverts along Major Drainage Paths.

Recommended Time of Work: 2022 – 2030

Priority #5: PROJECT #4: Backlot Drainage Swale – 45th Avenue to 48th Avenue

Construct a new Drainage Swale along the backlots from 45th Avenue to 48th Avenue to ensure flow from south to north. This Drainage Swale will also intercept any flow coming from the future development area to the east. Flow from the Drainage Swale will proceed to a collection area with a sediment bay that will outlet under Sunset Drive to the lake. The existing culverts along this flow path will be upgraded by lowering the ditch profile and culverts under approaches and roads increased in size to ensure unrestricted flow.

Recommended Time of Work: 2022 – 2030

Priority #6: Poor Culverts

Replace various culverts that are exhibiting significant issues that will need to be addressed in the next 20 years.

Recommended Time of Work: 2023 – 2030

Priority #7: Aging Culverts

Replace various culverts that will reach their design life within the next 20 years and will need rehabilitation or replacement.

Recommended Time of Work: 2030 - 2040

Priority #8: Other Culverts

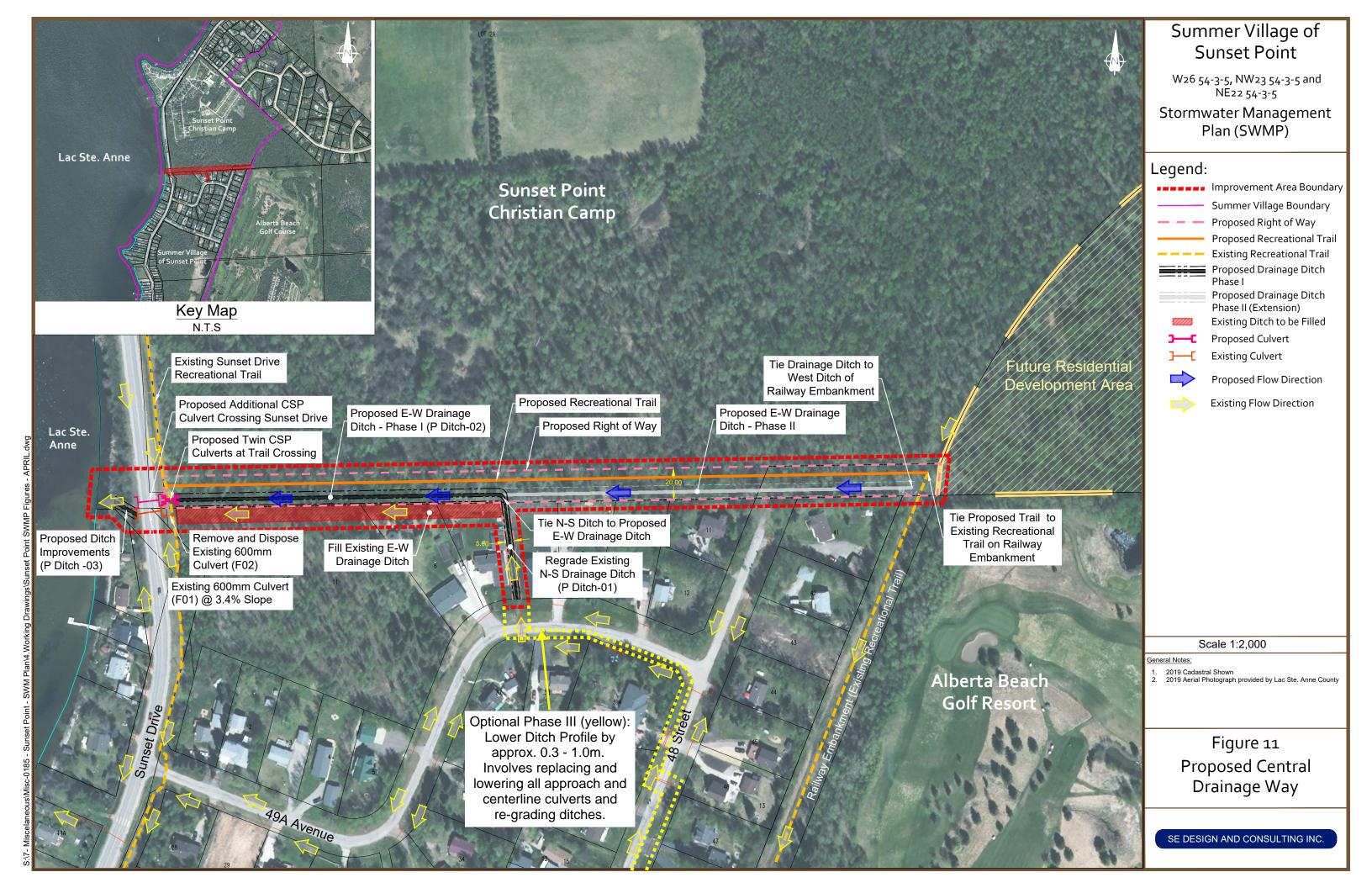
The remainder of the existing culvert infrastructure that will need rehabilitation or replacement due to long-term aging.

Recommended Time of Work: 2040 - 2060



APPENDIX A

Diagram of Project 2: Phase 1,2,3 Boundaries





APPENDIX B

Drainage Infrastructure Rehabilitation and Improvement Plan Culvert Rating System by:

- 1. Priority
- 2. Location
- 3. Priority Location







		MEETS MIN. DIAMETER (1 Point per Item)	CAPACITY	ROADWAY (1-3 Points per Item)	PIPE BARREL (2 Points per Item)	INLET / OUTLET (1 Point per Item)			
CULVER.	I NO	Aproach Culvert Min. Road Culvert 500mm (Yes = 0 points) (Yes = 0 points) (April 1) (April 2) (A	r 10 Year 5 Year (1 Point) (2 Points) Indequate Now (3 Points) Emergency (6 points)	Severe Road Pot Holing Sag in Cracking in Road Road	Sag/ Bow Round Settlement Infiltration/Cracking/J Corrosion 1.Moderate oint Release 2-Severe Blockage	Inlet/Oulet Damage No Sloped Ends Sediment Build Up Pipe Pipe	SCORE PROGRAMING YEAR	G ACTION	Improvement/ Replacement Cost

YEAR 2020 - 2021

PROJECT #1 - Old Railway Embankment & 48A Ave. Drainage Improvements

2741	D01	1	2		3	PROJECT #1		1 1 8 2020 - 2021 PROJECT #1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	35,200.00
2740	D02	1		2		PROJECT #1		1 1 5 2020 - 2021 PROJECT #1: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	8,300.00
2737	D03	1	2		3	PROJECT #1		1 1 5 2020 - 2021 PROJECT #1: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. 1 1 1 1 1 2020 - 2021 Project #1: Replace with 2-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	7,100.00
2736	D09			2		PROJECT #1	2	1 1 1 1 8 2020 - 2021 Project #1: Replace with 8000mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	12,400.00
2690	D04		2	2	3	PROJECT #1		1 1 9 2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & ripr	ip. \$	10,700.00
2689	D05		2	2	3	PROJECT #1		1 1 9 2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & ripr.	p. \$	9,800.00
2687	D06		2	2	3	PROJECT #1		1 1 9 2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & ripr.	p. \$	9,800.00
2685	D07		2	2	3	PROJECT #1		1 1 9 2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & ripr	ip. \$	13,100.00
2693	D08		2	2	3	PROJECT #1		1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1	\$	8,900.00
								Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the I	lorth for	
2692	RE02		2		6	PROJECT #1		1 1 1 1 1 13 2020 - 2021 300m.	\$	20,000.00
2692b	RE02b		2		6	PROJECT #1		1 1 10 2020 - 2021 Project #1: Install Manhole Structure with Control Weir at 48A Avenue S. Ditch	\$	20,000.00 25,000.00
								Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the	South for	
2692c	RE02c		2		3	PROJECT #1		1 1 1 1 1 10 <mark>2020 - 2021</mark> 300m.	\$	20,000.00
		+ + + + + + + + + + + + + + + + + + + +							\$	180,300.00

YEAR 2020 - 2023

PROJECT #2 - Central Drainage Way incl. 49A Ave. & 48th Street

2713	F01	1	2			3 PROJECT #2 Phase 1					1	1		8	2020 - 2023 PROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 27,400.00
2712	F02	1	2			3 PROJECT #2 Phase 1					1	1		8	2020 - 2023 PROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,300.00 9,300.00
2658	F07a	1	2			PROJECT #2 Phase 3	2				1	1 1		8	2020 - 2023 Project #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 9,300.00
2659	F07b		2			3 PROJECT #2 Phase 3	2				1	1 1		10	2020 - 2023 Project #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 9,300.00
2661	F05		2			PROJECT #2 Phase 3			1		1			4	2020 - 2023 Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall.	\$ 10,100.00
2662	F06		2		2	PROJECT #2 Phase 3								4	2020 - 2023 Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall.	\$ 9,300.00 10,100.00 10,100.00
2663	F03		2	1		PROJECT #2 Phase 3					1			4	2020 - 2023 Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 13,300.00 13,300.00 14,900.00
2664	F04		2	1		PROJECT #2 Phase 3					1			4	2020 - 2023 Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 13,300.00
2679	F14a					3 PROJECT #2 Phase 3				1	1	1	1	7	2020 - 2023 Project #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev.	\$ 14,900.00
2679	F14b					3 PROJECT #2 Phase 3				1	1	1	1	7	2020 - 2023 Project #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev.	\$ 1,700.00
2676	F28	1				PROJECT #2 Phase 3					1	1		3	2020 - 2023 Project #2: Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 11,400.00
2694	F12					PROJECT #2 Phase 3					1	1		2	2020 - 2023 Project #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$ 13,000.00
2675	F11					PROJECT #2 Phase 3					1	1		2	2020 - 2023 Project #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia.	\$
2674	F09					PROJECT #2 Phase 3					1	1		2	2020 - 2023 Project #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$ 11,300.00
2673	F10					PROJECT #2 Phase 3					1	1		2	2020 - 2023 Project #2: When aged out, remove. Culvert 2674/F09 will replace this culvert with 800mm Dia.	\$ -
	1	' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	1				- ' '	1							<u> </u>	\$ 153,400,00

YEAR 2022 - 2030

PROJECT #3 - 56th Avenue Drainage Improvements

2611	105	1	2	2	PROJECT #3		1	1	1	8	2022 - 2030	Project #3: Install sloped ends and rip rap. Re-Grade upstream ditch.	\$	5,800.00
2606	104	1	2	2	PROJECT #3		1	1	1	8	2022 - 2030	Project #3: Install sloped ends and rip rap.	\$	2,900.00
2605	103	1	2	2	PROJECT #3		1	1 1	1	9	2022 - 2030	Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap.	\$	73,600.00
2604	102	1	2	2	PROJECT #3		1	1 1	1	9	2022 - 2030	Project #3: Remove existing 400mm Dia. Culvert.	\$	7,200.00
						 		 				-	S	89 500 00

YEAR 2022 - 2030

PROJECT #4 - Backlot Drainage Swale - 45 Ave. to 48A Ave.

2202	C01	1 2			PROJECT #4		1	1		1	1	1	1	7	2022 - 2030	PROJECT #4: Add 1-800mm CSP with Sloped Ends, Rip Rap.	\$ 23,000.00
2201	C02	1 2		3	PROJECT #4					1	1	1		8	2022 - 2030	PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap	\$ 5,900.00
2201a	C02	1 2		3	PROJECT #4					1	1	1		8	2022 - 2030	PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap	\$ 4,100.00
															2022 - 2030		
2203	B05	1		3	PROJECT #4 2				2	1 1	1 1	1		12	2022 - 2030	PROJECT #4: Clean Culvert out. Extend inlet with sloped end and fix road. Cut-back outlet and install sloped end. Add	\$ 36,900.00
2204	B04	1		3	PROJECT #4		1	1		1	1 1	1		8	2022 - 2030	PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap.	\$ 8,900.00
2205	B05 B04 B03	1			PROJECT #4		2 1	1		1 1	1	1		7	2022 - 2030	PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 15,500.00
2206	B01	1	2		PROJECT #4					1	1	1		5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap.	\$ 9,900.00
2207	B02	1	2		PROJECT #4					1	1	1		5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap.	\$ 9,900.00
	'												'				\$ 114,100.00

YEAR 2020 - 2022 - Blocked Culverts, No Culverts

,																		
2655	F20	1					1	1	1		1			5 2	2020 - 2022	Approach not paved; Blockage on S. End. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$	6,800.00
2660	F18	1		6			2	1	1		1			12 2	2020 - 2022	Approach not paved; Culvert is too small & plugged. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$	7,600.00
2738	D19	1		3			1 2	1	1	1	1		1	12 2	2020 - 2022	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	6,500.00
2739a		1		3			2		1		1		1	9 2		Install New 1-600mm CSP with Sloped Ends, Rip Rap	\$	6,800.00
2210	B07	1					1		1	1	1		1	6 2	2020 - 2022	Re-Shape ditch and review culvert grade. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$	11,500.00
2238	A11 A19 H27a	1	2				2	1	1		1			8 2		Replace with 1-800mm CSP with Sloped Ends, Rip Rap.	\$	16,200.00
2226	A19	1	2				2	1	1	1	1			9 2		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$	6,200.00
2636a	H27a	1		6			1		1		1			10 2	2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	6,100.00
2618	107	1		3	2		1 2	1	1	1	1		1	14 2	2020 - 2022	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	8,500.00
						*						•		<u> </u>			S	76,200.00
																	1.*	. 5,200.00

YEAR 2023 - 2030 - Poor Culverts

2705	H01 H33		1	2		3			1		1	1	1	1	11	2023 - 2030	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	28,500.00
2701	H33	1			2				2	2	1	1 1	1 1	1	13	2023 - 2030	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$	10,000.00
2702	H12	1				3			1			1	1	1	8		When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$	9,300.00
2702	H12	1			2							1 1	1 1	1	8	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	10,000.00
2649	H13	1				3		2				1 1	1	1	10	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	6,400.00
2648	H14	1			2	3						1 1	1	1	10	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	7,100.00
2647	H15	1			2	3						1 1	1	1	10		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	6,400.00
2644	H17	1				3			1	2		1	1	1	10	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	14,100.00
-							*	 -++	•		*					•		s	91.800.00







			IN. DIAMETER			CAPACITY		-	(1-	ROADWAY			PIPE BARREL (2 Points per Item)							/ OUTLET nt per Item)						
VERT NO.	CULVE	Aproach Culvert Min.	Centreline Road Culvert Min. 600mm (Yes = 0 points)	Patn	(0 Deinte)	10 Year (1 Point)	5 Year (2 Points)	Indequate Now (3 Points) Emergency: (6 points)	Severe R	Road Pot Hol	ing Sag i	n Sag/ I Bow		Gorrosion 1-Moderate 2-Severe	Blockage	Inlet/Oulet Damage	No Sloped Ends	Sedimen Build Up	Erosio	n Scour Need	s Nee Cleari Trees/	ds Needs De- ng of vegetation @ inverts	SCORE	PROGRAMING YEAR	3 ACTION	Improvement/ Replacen
R 2030 - 2	040 - A	ging Culverts																								
2735	D10						2									1	1			1		1	7		Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
672 670	F27	7 1														1	1	1		1	ļ.,		5	2030 - 2040	If showing signs of poor drainage or when aged, Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$
70 56 54	F24 F25	1													- 1	1	1	1		1 1	1		5	2030 - 2040	Approach not paved; schedule to Replace with 500mm CSP w/ Sloped Ends & Rip Rap. Approach not paved. Could be blocked; Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ e
4	F26	3 1													-	1	1	1		1			5	2030 - 2040		\$
)	D15	5 1					2										1			1		1	6		Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	E07	7 1		2													1			1			5	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	E06	3 1		2												1	1			1			6	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	E05														2		1			1		1	6	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	E04	1 1												2		4	1			1		1	6	2030 - 2040 2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	E16 E03	3 1					2									1	1			1 1			6	2030 - 2040	Replace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	D15							3									1			1			5	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	E01	1	1				2		1								1	1	1	1 1	1		5	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends or Open Ditch, Rip Rap & make longer by 1m per end.	\$
	E08	3 1						3									1			1			6	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	E09	1					2										1			1			5	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	\$
	E13		1	-		1	1	1				-			2		1	1	1	1 1	-		5	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end or eliminate.	\$
	G01 H02	1	1	2													1		-	1	1		5	2030 - 2040	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	H03	2 1		- 2									2				1			1		1	6	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	H32							3					-				1			1		1	7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	S
	H11	1 1					2										1	1		1		1	7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	H33						2							1			1			1		1	7		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	H16	3 1												1			1			1		1	5	2030 - 2040		\$
	H26 H18	3	1	2										1			1			1		1	7	2030 - 2040	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
_	D18		1											1		1	1	4	-	1		1 1	6	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	D18	3 1												1			1	1		1 1		1 1	6	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ e
\dashv	C03													1			1			1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	φ ¢
	B17	7 1					2							· ·			1			1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$
	A15	5 1				1											1	1		1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$
	A16	3 1					2									1	1	1		1			7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$
	A18					1										1	1			1			5		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$
_	H28													1		1	1			1			5	2030 - 2040		\$
_	H30 H23) 1													2		1			1 1	1 1	1 1	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	H22																1			1	- 1	1	5	2030 - 2040		\$
	H25	5 1															1			1	1	1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	S
	H25	1															1			1	1	1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	121	1													1		1			1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	I11 I07		1					3									1			1		1	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	107	'	1					3									1			1		1	7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	106		1				2										1	1		1 1		1	7	2030 - 2040 2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
	I13															- 1	1	1		1 1		1	5		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ e
	117	1						3							1		1			1			7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	φ ¢
	I18	1														1	1			1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
		1						3							1		1			1		-	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
,	060 0	ther Culverts								,	1	<u>'</u>										"	•			\$
		ther Curverts										_										F				
	D11 D12	1 1	1		0	1		+	1			-					1		1	+ 1	-	1 1	4		Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
-	D12		1		0	1	1	1			-	-					1		+	1 1	+	1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. Replace with 500mm CSP with Sloped Ends & Rip Rap.	φ ¢
-	D13		1		0		1	1				1	1 1				1	1	1	1 1	1	1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	D16	3 1	1					1									1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	D17	7 1			0												1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	F17	7 1											1		I		1	1		1			4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	F16	5 1															1			1 1			3		Replace with 500mm CSP with Sloped Ends & Rip Rap. Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
-	F31					+	1	+	1					1			1	1	1	1 1	1		4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
_	F30) 1						1	1								1	1	1	1			4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	F29 F13	9 1															1			1			3	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	F13	3						1									1			1			2	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$
	F08	3	1	2				1	1				 		1		1	1	1	1			4	2040 - 2060	When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$
-1	E10	1					1										- 1		1	1 4	1 4		4	2040 2060	Approach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	¢
	F19 F21	1 1	1				1	1				1	1 1				1	1	1	1 1	1		3	2040 - 2060	Approach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. Approach paved with headwalls; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	F22	2 1				1	1	1				1	1				1	1	1	1 1			4	2040 - 2060	Approach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$
	F23	1		1		1	1	1	1						1		4	1	1		1		2	2040 2060	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	e







			N. DIAMETER t per Item)			CAPACIT	Υ		(1-3	ROADWAY 3 Points per					PIPE BARREL Points per Item)					ET / Ol Point pe							
ERT NO.	CULVERT NAME		Centreline Road Culvert Min. 600mm (Yes = 0 points)	Major Flow Path (2 Points)	25 Year	10 Year (1 Point)	5 Year (2 Point		Severe Ro Crackin	oad Pot Hol ng in Roa	ing Sag	in Sag/ Cad Bow R	ut of ound	lement II	nfiltration/Cracking/J oint Release	Corrosion 1-Moderate 2-Severe	let/Oulet Damage En			ve b	Scour Needs pelow Rip Pipe Rap	Clea	eeds Needs De- ring of vegetation //Brush @ inverts	SCORE	PROGRAMING YEAR	ACTION	Improvement/ Replacemen
Drive	F00					1	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		-							<u> </u>									2	
729	E02															2	1	1			1			4		Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 14,
719	E10 E11	1																1			- 1			3	2040 - 2060 F	Remove this culvert and approach as it is not being used. Check and coordinate with landowner 1st. Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 1,1 \$ 6,1
718 717	E11	1																1			1			3		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,0
717	E14																	1			1			2		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 13,
715a	E14a																				- '					Ory Approach - No Culvert needed.	9 13,
7134	F32																- 1	1			1			2		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 4,
708b	G02			2														1			1			4		Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7.
634	H19	1																1			1		1	4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6.
743	C04	1														1	1	1			1			4		Replace with 1-500mm CSP with Sloped Ends. Rip Rap.	\$ 5.
208	B13	1															1	1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends. Rip Rap.	\$ 5
209	B06	1					1										1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6.
211	B14	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5
212	B08	1															1	1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 8,
213	B15	1															1	1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6
214	B09	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 7
215	B10	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 7
216	B16	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6
217	B11	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 9,
218	B12	1															1	1			1			3	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,
220	B18	1				1												1			1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,
221	A24 A26	1																1			1			3	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5, \$ 5.
	A26 A23	1																1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends, RIP Rap. Replace with 1-500mm CSP with Sloped Ends, RIP Rap.	\$ 5,
223	A23 A25	1					2										1	1			1			3	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-800mm CSP with Sloped Ends. Rip Rap.	\$ 6,
235	A25 A22	1														1		1			- 1			- 3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 10,
236	A21	1														1	- 1	1			1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6.
237	A20	1														1		1			1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6
239	A12	1														•		1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5.
240	A13	1				1												1			1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5.
234	A14	1				1												1			1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5
228	A17	1															i	1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,
venue & 49t	th Street																										
1636	H27	1															1	1						2	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5
633	H29	1														1	1	1			1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5
623	H21	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
622	H20	1															1	1			1			3	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5
621	H24	1															1 1	1			1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
628	120	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 2
630	122	1															1	1			1			3	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5
631	123	1															1	1			1		1	4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5
632	H31	1															1	1			1			3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6
1603	I12		1														1	1			1		1	4	2040 - 2060 F	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 10
venue & 49t	th Street																										
1608	I14																1	1 1	1		1			3		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
1609	I15	1															1	1 1	1		1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6
610	I16	1															1		1		1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$
1616	109	1					1									1	1	1			1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6
615	I10	1					_									1	1	1			1			4	2040 - 2060 F	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6
614	I19	1 1		1	1	10	1	1	1				1			1								4		veniace with 1-builimm (ISP with Sloped Ende, Rin Ran & make longer by 1m ner and	\$ 6







			MIN. DIAMETER			CAPACITY	′			OADWAY	n)		PIPE BARREL (2 Points per Item)						NLET / OU							
CULVERT NO.	CULVERT NAME	Aproach Culvert Min 500mm (Yes = 0 points)	0	Major Flow Path (2 Points)	25 Year (0 Points		5 Year (2 Points		Severe Road Cracking	Pot Holing	Sag in Sag/ Out	of Settlemer	Infiltration/Cracking/ oint Release	Corrosion 1-Moderate 2-Severe	Blockage		No oped nds	mant E	rosion Sc	cour Needs	s Needs Clearing o Trees/Brus	Needs De- f vegetation h @ inverts	SCORE	PROGRAMING YEAR	ACTION Im	nprovement/ Replacement Co
48A Avenue																										
2737 2736	D03 D09	1		2			-	3	PROJECT #1							1	1	. +		1		1	10	2020 - 2021	Project #1: Replace with 2-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Project #1: Replace with 8000mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	7,100.0 12,400.0
2735	D10	1					2		PROJECT#1		2					1	1	-		1		1	7	2020 - 2021	Replace with 500mm CSP with Sloned Ends & Rip Rap \$ Replace with 500mm CSP with Sloned Ends & Rip Rap \$ Replace with 500mm CSP with Sloned Ends & Rip Rap \$ 1.00mm CSP with Sloned Ends & Rip Rap	3,200.0
2734	D11	1			0		<u> </u>										1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rio Rao. \$	5.600.0
2733	D12	1			0												1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	4,800.0
2732	D13	1			0												1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	8,300.
2731 2730	D14 D15	1			0		-										1			1		1	4 6	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Special Control of the State of State o	7,900. 6,700.
2691	D15	1			0		- 2										1	_		1		1	4	2030 - 2040	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap	8,100
2690	D04			2			2	3	PROJECT #1								1			1		•	9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist, with slope ends & riprap.	10.700
2688	D17	1			0												1			1		1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	6,000
2689	D05			2			2	3	PROJECT #1								1			1			9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ \$ Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	9,800
2687	D06			2			2	3	PROJECT #1								1			1			9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap.	9,800
2686 2685	F17 D07	1	+	2	-	1	2	- 3	PROJECT #1		1	_			-	 	1			1		+	9	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. Specied #1: Add additional 600mm CSP with Sloped Ends & Rip Rap.	5,200 13,100
2693	D07			2			2	3	PROJECT #1								1	_		1		1	10	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ Project #1: Install 600mm CSP Sloped Ends. Re-Grade upstream ditch for 150m. \$	8.900
		1	- 1		1					1	1 1		- L	1							1			2020 2021	The Section . Indican cooming control of cooper Ends. The Clade appared in American Form.	0,000
Old Railway Emba	nkment	1	1	1	1	1	1		1	1	1 1 1		1		1	I I					1		ı		Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the North for	
2692	RE02			2				6	PROJECT #1								1			1 1	1	1	13	2020 - 2021	300m.	20,000
2692b	RE02b			2				6	PROJECT #1												1	1	10	2020 - 2021	Project #1: Install Manhole Structure with Control Weir at 48A Avenue S. Ditch	25,000
																									Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the South for	
2692c	RE02c			2				3	PROJECT #1								1			1 1	1	1	10	2020 - 2021	300m. \$	20,000
8 Street																										
2683	F16	1															1			1			3	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	7,600
2682	F15	1															1			1			3	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	8,300
2681	F31	1												1			1			1			4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	8,300
2680	F30	1								<u> </u>							1 :	1		1			7		Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Project #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev. \$	4,400
2679 2679	F14a F14b							3	PROJECT #2 PROJECT #2						1		1	_		1		1	7	2020 - 2023	Project #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev. \$ Project #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev. \$	14,90 1,70
2678	F29	1						3	PROJECT #2	Filase 3					<u>'</u>		1	_		1		-	3	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	13,00
2677	F13																1			1			2			9,50
2676	F28 F12	1							PROJECT #2	Phase 3							1			1			3	2020 - 2023	Project #2: Replace with 500mm CSP with Sloped Ends & Rip Rap. \$	11,40
2694	F12								PROJECT #2								1			1			2	2020 - 2023	Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ project #2: Replace with 500mm CSP with Sloped Ends & Rip Rap. \$ project #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap. \$ project #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia. \$ project #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap. \$ project #2: When aged out, remove. Culvert 2674/F09 will replace this culvert with 800mm Dia. \$ project #2: When aged out, remove. Culvert 2674/F09 will replace this culvert with 800mm Dia.	13,00
2675	F11								PROJECT #2								1			1			2	2020 - 2023	Project #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia. \$	44.00
2674 2673	F09 F10								PROJECT #2 PROJECT #2								1	_		1			2	2020 - 2023	Project #2: When aged out, replace with outrim CSP with Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace with outrim CSP with Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart #2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart *2: When aged out, replace With Stopes Ends & Rth Rap. \$ Depart *2: When aged out, replace With Stopes Ends & Rth Rap.	11,30
2672	F27	1							PROJECT #2	Filase 3						1	1 .			1			5	2020 - 2023	If showing signs of poor drainage or when aged, Replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ 18 Showing signs of poor drainage or when aged, Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	10,60
2671	F08			2													1			1			4	2040 - 2060	When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	13,000
2670	F24															1	1	1		1	1		5	2030 - 2040	Approach not paved; schedule to Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	6,800
2656	F25	1													1		1 '	1		1			6	2030 - 2040	Approach not paved, Could be blocked; Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	8,80
2654	F26	1														1	1			1			5 5	2030 - 2040	Approach not paved; Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	6,800
2655	F20	1					1								1	1	1			1			5	2020 - 2022	Approach not paved; Blockage on S. End. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	6,800
49A Avenue																										
2658	F07a	1		2					PROJECT #2	Phase 3	2						1			1	1		8	2020 - 2023	Project #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ Project #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ \$	9,300
2659 2657	F07b F19	4		2	1	-		3	PROJECT #2	Phase 3							1			1	1 1	1	10	2020 - 2023	Project #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap. Approach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	9,300 8,400
2660	F19 F18	1	+		1	1	+	6	1			_	1	1	2	1 1	1			1		+	12	2020 - 2022	Approach not paved, Culvert is too small & plugged. Replace with 500mm CSP w/ Sloped Ends & Rip Rep. \$ Approach not paved: Culvert is too small & plugged. Replace with 500mm CSP w/ Sloped Ends & Rip Rep. \$ 1	7,600
2661	F05	†	1	2	1	1	1	1 ,	PROJECT #2	Phase 3				1	<u> </u>	-	1					1	4	2020 - 2023	Approach not paved; Culvert is too small & plugged. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$ Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall. \$	10,10
2662	F06			2			2		PROJECT #2	Phase 3													4	2020 - 2023	Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap, Headwall	10,10
2663	F03			2		1			PROJECT #2								1						4	2020 - 2023	Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ \$ Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	13,30
2664	F04			2	-	1	1		PROJECT #2	Phase 3					-		1							2020 - 2023	Project #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	13,30
2665 2666	F21 F22	1		-		1	1			-							1			1		+	3	2040 - 2060	Approach paved with headwalls; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$ Approach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$ \$ \$	10,80 6,80
2667	F23	1	+		1	1	1	+	1	—		-				 	1			1	1	1	3	2040 - 2060	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	8,90
2668	E07	1		2													1			1			5	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	9,30
2669	E06	1		2												1	1			1			6	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	8,90
2775b		1															1			1			3	2040 - 2060	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	8,00
2725	E05	1					1								2		1			1		1 1	6	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	10,40
2724 2723	E04 E15	1			1	+								2		1	1			1		1	6	2030 - 2040	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$ When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	8,10 10,00
2123	E 10	'			1	+										<u> </u>	-					1	4	2040 - 2000	TALLER A SECTION AND A STATE OF A	10,000
2721	E16	1					2									1	1			1			6	2030 - 2040	Replace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	3,60
2722	E03	1					2									1	1			1			6	2030 - 2040	Replace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	3,60
2720	D15			1		1	1	3							ı	1 1	1			1	1		5	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	12.400







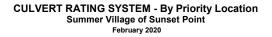
			N. DIAMETER at per Item)		(CAPACITY				OADWAY pints per Iter	n)			PIPE BARREL Points per Item)						INLET / OI (1 Point pe						
CULVERT NO.	CULVERT NAME	Aproach Culvert Min. 500mm (Yes = 0 points)	Centreline Road Culvert Min. 600mm (Yes = 0 points)		25 Year 0 Points)	10 Year (1 Point)	5 Year (2 Points)	Indequate Now (3 Points) Emergency: (6 points)	Severe Road Cracking	Pot Holing in Road	Sag in S Road E	ag/ (filtration/Cracking/J oint Release	Corrosion 1-Moderate 2-Severe	Blockage	Inlet/Oulet Damage	No Sloped Ends	Sediment Build Up	Erosion S above b Pipe I	cour Nee elow Ri Pipe Ra	eds lip C ap Ti	Needs De- Clearing of rees/Brush @ inverts	PROGRAMING YEAR	ACTION Improve	ovement/ Replacement Cost
Sunset Drive 2729	E02														2			1			1	1	4	2040 - 2060	Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	14,100.00
2728 2727	E02 E01 E08	1	1				2	3										1			1	1	5	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends or Open Ditch, Rip Rap & make longer by 1m per end. \$ Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Seplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	11,700.00 5,200.00
2726	E09	1					2											1			1	1	5	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	5,200.00
2719 2718	E10 E11	1 1																1			1	1	3 3	2040 - 2060	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Remove this culvert and approach as it is not being used. Check and coordinate with landowner 1st. \$ Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	1,000.00 6,000.00
2717	E12	1																1			1	1	3	2040 - 2060	Replace with 1-600mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	6,000.00
2716 2715	E13 E14	1														2		1			1	1	5 2	2030 - 2040 2040 - 2060	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end or eliminate. \$ Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	4,100.00 13,200.00
2715a 2714	E14a																	1					0		Dry Approach - No Culvert needed. \$ Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	4,700.00
2713	F32 F01 F02		1	2				3	PROJECT #2	Phase 1								1			1	1	8	2020 - 2023	PROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	27,400.00
2712 2708a	F02 G01		1	2				3	PROJECT #2	Phase 1								1			1	1	8	2020 - 2023	PROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ \$	8,300.00 27,400.00
2708b	G02			2														1			1	1	4	2040 - 2060	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	7,200.00
2705 2707	H01 H02		1	2				3							1		1	1			1	1	1 11	2023 - 2030 2030 - 2040	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	28,500.00 10,500.00
2708	H03	1											2					1			1	1	1 6	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	5,000.00
2701 2702	H33 H12	1					2	3							1	2	1	1	1		1 1	1	1 13 1 8	2023 - 2030	When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$ When aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. \$	10,000.00 9,300.00
2703 2704	H32 H11	1						3										1			1	1	1 7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	5,800.00 7,900.00
2702	H12	1					2											1	1		1 1	1	1 8	2023 - 2030	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Yes Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	10,000.00
2701 2649	H33 H13	1 1					2	2						2	1			1	1		1	1	1 7 1 10	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	9,300.00 6,400.00
2648	H14	1					2	3										1	1		1	1	1 10	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Separation of the State of the State St	7,100.00
2647	H15	1					2	3										1	1		1	1	1 10	2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	6,400.00
2645 2644	H16 H17	1 1						3							1	2		1			1	1	1 5 1 10	2030 - 2040 2023 - 2030	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	7,100.00 14,100.00
2634	H19	1																1			1	1	1 4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	6,400.00
2646	H26		1	2											1			1			1	1	1 7	2030 - 2040	Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	26,300.00
2635	H18		1												1		1	1			1	1	1 6	2030 - 2040	Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	17,000.00
2738 2739	D19 D18	1 1						3							1	2	1	1	1		1	1	1 12 1 6	2020 - 2022 2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	6,500.00 5,000.00
2739a		1						3								2		1			1	1	1 9		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ install New 1-600mm CSP with Sloped Ends, Rip Rap \$	6,800.00
2741 2740	D01 D02	1	1	2			2	3	PROJECT #1 PROJECT #1									1			1	1	8 5	2020 - 2021	PROJECT #1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ PROJECT #1: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$	35,200.00 8,300.00
2742	D20	1													1			1	1		1		1 6	2030 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	6,600.00
2743 2744	C04 C03	1													1			1			1	1	1 5	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ \$	5,400.00 6,200.00
2202	C01 C02		1	2					PROJECT #4	l .					1			1			1	1	1 7	2022 - 2030	PROJECT #4: Add 1-800mm CSP with Sloped Ends, Rip Rap. \$	23,000.00
2201 2201a	C02 C02		1 1	2 2				3	PROJECT #4 PROJECT #4	l l								1			1	1	8 8	2022 - 2030 2022 - 2030	PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap \$	5,900.00 4,100.00
2203	B05		1					3	PROJECT #4	2						2	1	1	1		1	1	12	2022 - 2030	PROJECT #4: Clean Culvert out. Extend inlet with sloped end and fix road. Cut-back outlet and install sloped end. Add \$	36,900.00
2204 2205	B04 B03		1					3	PROJECT #4 PROJECT #4						1			1	1		1	1	8 7	2022 - 2030	PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap. \$ PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	8,900.00 15,500.00
2206	B01		1				2		PROJECT #4						- '		'	1			1	1	5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap. \$	9,900.00
2207 2208	B02 B13	1	1				2		PROJECT #4									1	1		1	1	5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ \$	9,900.00 5,400.00
2209	B06	1																1			1	1	3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	6,900.00
2210 2211	B07 B14	1 1													1			1	1		1	1	1 6	2020 - 2022 2040 - 2060	Re-Shape ditch and review culvert grade. Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	11,500.00 5,400.00
2212	B08	1																1	1		1	1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	8,200.00
2213 2214	B15 B09	1																1	1		1	1	3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	6,900.00 7,400.00
2215 2216	B10 B16	1																1			1	1	3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	7,400.00 6,900.00
2217	B11	1																1			1	1	3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	9,800.00
2218 2219	B12 B17	1					2											1			1	1	3 5	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	6,400.00 7,700.00
2220	B18	1				1												1			1	1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends. Rip Rap.	5,400.00
2221 2222	A24 A26	1																1	1		1	1	3 4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	5,800.00 5,400.00
2223 2222	A23 A25	1																1			1	1	3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-800mm CSP with Sloped Ends, Rip Rap. \$	6,600.00 10,100.00
2235	A22	1					۷.								1			1			1	1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends. Rip Rap. \$	5,400.00
2236 2237	A21 A20	1										$-\mathbb{F}$			1			1			1	1	4 4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	6,200.00 6,900.00
2238	A11		1	2												2	1	1			1	1	8	2020 - 2022	Replace with 1-800mm CSP with Sloped Ends. Rin Ran	16,200.00
2239 2240	A12 A13	1 1				1					 							1			1	1	3 4	2040 - 2060 2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	5,400.00 5,400.00
2234	A14	1				1												1			1	1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	5,400.00
2233 2232	A15 A16	1 1				1	2										1	1	1		1	1	5 7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	5,400.00 5,400.00
2228 2227	A17 A18	1				1											1	1	1		1	1	4 5	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends. Rip Rap.	5,800.00 5,400.00
2226	A18 A19	1				'	2									2	1	1	1		1	1	9	2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$ Replace with 1-500mm CSP with Sloped Ends, Rip Rap. \$	6,200.00







			N. DIAMETER t per Item)			CAPACITY				OADWAY pints per Iter	m)			PIPE BARREL (2 Points per Item)							OUTLET t per Item)							
	ULVERT NAME	Aproach Culvert Min. 500mm (Yes = 0 points)	Centreline Road Culvert Min. 600mm (Yes = 0 points	Major Flow Path (2 Points)	25 Year		5 Year (2 Points)	Indequate Now (3 Points) Emergency: (6 points)	Severe Road Cracking	Pot Holing in Road	Sag in Sag/ Road Bow	Out of Round	Settlement	Infiltration/Cracking/J oint Release	Corrosion 1-Moderate 2-Severe	Blockage		No lloped Ends	Sediment Build Up	Erosion above Pipe	below	Needs Rip Rap 1	Needs Clearing of Frees/Brush	Needs Devegetation @ inverts	SCOR	PROGRAMING YEAR	ACTION	Improvement/ Replacement Co
54th Avenue & 49th	Street																											
2636a	H27a	1						6								1		1				1			10	2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,100.0
2636	H27	1																1							2	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,600.0
2637	H28	1													1		1	1				1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,200.0
2633	H29	1													1			1			1	1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5.600.
2626	H30	1														2		1			1	1	1	1	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	\$ 6,400.
2625	H23	1														2		1			1	1	1	1	7		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,600.
2624	H22	1																1			1	1	1	1	5		Replace with 1-500mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	\$ 8,300.
2623	H21	1																1				1		· ·	3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,400.
2622	H20	1																1			1	1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.
2621	H24	1															1	1			+	1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.
2620	H25																	1				1	- 1	1			Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.
2627	124																	1				1	1	1	5		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100
2628	124	1																1			-	1	- '	- '	3		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 2,600.
2629	120	1						_										4			+	-		- 4			Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 2,800
																		+				1		- '	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 4,100.
2630 2631	122	1																1				1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	\$ 5,300.0
	123	1																1				1		1	4			
2632	H31	1																1				1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.0
2619	l11		1					3										1				1		1	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 9,700.0
2617	107		1					3										1				1		1	7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,400.0
2603	I12		1															1				1		1	4		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 10,600.0
2602	106		1				2											1	1			1		1	7	2030 - 2040	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 11,900.0
	.																											
56th Avenue & 49th 2607	I13	1		1	-			1		1								4	1 1		г г	4		1 1		2020 2040	Replace with 1-500mm CSP with Sloped Ends. Rip Rap & make longer by 1m per end.	\$ 6,600.
2608	114	<u>'</u>																1	1			1		<u>'</u>	3		Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,600
2609	115	4						_										4	-		+	-			4	2040 - 2000	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
2610																		+				1				2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
	I16	1																1	1			1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, RIP Rap & make longer by 1m per end.	\$ 6,000
2613	117	1															1	1	1			1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	
2616	109	11														1		1				1		1	4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
2615	I10	1														1		1				1			4		Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
2614	I19	11																1				1		1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
2614b		1						3								1		1				1			7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.
2612	I18	1															1	1				1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000
2612b		1						3								1		1				1			7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,100.
2618	107		1					3				2			1	2	1	1	1			1		1	14	2020 - 2022	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,500
2611	105		1	2			2		PROJECT #3						1			1				1			8	2022 2020	Project #3: Install sloped ends and rip rap. Re-Grade upstream ditch.	\$ 5,800
2606	105			2			2	1	PROJECT #3		 	+ + +			1		 	1	-		+	1		1	8	2022 - 2030	Project #3: Install sloped ends and rip rap. Re-Grade upstream ditch.	\$ 5,800
2605	104		1	2		_	2	-	PROJECT #3						1			1				1		-	9	2022 - 2030	Project #3: Install sloped ends and rip rap. Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap.	\$ 2,900
			1	2			2		PROJECT #3						1		1 1	1				7					Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap. Project #3: Remove existing 400mm Dia. Culvert.	
2604	102		1	2	1	1	- 2	1	PROJECT#3	1	1 1	1 1		I	1		1 7	1			1 1	1		1	9	2022 - 2030	Project #3: Remove existing 400mm Dia, Cuivert.	\$ 7.200







			I. DIAMETER per Item)		CAPAC	IΤΥ		_	ADWAY nts per Item)			PIPE BARREL (2 Points per Item)						NLET / OU 1 Point per							
CULVERT	NO. CULVER	I Abroach	Centreline Road Culvert Min. 600mm (Yes = 0 points)	Major Flow Path (2 Points) 25 (0 P	rear 10 Ye pints) (1 Poi	ar 5 Year nt) (2 Points	Indequate Now (3 Points) Emergency: (6 points)	Severe Road Cracking	Pot Holing S in Road I	ag in Sag/ Road Bow	Out of Round Settlement	Infiltration/Cracking/ oint Release	Corrosion 1-Moderate 2-Severe	Blockage	Inlet/Oulet Damage	No Sloped Ends	Sediment Build Up	rosion Sc above be Pipe Pi	our Needs low Rip pe Rap	Needs Clearing of Trees/Brush	Needs Devegetation @ inverts	SCORE	PROGRAMING YEAR	ACTION Improv	rovement/ Replacement Cost

YEAR 2020 - 2021

PROJECT #1 - Old Railway Embankment & 48A Ave. Drainage Improvements

	PROJECT #1	- Old Railway	<u>Embankment & 48A Ave. Drainage Improv</u>	<u>rements</u>												
2741	D01		1 2			3	PROJECT #1			1		1			8	2020 - 2021 PROJECT #1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ 35,200.0
2740	D02	1			2		PROJECT #1			1		1			5	2020 - 2021 PROJECT #1: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ 8,300.1
2737	D03	1	2			3	PROJECT #1		1	1		1		1	10	2020 - 2021 Project #1: Replace with 2-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ 7,100.1
2736	D09				2		PROJECT #1	2	1	1 1		1			8	2020 - 2021 Project #1: Replace with 8000mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ 12,400.1
2690	D04		2		2	3	PROJECT #1			1		1			9	2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ 10,700.1
2689	D05		2		2	3	PROJECT #1			1		1			9	2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ 9,800.
2687	D06		2		2	3	PROJECT #1			1		1			9	2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ 9,800.1
2685	D07		2		2	3	PROJECT #1			1		1			9	2020 - 2021 Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap. \$ 13,100.1
2693	D08		2		2	3	PROJECT #1			1		1		1	10	2020 - 2021 Project #1: Install 600mm CSP Sloped Ends. Re-Grade upstream ditch for 150m. \$ 8,900.1
																Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the North for
2692	RE02		2			6	PROJECT #1			1	1	1	1	1	13	2020 - 2021 300m. \$ 20,000.1
2692b	RE02b		2			6	PROJECT #1						1	1	10	2020 - 2021 Project #1: Install Manhole Structure with Control Weir at 48A Avenue S. Ditch \$ 25,000.
															1	Project #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the South for
2692c	RE02c		2			3	PROJECT #1			1	1	1	1	1	10	2020 - 2021 300m. \$ 20,000.1

YEAR 2020 - 2023

PROJECT #2 - Central Drainage Way incl. 49A Ave. & 48th Street

2713	F01	1	2		3 PROJECT	#2 Phase 1			1		1	8	2020 - 2	2023 PRC	JECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	27,400.00
2712	F02	1	2		3 PROJECT	#2 Phase 1			1		1	8	2020 - 2	2023 PRC	JECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$	8,300.00
2658	F07a	1	2		PROJECT	#2 Phase 3	2		1		1	8	2020 - 2		ect #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$	9,300.00
2659	F07b		2		3 PROJECT	#2 Phase 3	2		1		1	10	2020 - 2	2023 Proj	ect #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$	9,300.00
2661	F05		2		PROJECT	#2 Phase 3		1	1			4	2020 - 2		ect #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall.	\$	10,100.00
2662	F06		2		2 PROJECT	#2 Phase 3						4	2020 - 2	2023 Proj	ect #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall.	\$	10,100.00
2663	F03		2	1	PROJECT	#2 Phase 3			1			4	2020 - 2	2023 Proj	ect #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$	13,300.00
2664	F04		2	1	PROJECT	#2 Phase 3			1			4	2020 - 2	2023 Proj	ect #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$	13,300.00
2679	F14a				3 PROJECT	#2 Phase 3		1	1		1	1 7	2020 - 2		ect #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev.	\$	14,900.00
2679	F14b				3 PROJECT	#2 Phase 3		1	1		1	1 7	2020 - 2	2023 Proj	ect #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev.	\$	1,700.00
2676	F28	1			PROJECT	#2 Phase 3			1		1	3	2020 - 2	2023 Proj	ect #2: Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$	11,400.00
2694	F12				PROJECT	#2 Phase 3			1		1	2	2020 - 2	2023 Proj	ect #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$	13,000.00
2675	F11				PROJECT	#2 Phase 3			1		1	2	2020 - 2	2023 Proj	ect #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia.	\$	-
2674	F09				PROJECT	#2 Phase 3			1		1	2	2020 - 2		ect #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$	11,300.00
2673	E10				DPO IECT	#2 Dhaco 3			- 1		1	2	2020 2	2023 Droi	oct #2: When aged out, remove. Culvert 2674/E00 will replace this culvert with 800mm Dia	•	

YEAR 2022 - 2030

PROJECT #3 - 56th Avenue Drainage Improvements

2611	105	1	2		2	PROJECT #	13			1	1		1		8	2022 - 2030 Project #3: Install sloped ends and rip rap. Re-Grade upstream ditch. \$ 5,800
2606	104	1	2		2	PROJECT #	13			1	1		1		8	2022 - 2030 Project #3: Install sloped ends and rip rap. \$ 2,900
2605	103	1	2		2	PROJECT #	13			1	1 1		1		9	2022 - 2030 Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap. \$ 73,600
2604	102	1	2		2	PROJECT #	13			1	1 1		1		9	2022 - 2030 Project #3: Remove existing 400mm Dia. Culvert. \$ 7,200

YEAR 2022 - 2030

PROJECT #4 - Backlot Drainage Swale - 45 Ave. to 48A Ave.

				_ '													
220	C01	1	2				PROJECT #	4			1	1		1	1	7	2022 - 2030 PROJECT #4: Add 1-800mm CSP with Sloped Ends, Rip Rap. \$ 23,000.00
220	C02	1	2			3	PROJECT #	4				1		1		8	2022 - 2030 PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap \$ 5,900.00
220	a C02	1	2			3	PROJECT #	4				1		1		8	2022 - 2030 PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap \$ 4,100.00
																	2022 - 2030
220		1				3	PROJECT #	4 2			2	1 1 1		1		12	2022 - 2030 PROJECT #4: Clean Culvert out. Extend inlet with sloped end and fix road. Cut-back outlet and install sloped end. Add \$ 36,900.00
220	B04 B03	1				3	PROJECT #	4			1	1 1		1		8	2022 - 2030 PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap. \$ 8,900.00
220	B03	1					PROJECT #	4		2	1	1 1		1		7	2022 - 2030 PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. \$ 15,500.00
220	B01	1			2		PROJECT #	4				1		1		5	2022 - 2030 PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap. \$ 9,900.00
220	B02	1			2		PROJECT #	4				1		1		5	2022 - 2030 PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap. \$ 9,900.00

YEAR 2020 - 2022 - Blocked Culverts, No Culverts
YEAR 2023 - 2030 - Poor Culverts
YEAR 2030 - 2040 - Aging Culverts
YEAR 2040 - 2060 - Other Culverts

48A Avenue

40A AVEITUE																			
2737	D03	1	2			3 PROJECT	¥1			1	1			1	1	10	2020 - 2021	Project #1: Replace with 2-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,100.00
2736	D09				2	PROJECT	#1	2		1	1	1		1		8	2020 - 2021	Project #1: Replace with 8000mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 12,400.00
2735	D10	1			2					1	1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 3,200.00
2734	D11	1		0							1			1	1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 5,600.00
2733	D12	1		0							1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 4,800.00
2732	D13	1		0							1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 8,300.00
2731	D14	1		0							1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 7,900.00
2730	D15	1			2						1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 6,700.00
2691	D16	1		0							1			1	1			Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 8,100.00
2690	D04		2		2	3 PROJECT	¥1				1			1		9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap.	\$ 10,700.00
2688	D17	1		0							1			1	1	4	2040 - 2060	Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 6,000.00
2689	D05		2		2	3 PROJECT	#1				1			1		9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap.	\$ 9,800.00
2687	D06		2		2	3 PROJECT	¥1				1			1		9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap.	\$ 9,800.00
2686	F17	1						1			1			1				Replace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 5,200.00
2685	D07		2		2	3 PROJECT	#1				1			1		9	2020 - 2021	Project #1: Add additional 600mm CSP with Sloped Ends & Rip Rap. Upgrade exist. with slope ends & riprap.	\$ 13,100.00
2693	D08		2		2	3 PROJECT	¥1				1			1	1	10	2020 - 2021	Project #1: Install 600mm CSP Sloped Ends. Re-Grade upstream ditch for 150m.	\$ 8,900.00





			TS MIN. DIAMETER 1 Point per Item)		CAPACITY	ROADWAY (1-3 Points per Item)			PIPE BARREL (2 Points per Item)							OUTLET t per Item)						
CULVERT NO.	CULVER' NAME	Culver 500mm	Min. Road Culvert	Major Flow Path (2 Points) 25 Year (0 Points)	10 Year (1 Point) 5 Year (2 Points) Indequate Now (3 Points) Emergency: (6 points)	Severe Road Pot Holing Sa Cracking in Road R	Sag in Sag/ Road Bow	Out of Round	Infiltration/Cracking/ oint Release	Corrosion 1-Moderate 2-Severe	Blockage I	nlet/Oulet Damage	No Sloped Ends	Sediment Build Up	Erosion above Pipe	below F	eeds Rip Rap T	Needs De- Clearing of Frees/Brush @ inverts	SCORE	PROGRAMING YEAR	ACTION	Improvement/ Replacement Cost
2692 2692b	RE02 RE02b			2	6	PROJECT #1 PROJECT #1							1			1	1	1 1	13 10		roject #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the North for)0m. roject #1: Install Manhole Structure with Control Weir at 48A Avenue S. Ditch	\$ 20,000.00 \$ 25,000.00
2692c	RE02c			2	3	PROJECT#1							1			1	1	1 1	10	Pi	of ect #1: Remove existing culvert. Construct Drainage Ditch System along Railway Embankment to the South for 10m.	\$ 20,000.00
	NLUZU	<u> </u>	I			PROJECT #1			_I		1	l .	- ' - 1		I		' '		10	2020 - 2021 30	Join.	20,000.00
2683 2682	F16 F15	1											1				1		3		eplace with 500mm CSP with Sloped Ends & Rip Rap. eplace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 7,600.00 \$ 8,300.00
2681	F31	1								1			1				1		3	2040 - 2060 R	eplace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 8,300.0
2680 2679	F30 F14a				3	PROJECT #2 Phase 3					1		1	1			1	1	7	2020 - 2023 P	eplace with 500mm CSP with Sloped Ends & Rip Rap. roject #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev.	\$ 4,400.0 \$ 14,900.0
2679 2678	F14b F29	1			3	PROJECT #2 Phase 3					1		1				1	1	7	2040 - 2060 R	roject #2: Remove 500mm Pipes; Replace with one 600mm CSP with Sloped Ends & Rip Rap. Reset Elev. eplace with 500mm CSP with Sloped Ends & Rip Rap.	\$ 1,700.0 \$ 13,000.0
2677 2676	F13 F28	1				PROJECT #2 Phase 3							1				1		2	2020 - 2023 P	eplace with 500mm CSP with Sloped Ends & Rip Rap. roject #2: Replace with 500mm CSP with Sloped Ends & Rip Rap. roject #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$ 9,500.0 \$ 11,400.0
2694 2675	F12 F11					PROJECT #2 Phase 3 PROJECT #2 Phase 3							1				1		2 2 2 2	2020 - 2023 P 2020 - 2023 P	roject #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap. roject #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia.	\$ 13,000.0 \$ -
2674 2673	F09 F10					PROJECT #2 Phase 3 PROJECT #2 Phase 3							1				1		2	2020 - 2023 Pi 2020 - 2023 Pi	roject #2: When aged out, replace with submm CSP with Sloped Ends & Rip Rap. roject #2: When aged out, remove. Culvert 2694/F12 will replace this culvert with 800mm Dia. roject #2: When aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap. roject #2: When aged out, remove. Culvert 2674/F09 will replace this culvert with 800mm Dia. showing signs of poor drainage or when aged, Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 11,300.0 \$ -
2672 2671	F27 F08			2								1	1	1			1		5 4	2030 - 2040 If	showing signs of poor drainage or when aged, Replace with 600mm CSP w/ Sloped Ends & Rip Rap. Then aged out, Replace with 800mm CSP with Sloped Ends & Rip Rap.	\$ 10,600.0 \$ 13,000.0
2670 2656	F24 F25			-							1	1	1	1			1 1	1	5	2030 - 2040 A	pproach not paved; schedule to Replace with 500mm CSP w/ Sloped Ends & Rip Rap. pproach not paved. Could be blocked; Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 6,800.0 \$ 8,800.0
2654 2655	F26 F20	1									' '	1	1	1			1		5	2030 - 2040 A	pproach not paved; Replace with 500mm CSP w/ Sloped Ends & Rip Rap. pproach not paved; Blockage on S. End. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 6,800.0 \$ 6,800.0
	F20		I				<u> </u>					'	' 1		l	l l	'	<u> </u>	5	2020 - 2022 A	pproach not paved, blockage on S. End. Replace with Southin CSP w Sloped Ends & Rip Rap.	\$ 6,800.0
2658	F07a			2		PROJECT #2 Phase 3		2					1				1	1	8	2020 - 2023 P	roject #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 9,300.0
2659 2657	F07b F19	1		2	3	PROJECT #2 Phase 3		2					1				1	1	10 4	2040 - 2060 A	roject #2: Approach not paved; Culvert is too small. Replace with 600mm CSP w/ Sloped Ends & Rip Rap. pproach not paved; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 9,300.0 \$ 8,400.0
2660 2661	F18 F05	1		2	6	PROJECT #2 Phase 3				1	2	1	1				1		12 4	2020 - 2022 A 2020 - 2023 P	proach not paved; Culvert is too small & plugged. Replace with 500mm CSP w/ Sloped Ends & Rip Rap. roject #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. roject #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall.	\$ 7,600.00 \$ 10,100.00
2662 2663	F06 F03			2 2	2	PROJECT #2 Phase 3 PROJECT #2 Phase 3							1						4	2020 - 2023 P	roject #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. Headwall. roject #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap.	\$ 10,100.0 \$ 13,300.0
2664 2665	F04 F21	1		2	1	PROJECT #2 Phase 3							1				1		4	2020 - 2023 P	roject #2: When aged out, replace with 600mm CSP w/ Sloped Ends & Rip Rap. pproach paved with headwalls; Culvert is too small. Replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 13,300.00 \$ 10,800.00
2666 2667	F22	1						1					1				1		4	2040 - 2060 A	pproach not paved; Culvert is too small. Replace with 500mm CSP w/ Stoped Ends & Rip Rap. The aged out, replace with 500mm CSP w/ Stoped Ends & Rip Rap.	\$ 6,800.00 \$ 8,900.00
2668	F23 E07	1		2									1				1		5	2030 - 2040 W	nen aged out, replace with 500mm CSP wi Sloped Ends & Rip Rap. Then aged out, replace with 500mm CSP wi Sloped Ends & Rip Rap. Then aged out, replace with 500mm CSP wi Sloped Ends & Rip Rap.	\$ 9,300.00
2669 2775b	E06	1		2								1	1				1		6	2040 - 2060 W	rien aged out, replace with 500mm CSP w Sloped Ends & Rip Rap. 'hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 8,900.00 \$ 8,000.00
2725 2724	E05 E04									2	2		1				1	1	6	2030 - 2040 W 2030 - 2040 W	hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 10,400.00 \$ 8,100.00
2723	E15	1										1	1				1		4			\$ 10,000.00
2721 2722 2720	E16 E03 D15	1			2 2 3							1	1 1 1				1 1 1		6 6 5	2030 - 2040 R	eplace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 3,600.00 \$ 3,600.00 \$ 12,400.00
Sunset Drive								_	_													
2729 2728	E02 E01		1		2					2			1				1		5	2030 - 2040 R	eplace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-800mm CSP with Sloped Ends or Open Ditch, Rip Rap & make longer by 1m per end.	\$ 14,100.00 \$ 11,700.00
2727 2726	E08 E09				2								1				1		6 5	2030 - 2040 R	eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,200.0 \$ 5,200.0
2719 2718	E10 E11	1											1				1		3	2040 - 2060 R	emove this culvert and approach as it is not being used. Check and coordinate with landowner 1st. eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 1,000.0 \$ 6,000.0
2717 2716	E12 E13	1									2		1				1		3 5	2040 - 2060 R 2030 - 2040 R	eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end or eliminate.	\$ 6,000.0 \$ 4,100.0
2715 2715a	E14 E14a												1				1		2	2040 - 2060 R	eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. ry Approach - No Culvert needed.	\$ 13,200.0 \$
2714 2713	F32 F01		1	2	2	PROJECT #2 Phase 1							1				1		2	2040 - 2060 R	polace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. ROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 4,700.0 \$ 27,400.0
2713 2712 2708a	F02 G01		1 1	2 2	3	PROJECT #2 Phase 1							1				1 1		8	2020 - 2023 P	ROJECT #2 Ph. 1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,300.0 \$ 27,400.0
2708b	G02			2									1				1		4	2040 - 2060 R	epiace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. epiace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. epiace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. epiace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. epiace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. hen aged out, replace with 500mm CSP with Sloped Ends & Rip Rap. hen aged out, replace with 500mm CSP with Sloped Ends & Rip Rap. epiace with 1-800mm CSP with Sloped Ends, Rip Rap & Rap. hen aged out, Replace with 500mm CSP with Sloped Ends & Rip Rap. epiace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,200.0
2705 2707	H01 H02		1	2 2	3					1		1	1				1	1	11 5	2023 - 2030 R 2030 - 2040 R	ернасе wiin z-ouuriim CSP with Sloped Ends, кір кар & make longer by 1m per end. eplace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 28,500.0 \$ 10,500.0
2708 2701	H03 H33	1			2			2		2	2	1	1	1		1	1	1	6 13	2030 - 2040 R 2023 - 2030 W	eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Then aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap.	\$ 5,000.0 \$ 10,000.0
2702 2703	H12 H32				3 3					1			1				1	1	8 7	2023 - 2030 W 2030 - 2040 R	/hen aged out, replace with 500mm CSP w/ Sloped Ends & Rip Rap. eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 9,300.0 \$ 5,800.0
2704 2702	H11 H12	1			2 2								1	1		1	1	1 1	7 8	2023 - 2030 R	eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,900.0 \$ 10,000.0
2701 2649	H33	1			2 3				2	1			1	1			1 1	1	7	2030 - 2040 R	pplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 9,300.0 \$ 6,400.0
2648	H14	1			2 3				2				1	1			1	1	10 10	2023 - 2030 R	eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,100.0
2647	H15				2 3								1	1			1	1	10		eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,400.00
2645 2644	H16 H17				3					1	2		1				1	1 1	5 10	2030 - 2040 R 2023 - 2030 R	eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,100.00 \$ 14,100.00
2634	H19	1											1				1	1	4	2040 - 2060 R	eplace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,400.0
2646	H26		1	2						1			1				1	1	7		eplace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 26,300.0
2635	H18		1							1		1	1				1	1	6		eplace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 17,000.0
2738	D19				2					1	2	1	1	1			1	1	12			\$ 6,500.00
2739 2739a	D19	1			3					1	2		1	1			1 1	1 1	6 9	2030 - 2040 R	eplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. pplace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. stall New 1-600mm CSP with Sloped Ends, Rip Rap	\$ 5,000.00
21 39a		1			3								- 1				1	1	9	2020 - 2022 In	sian new 1-000mm Cof with stoped Ends, rtip rap	\$ 6,800.00





			N. DIAMETER t per Item)			CAPACITY				OADWAY pints per Iten	1)		PIPE BARREL (2 Points per Item)						INLET / OU (1 Point per							
CULVERT NO.	CULVERT NAME		Centreline Road Culvert Min. 600mm (Yes = 0 points)	Major Flow Path (2 Points)	25 Year (0 Points)	10 Year (1 Point)	5 Year (2 Points)	Emergency:	Severe Road Cracking		Sag in Sag/ Out of Road Bow Rour	f d Settlement	Infiltration/Cracking/ oint Release	Corrosion 1-Moderate 2-Severe	Blockage	Inlet/Oulet Damage	No Sloped Ends	Sealment	Erosion So above be Pipe P	cour Need elow Rip lipe Rap	s Needs Clearing of Trees/Brush	vegetation	SCORE P	PROGRAMINO YEAR	ACTION	Improvement/ Replacement Cos
2741 2740	D01 D02	1	1	2			2	(6 points)	PROJECT #1 PROJECT #1								1			1			8		PROJECT #1: Replace with 2-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. PROJECT #1: Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 35,200.00 \$ 8,300.00
2742	D20	1							TROOLOT #1					1			1	1		1		1	6	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,600.00
2743 2744	C04 C03	1 1												1 1			1			1		1	5	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00 \$ 6,200.00
		·																					Ů	2000 2010		
2202 2201	C01 C02		1	2 2				3	PROJECT #4 PROJECT #4					1			1			1		1	7 8	2022 - 2030 2022 - 2030	PROJECT #4: Add 1-800mm CSP with Sloped Ends, Rip Rap. PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap	\$ 23,000.00 \$ 5,900.00
2201a	C02		1	2				3	PROJECT #4								1			1			8	2022 - 2030	PROJECT #4: Replace with 800mm Dia. CSP with Sloped Ends with Rip Rap	\$ 4,100.00
2203	B05		1					3	PROJECT #4	2					2	1	1	1		1			12	2022 - 2030	PROJECT #4: Clean Culvert out. Extend inlet with sloped end and fix road. Cut-back outlet and install sloped end. Add i	\$ 36,900.00
2204 2205	B04 B03		1					3	PROJECT #4 PROJECT #4				2	1 1		1	1	1		1			8	2022 - 2030	PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap. PROJECT #4: Replace with 1-800mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,900.00 \$ 15,500.00
2206	B01		1				2		PROJECT #4				2			'	1			1			5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap.	\$ 9,900.00
2207 2208	B02 B13	1	1				2		PROJECT #4								1	1		1			5	2022 - 2030	PROJECT #4: Replace with 1-600mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 9,900.00 \$ 5,400.00
2209	B06	1															1	·		1				2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,900.00
2210 2211	B07 B14	1												11			1	1		1		1	6	2020 - 2022 2040 - 2060		\$ 11,500.00 \$ 5,400.00
2211 2212	B08	1															1	1		1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 8,200.00
2213 2214	B15 B09	1									 			1			1	1		1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,900.00 \$ 7,400.00
2215 2216	B10 B16	1															1			1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 7,400.00 \$ 6,900.00
2217	B11	1															1			1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 9,800.00
2218 2219	B12 B17	1					2										1			1			3	2040 - 2060 2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,400.00 \$ 7,700.00
2220	B18	1				1											1			1				2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00
2221 2222	A24 A26	1															1	1		1			3	2040 - 2060 2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,800.00 \$ 5,400.00
2223	A23	1															1			1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,600.00
2222 2235	A25 A22	1					2							1			1			1					Replace with 1-800mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 10,100.00 \$ 5,400.00
2236	A21	1												1			1			1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 6,200.00
2237 2238	A20 A11	1	1	2										1	2	1	1			1			8	2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-800mm CSP with Sloped Ends, Rip Rap.	\$ 6,900.00 \$ 16,200.00
2239	A12	1															1			1					Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00
2240 2234	A13 A14	1				1											1			1				2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00 \$ 5,400.00
2233 2232	A15 A16	1				1	_										1	1		1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00 \$ 5,400.00
2228	A16	1														'	1	1		1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,800.00
2227 2226	A18 A19	1				1	2								2	1	1	1		1			5 9	2030 - 2040 2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap. Replace with 1-500mm CSP with Sloped Ends, Rip Rap.	\$ 5,400.00 \$ 6,200.00
54th Avenue & 4	49th Street																									
2636a	H27a	1						6							1		1			1				2020 - 2022	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,100.00
2636 2637	H27 H28	1												1		1	1			1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,600.00 \$ 7,200.00
2633 2626	H29 H30	1												1	2		1			1	1	1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,600.00 \$ 6,400.00
2625	H23	1													2		1			1	1	1		2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,600.00
2624 2623	H22 H21	1															1			1	1	1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,300.00 \$ 6,400.00
2622	H20	1															1			1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.00
2621 2620	H24 H25	1														1	1			1	1	1	5	2040 - 2060 2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.00 \$ 5,100.00
2627	124	1															1			1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,100.00
2628 2629	I20 I21	1 1													1		1			1		1	5	2040 - 2060 2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 2,600.00 \$ 4,100.00
2630	122	1															1			1			3	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,300.00
2631 2632	I23 H31	1								-				+	1		1			1 1		1			Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 5,300.00 \$ 6,000.00
2619 2617	I11 I07		1					3									1			1		1	7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 9,700.00 \$ 8,400.00
2603 2602	I12 I06		1				2										1	1		1		1	4 7	2040 - 2060	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 10,600.00 \$ 11,900.00
2002	100	1	•		1							· ·	l		1	I	<u> </u>		I					2000 2010	respect than 1 committee that colored characters are a manife longer by the part one.	· 11,000.01
56th Avenue & 4 2607	49th Street	1 1						1	1					1		1	1	1	1	1 1		1 1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,600.00
2608	114																1	1		1			3	2040 - 2060	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,600.00
2609 2610	I15 I16	1								-					1		1	1		1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.00 \$ 6,000.00
2613	l17	1														1	1	1		1			5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.00
2616 2615	I09 I10	1													1 1		1			1			4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.00 \$ 6,000.00
2614 2614b	119	1						3							1		1			1		1	4	2040 - 2060	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end. Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.00 \$ 6,000.00
2612	I18	1						3							1	1	1			1		1	5	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 6,000.00
2612b		1						3							1		1			1			7	2030 - 2040	Replace with 1-500mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 7,100.00
2618	107		1					3			2			1	2	1	1	1		1		1	14	2020 - 2022	Replace with 1-600mm CSP with Sloped Ends, Rip Rap & make longer by 1m per end.	\$ 8,500.00
2611	105		1	2			2		PROJECT #3					1			1			1			8	2022 - 2030	Project #3: Install sloped ends and rip rap. Re-Grade upstream ditch.	\$ 5,800.00
2606	104		1	2			2		PROJECT #3					1			1			1			8	2022 - 2030	Project #3: Install sloped ends and rip rap. Project #3: Install sloped ends and rip rap. Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap. Project #3. Remove existing 400mm Dis. Culvert.	\$ 2,900.00
2605	103	1	1	2	1	1	2	i	PROJECT #3	i	1 1	1	1	1 1		1	1	i l	1	1	1	1	9	2022 - 2030	Project #3: Replace with 1-800mm CSP with Sloped Ends & Rip Rap.	\$ 73,600.00



APPENDIX C

Design Specifications for Culverts: Detail Drawings and Specifications

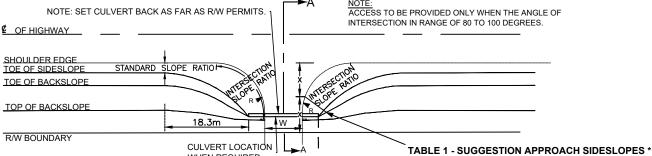
Detail Drawings:

- 1. Approach Treatment for Minor Intersecting Roadway (Intersection of Road and Highway)
- 2. Corrugated Metal Pipe Culvert Installation
- 3. Hand Laid Rock Riprap
- 4. Slope End Installations for Round Section Corrugated Metal Pipe

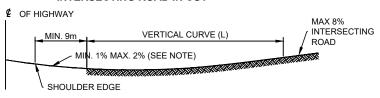
Detail Drawings:

- 1. Section 02315 Trenching and Backfilling
- 2. Section 02434 Pipe Culverts
- 3. Section 02371 Riprap

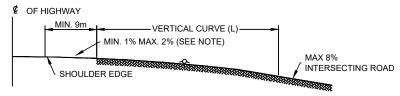
APPROACH TREATMENT FOR MINOR INTERSECTING ROADWAY INTERSECTION OF ROAD AND HIGHWAY AND TELEBRACK AS FAR AS R/W PERMITS. 1 ACCESS TO BE PROVIDED ONLY WHEN THE



SECTION A-A WHEN REQUIRED INTERSECTING ROAD IN CUT



SECTION A-A INTERSECTING ROAD IN FILL



Posted>= 100km/h	i iii i ioigiit	New Approach
Undivided Highway	<4m fill	7:1
AADT <1,000	>4m fill	4:1
Undivided Highway	<4m fill	7:1
1,000 <aadt<3,000< td=""><td>>4m fill</td><td>5:1</td></aadt<3,000<>	>4m fill	5:1
Undivided Highway	<4m fill	7:1
AADT >3,000	>4m fill	6:1
Divided Highway	<4m fill	7:1
AADT <6,000	>4m fill	7:1
Divided Highway	<4m fill	8:1
6,000 <aadt<15,000< td=""><td>>4m fill</td><td>7:1</td></aadt<15,000<>	>4m fill	7:1
Divided Highway	<4m fill	10:1
AADT>15,000	>4m fill	7:1
* ADDDOACH TO	NODE TO DE I	MEACHDED AT

Desirable Slope on

Primary Highway

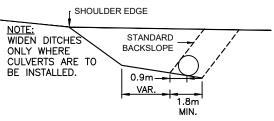
APPROACH TO SLOPE TO BE MEASURED AT A POINT MIDWAY BETWEEN THE HIGHWAY SHOULDER AND BASIC RIGHT—OF—WAY BOUNDARY AS ILLUSTRATED ON FIGURES D—33a AND D—33b

MINIMUM LENGTH OF VERTICAL CURVE					
ALGEBRAIC DIFF IN	LENG	LENGTH (m)			
GRADIENT (%)	CREST	SAG			
1	6	8			
2	12	15			
3	18	23			
4	24	30			
5	30	38			
6	37	46			
7	/	46			
8	1	46			
9	1	46			

NOTE:
WHERE THE MINOR INTERSECTING ROADWAY HAS A LARGE
NUMBER OF WB-15 VEHICLES TURNING, THE APPROACH
TREATMENT SHOWN IN FIGURE D-3.3a SHOULD BE USED.

TABLE FOR DETER	RADIUS OF INTERSECTION		
USE	ROADWAY V	VIDTH, W * (m)	EDGE OF SHOULDER (R)
USE	SINGLE	JOINT	SINGLE OR JOINT ACCESS
RESIDENTIAL	8	10	10
AGRICULTURAL	10	10.5	15
UTILITY MAINTENANCE	8		15
PUBLIC ROAD ALLOWANCE	8	3	15

* ENGINEERING DISCRETION SHOULD BE USED IN SELECTING A ROADWAY WIDTH TO SUIT THE NEEDS OF THE ACCESS.



DETAIL OF DITCH AND CULVERT LOCATION

NOTE:
DESIRABLE MINIMUM 1% IS TO
PREVENT PONDING AND
SUBSEQUENT ICING AT THE
INTERSECTION.

DESIRABLE MAXIMUM 2% IS FOR EASE OF OPERATION IN ALL WEATHER CONDITIONS.

APPROACH GRADES BETWEEN 0.5 % AND 3%, ABSOLUTE MAXIMUM 6% ARE CONSIDERED ACCEPTABLE. APPROACH ROAD GRADES UP TO 1% SLOPING DOWN TOWARD THE HIGHWAY MAY BE USED TO MATCH SUPERELEVATION ON THE HIGHWAY, IF DESIRABLE FOR ENGINEERING REASONS.



MINIMUM CULVERT REQUIRED

APPROACH: 500mm

CENTERLINE: 600mm

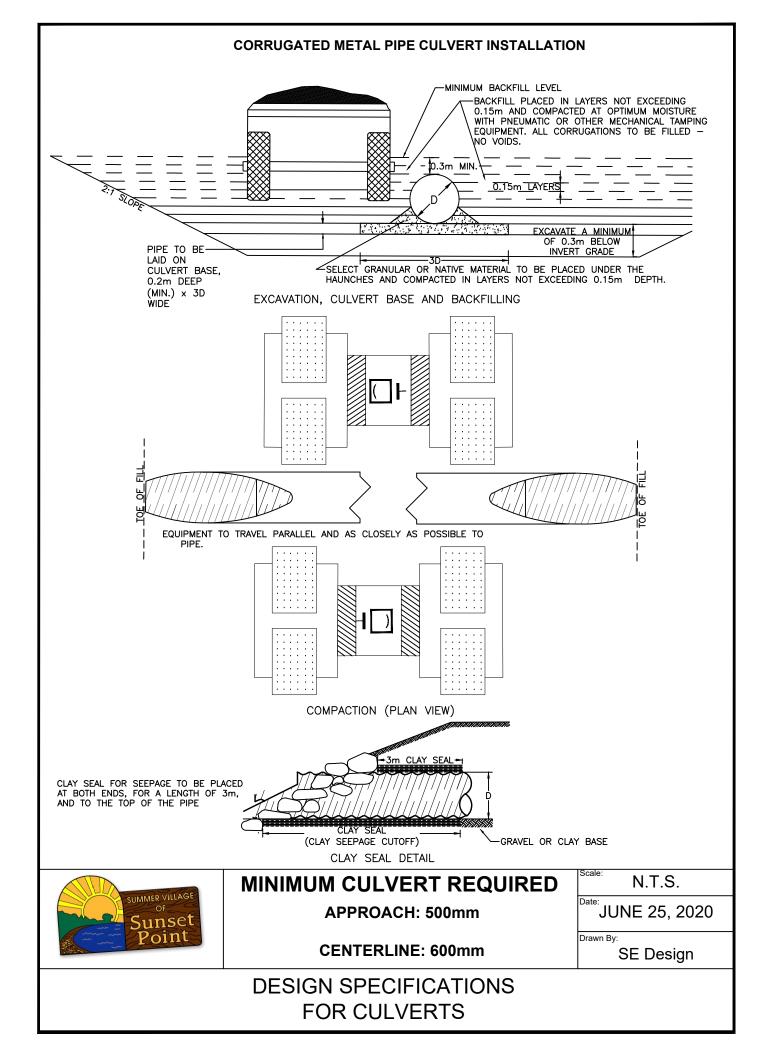
N.T.S.

JUNE 24, 2020

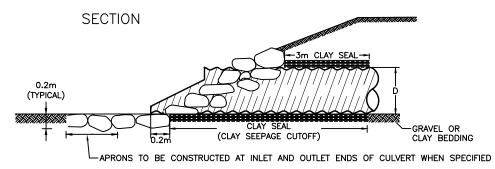
Drawn By:

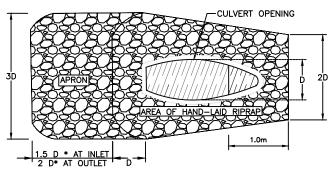
SE Design

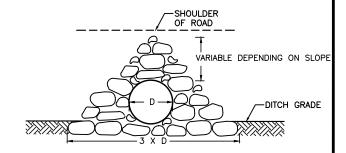
DESIGN SPECIFICATIONS
FOR CULVERTS



HAND LAID ROCK RIPRAP







THESE ARE THE TYPICAL MINIMUM DIMENSIONS.

PLAN VIEW

NOTES:

1. ROCKS AND BOULDERS SHALL BE SELECTED AS NEARLY CUBICAL IN FORM AS PRACTICAL AND SHALL HAVE AT LEAST A MINIMUM DIMENSION OF 200mm. THE STONES SHALL BE PLACED WITH THEIR BEDS AT RIGHT ANGLES TO THE SLOPE, THE LARGER STONES BEING USED IN THE THE LARGER STONES BEING USED IN THE BOTTOM COURSES AND THE SMALLER STONES AT TOP. THEY SHALL BE LAID IN CLOSE CONTACT SO AS TO BREAK JOINTS AND IN SUCH MANNER THAT THE WEIGHT OF THE STONE IS CARRIED BY THE EARTH AND NOT BY THE ADJACENT STONES. THE FINISHED WORK SHALL PRESENT AN EVEN TIGHT, AND REASONABLY PLANE SURFACE, VARYING NOT MORE THAN 75mm FROM THE REQUIRED CONTOUR.

ELEVATION

- 2. WHERE NO SPECIAL TREATMENT IS REQUIRED CULVERT INVERT ELEVATIONS ARE TYPICALLY SET ABOUT 0.15 X DIAMETER BELOW THE DRAINAGE COURSE ELEVATION.
- A CLAY SEAL IS TO BE PLACED AT BOTH ENDS OF THE CULVERT FOR A LENGTH OF 3m TO CUT OFF SEEPAGE. THE CLAY SEAL SHALL EXTEND FROM THE BOTTOM OF THE EXCAVATION TO 300mm ABOVE THE CROWN OF THE PIPE AND FOR THE FULL WIDTH OF THE EXCAVATION.
- 4. WHERE APRONS ARE REQUIRED DUE TO HIGH VELOCITY FLOW OR EROSION PRONE SOIL, TYPICALLY THE MINIMUM INLET APRON IS 1.5x DIAMETER LONG WHILE THE MINIMUM OUTLET APRON (WHERE WATER VELOCITY IS HIGHER IS HIGHER) IS TWO DIAMETERS

ESTIMATED RIPRAP SURFACE AREAS*

LOTHINATED KIT KAT OOKT AGE AKEAG						
PIPE DIAMETER (mm)	AREA OF ONE END EXCLUDING APRON (m²)	AREA OF ONE END INCLUDING INLET APRON (m²)	AREA OF ONE END INCLUDING OUTLET APRON (m²)			
500	2	3	4			
600	3	5	6			
700	4	6	7			
800	5	8	9			
900	6	10	11			
1000	7	12	13			
1100	9	14	16			
1200	10	16	19			
1400	13	22	25			

THE ESTIMATED RIPRAP SURFACE AREAS SHOWN IN THIS TABLE ARE BASED ON A 4:1



MINIMUM CULVERT REQUIRED

APPROACH: 500mm

CENTERLINE: 600mm

N.T.S.

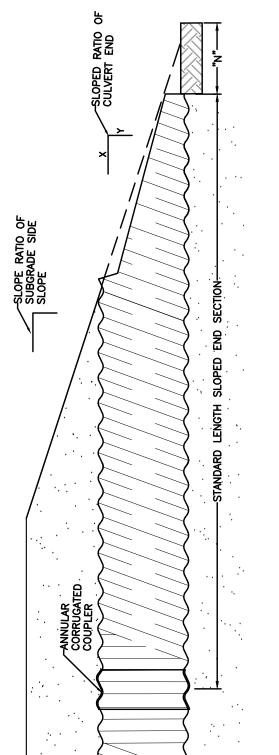
JUNE 25, 2020

Drawn By:

SE Design

DESIGN SPECIFICATIONS FOR CULVERTS

SLOPED END INSTALLATIONS FOR ROUND SECTION CORRUGATED METAL PIPE



DETERMINING INSTALLATION LENGTH
THE LENGTH OF PIPE CULVERT TO BE
INSTALLED SHALL BE DETERMINED AS FOLLOWS

ESTABLISH THE THEORETICAL LENGTH BASED ON SLOPE STAKE REQUIREMENTS. WHERE NO SPECIAL TREATMENT IS REQUIRED, CULVERT INVERT ELEVATIONS ARE TYPICALLY SET ABOUT 0.15 X DIAMETER BELOW THE DRAINAGE COURSE ELEVATION.

DETERMINED FROM THE TABLE TO EACH APPLYING THE END CORRECTION N AS ADJUST THE THEORETICAL LENGTH BY 呈 END OF THE CULVERT. 5

INSTALLATION LENGTH SHALL BE THE LENGTH DETERMINED IN "2" ABOVE, ROUNDED OFF TO THE NEAREST METRE. 3

**N" — m											
SLOPE RATIO OF CULVERT END X:Y SUBGRADE SLOPE RATIO 4:1 0.3 0.5 0.6 0.9 1.2 4:1 0.3 0.6 0.9 1.2 0.8 1.2 2.0 4:1 0.3 0.6 1.0 1.6 4:1 0.3 0.6 1.0 1.6 4:1 0.3 0.6 1.0 1.6 2.3 4:1 0.5 1.1 0.5 1.2 2.0 1.6 4:1 0.5 1.7 2.4 3.7 3.1 0.5 1.9 2.8 3.8 3.8 3.1 0.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	INVERT	SEC. METRE	0.9	0.9	0.9	0.9	0.9	0.9	0.9	6.0	6.0
SLOPE RATIO OF CULVERT SUBGRADE SLOPE RATIO 4:1 0.3 4:1 0.3 4:1 0.3 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5			1.2	1.5	1.6	2.0	2.3	2.5	2.8	3.7	4.3 9.3
SLOPE RATIO OF CULVERT SUBGRADE SLOPE RATIO 4:1 0.3 4:1 0.3 4:1 0.3 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5 4:1 0.5	E -	WITH 5:1 SUBGRADE SLOPE RATIO	0.8	6.0	1.0	1.2	1.4	1.6	1.8	2.4	2.8
SLOPE RATIO - D OF CULVERT END X:Y 4:1 4:1 4:1 4:1 4:1 4:1 3:1	" N _"	WITH 4:1 SUBGRADE SLOPE RATIO	0.5	9.0	9.0	0.8	6.0	1.0	1.2	1.7	1.9
Δ .		WITH 3:1 SUBGRADE SLOPE RATIO	0.3	6.0	6.0	0.3	0.4	9.0	9:0	0.5 0.5	0.5
	SLOPE RATIO	OF CULVERT END X:Y	1:1	4:1	4:1	4:1	4:1	4:1	4:1	3:1 4:1	3:1 4:1
		1	400	200	009	200	800	006	1000	1200	1400

A 4:1 SLOPED END SECTION SHALL BE USED IN CONJUNCTION WITH ALL SUBGRADE SIDE SLOPES WITH THE EXCEPTION OF 1200mm DIA. AND LARGER WHERE APPLICABLE. SLOPED FCTION FOR SFI **MINIMUM CULVERT REQUIRED**

SLOPE RATIO SECTION:

OF

END

APPROACH: 500mm

CENTERLINE: 600mm

Scale: N.T.S.

JUNE 25, 2020

Drawn By:

SE Design



DESIGN SPECIFICATIONS FOR CULVERTS

1.0 GENERAL

1.1 Definitions

- .1 Common Excavation:
 - .1 Refer to special provision 2000.

.2 Rock Excavation:

.1 The excavation of rock, concrete or masonry exceeding 1.0m³ in volume; and solid ledge rock, concrete or masonry which requires for its removal drilling, blasting, wedging, sledging, barring or breaking with a power operated hand tool shall be classified as rock excavation. Soft or disintegrated rock, concrete or masonry which can be removed with a hand pick, power operated excavator or shovel; and loose, shaken or previously blasted rock will not be classified as rock excavation.

.3 Class 1 Backfill:

.1 Class I backfilling shall consist of backfilling the trench with sand or gravel compacted in even layers not exceeding 300mm in depth so that there is no subsequent subsidence in the trench. Backfill shall be compacted to a minimum of 100% Standard Proctor Density. Fillcrete may be used in lieu of Class 1 backfill.

.4 Class 2 Backfill:

.1 Class 2 backfilling shall consist of replacing the excavated material in even layers not exceeding 300 mm in depth, and compacting each layer by mechanical means to 95% Standard Proctor Density in landscaped areas and 98% - 100% Standard Proctor Density within the road carriage way. Specify Standard Proctor Compaction will be indicated on the tender form or directed by the Engineer.

.5 Topsoil:

.1 The top layer of soil containing organic material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

1.2 <u>Protection of Existing Features</u>

- .1 Existing buried utilities and structures:
 - .1 Prior to commencing any excavation work, notify applicable owner or authorities; establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.
 - .2 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered. All damage incurred shall be repaired by the contractor at his expense.
- .2 Existing buildings and surface features:
 - .1 Maintain and protect from damage existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, paving, survey bench marks and monuments which may be affected by work. All damage incurred shall be repaired by the Contractor at his expense.

1.3 Safety Requirements

- .1 The Contractor shall be required to observe all applicable sections of the Alberta Regulations made under the Occupational Health and Safety Act Part 32 covering worker safety in trenches and excavations.
- .2 Open cut trenches shall be sheeted and braced as required by the Accident Prevention Regulations of the Occupational Health and Safety Division of the Department of Labour and Municipal Ordinances, and as may be necessary to protect life, property and the work.
- .3 Prefabricated cages or shields, provided they conform with all applicable safety requirements, may be used to supplement or replace conventional shoring.

1.4 Samples

- .1 At least 2 weeks prior to commencing work, inform of proposed source of granular materials.
- .2 The Contractor shall provide a sieve analysis of the material for approval.

.3 Sand and gravel shall be approved before being used.

1.5 Measurement for Payment

- .1 Except as provided elsewhere, trenching, backfilling and compaction will be measured as indicated on the tender form for each depth category and type of backfill used on the following basis:
 - .1 Horizontal measurement shall be measured along the centerline of the trench between manhole centres, fittings to fittings for watermain and from main to the property line for the house service trenches.
 - .2 Measurement between any two manholes or structures for gravity sewers shall be included in one depth category.
 - .3 The depth category between any two manholes or structures for gravity sewers will be calculated by taking the sum of the depths of the pipe at each manhole or structure and dividing by two.
 - .4 The depth of the pipe shall be the depth from the top of the frame to the invert of the pipe in the trench being measured.
- .2 Rock excavation will be measured as indicated on the tender form in its original place. Boulders exceeding 1.0m³ in volume shall be measured complete, as removed from the trench. Ledge rock shall be measured by actual length and actual width of the trench. A greater width than the approved width will not be paid for. Depth shall be measured by the distance from the surface of the rock to the level to which the Engineer orders the rock to be excavated. Any over excavation will not be paid for. Payment for rock excavation shall include hauling and disposing of the material excavated at a location approved, and replacement with suitable material.
- .3 Imported granular material used for stabilizing trench bases and replacement of unsuitable material will be incidental to the trenching price and pipe installation. No extra payment will be made for granular material.

- .4 Filter fabric used for wrapping trench stabilizing gravel will be measured as indicated on the tender form installed. Payment shall be compensation in full for supply and hauling the material to the site, placing, sewing, welding, cutting and all other incidentals necessary to complete the work prescribed.
- .5 The cost of supplying, placing, maintaining and removal of shoring, bracing, cofferdams, underpinning and dewatering will be incidental to the trenching price and pipe installation. No extra payment will be made.

2.0 PRODUCTS

2.1 Stabilizing Base Gravel

- .1 Stabilizing base gravel shall be well graded gravel consisting of hard durable particles free from clay lumps, cementation, organic material, frozen material and other deleterious materials.
- .2 The material shall meet one of the following gradations depending on the native foundation material encountered:

Screened Rock-Washed (Not Crushed)		Crushed Gravel		
Sieve Size (10 ⁻⁶ m)	Percent Passing (by weight)	Sieve Size (10 ⁻⁶ m)	Percent Passing (by weight)	
25,000	100	25,000	100	
10,000	30-55	20,000	35-60	
2,000	5-25	5,000	15-40	
400	0-5	400 5-15		
		63	0-5	

.3 The liquid limit shall not exceed 25 and the plasticity index shall not exceed 6.

2.2 <u>Filter Fabric</u>

.1 The synthetic filter fabric shall consist of a durable, permeable, woven, polypropylene fabric composed of continuous synthetic filaments with typical properties as follows:

Tensile Grab Strength — ASTM D4632	890 N
Trapezoid Tear Strength — ASTM D4533	330 N
Mullen Burst Strength — ASTM D3786	2,750 kPa
Puncture—ASTM	400 N

Filter fabric shall be woven Propex 2002, Layfield LP200 or approved equal.

2.3 Bedding and Backfill Material

- .1 Material for Class 1 backfill shall consist of sound, hard, durable, uniformly graded crushed gravel and shall not contain organic or soft materials, materials that break up when alternately frozen and thawed or wetted and dried, or other deleterious materials. When compacted near the optimum moisture content to not less than 100% of the maximum dry density corrected for the stone content as determined by ASTM D698, the material shall have a minimum bearing ratio as defined ASTM D1 883, of fifteen percent (15%).
- .2 Material for Class 2 backfill shall consist of sound, hard, crushed rock or crushed gravel free from organic or soft material that would disintegrate through decay or weathering, well graded throughout confirming to the grading requirement of table below. Class 2 material is to have 100% crush content and be well graded throughout.
- .3 Sand is to be clean and free running conforming to the grading requirements of table below.
- .4 Class 1& 2 material is to have a loss of not more than 35% when subjected to abrasion testing in accordance with Grading B of ASTM C131.
- .5 Imported clay material is to be low to medium plastic clays with liquid limit <50 or mixtures of clay and sand suitable for compaction and is use to be free of silt, rock, concrete rubble and organic materials. Material is to be approved by Engineer before placing in excavation.

TABLE: GRADING REQUIREMENTS FOR IMPORTED BACKFILL

Canadian Metric Sieve Size	Percent of T	otal Dry Weight Passi	ng Each Sieve
O.E.O	Class 1	Class 2	Sand
75,000	90%-100%		
28,000	80%-100%		
20,000		100%	
10,000			100%
5,000	40% - 80%	40% - 70%	90% - 100%
2,500		25% - 60%	
630			25% - 60%
315	10% - 35%	8% - 25%	

2.4 Fillcrete

.1 Non-shrinking fill made up of a mixture of portland cement, sand, water and admixtures conforming to the following:

.1 Minimum 28 day compressive strength	1.00 to 2.00 MPa
.2 Slump	100 mm ±25 mm
.3Portland Cement	Type 10
4 Air entrainment	5% +1%

3.0 EXECUTION

3.1 Site Preparation

.1 Strip organic material, clear and grub, remove weeds and grasses as specified or as required prior to excavation. Avoid intermixing of subsoil fill materials with organic material and from other forms of contamination.

3.2 Trenching

.1 Trench width:

.1 The minimum trench width below the crown of the pipe shall be not less than the nominal diameter of the pipe plus 400mm. The maximum width of the trench below the crown of the pipe including shoring shall not be more than the nominal diameter of the pipe plus 600mm or not more than a total width of 900mm, whichever is larger. Where the maximum trench width

is exceeded, the Contractor shall, at his own expense, provide special bedding or take other precautions as directed by the Engineer.

- .2 The contractor shall confine his activities to the immediate area of the trench. All activities outside the trench boundaries shall be performed so as not to damage other existing features. The Contractor shall generally have the option of using either vertical shored trenches or Vee trenches. Every effort shall be made to restrict the trench widths to minimize the area disturbed.
- .2 All excavated material shall be piled at least 1.0m clear of the trench top to prevent material from falling back into the excavation. The material shall be piled in such a manner that it will not endanger the work, or obstruct other work or rights-of-way. Sufficient clear space must be left on one side of the trench to accommodate the surveyor's stakes.
- .3 The trench shall be excavated so that the pipe can be laid to the alignment, grade and depth required.
- .4 When the walls of an open excavation are cut back, the contractor must ensure that:
 - 1. If the soil is classified as "hard and compact soil", the walls are sloped to within 1.5 meters of the bottom of the excavation at an angle of not less than 30 degrees measured from the vertical.
 - 2. If the soil is classified as "likely to crack or crumble soil" the walls are sloped to within 1.5 meters of the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical, and
 - 3. If the soil is classified as "soft, sandy or loose soil" the walls are sloped from the bottom of the excavation at an angle of not less than 45 degrees measured from the vertical.

.4 Trench Rock Excavation:

.1 Where excavation is made in rock or where excavation is made in a material which cannot provide an even, uniform and smooth surface; or where large stones are encountered in the trench, such material shall be removed to provide a clear distance between any part or projection of such material and the surface of all pipe and fittings of not less than 150mm for 600mm outside diameter pipe or less, and 200mm for pipe having an outside diameter greater than 600mm. The subgrade shall then be made by backfilling with an approved sand compacted in 75mm layers at the Contractors expense. Excavated rock shall not be used for backfill. The finished

subgrade surface shall be shaped by hand tools to provide a uniform and continuous support for the pipe.

- .2 Blasting for excavation will be permitted only with the approval of the Engineer and only when proper precautions are taken for the protection of persons or property. The Contractor's method of procedure in blasting shall conform to provincial statutes and municipal ordinances.
- .5 The subgrade shall provide an uniform and continuous support for the pipe and fittings on solid undisturbed ground. Any over excavation by the Contractor below the required grade shall be backfilled at his expense with an approved compacted sand.

3.3 Classification of Soil Type

- .1 Soil is classified as <u>"hard and Compact"</u> if it closely exhibits most of the following characteristics:
 - .1 it is hard in consistency and can be penetrated only with difficulty by a small, sharp object;
 - .2 it is very dense;
 - .3 it appears to be dry;
 - .4 it has no signs of water seepage;
 - .5 it is extremely difficult to excavate with hand tools:
 - .6 if has not been excavated before.
- .2 Soil is classified as "likely to crack or crumble" if:
 - .1 it has been excavated before but does not exhibit any of the characteristics of "soft, sandy or loose" soil, or
 - .2 it closely exhibits most of the following characteristics:
 - .1 it is stiff in consistency and compacted;
 - .2 it can be penetrated with moderate difficulty with a small, sharp object;
 - .3 it is moderately difficult to excavate with hand tools;
 - .4 it has a low to medium natural moisture content and a damp appearance after it is excavated;
 - .5 it exhibits signs of surface cracking;

- .6 it exhibits signs of localized water seepage
- .3 Soil is classified as <u>"soft, sandy or loose"</u> if it closely exhibits most of the following characteristics:
 - .1 it is firm to very soft in consistency, loose to very loose;
 - .2 it is easy to excavate with hand tools;
 - .3 it is solid in appearance but flows or becomes unstable when disturbed;
 - .4 it runs easily into a well-defined conical pile whe dry;
 - .5 it appears to be wet;
 - .6 it is granular below the water table, unless water has been removed from it:
 - .7 it exerts substantial hydraulic pressure when a support system is used.
- .4 if an excavation contains soil or more than one soil type, the contractor must operate as if all of it is the soil type with the least stability.

3.4 Unstable Subgrade

- .1 Where the subgrade of the trench is unstable or will not properly support the pipe, or where it contains materials harmful to the pipe such as ashes, cinders, refuse, vegetable or organic material, the Contractor shall excavate such material to the width, depth and length as directed and dispose of the material. The subgrade shall then be made by backfilling with an approved stabilizing gravel compacted in 75mm layers. The finished subgrade surface shall be shaped by hand tools to provide an uniform and continuous support for the pipe.
- .2 The stabilization gravel may be completely wrapped in the filter fabric as specified. The fabric shall be overlapped a minimum of 500 mm at all joints to provide a full, continuous wrap and shall be smooth and free of tension, stress, folds, wrinkles or creases.
- Where the subgrade cannot be made to properly support the pipe by replacing unsound material with stabilizing gravel, the Contractor shall construct a foundation for the pipe in accordance with a drawing prepared at the time. Payment for this work shall be made in accordance with the provisions for extra work unless specified otherwise.

3.5 Shoring

- .1 When close sheeting is required, it shall be so driven as to prevent adjacent soil from entering the trench either below or through such sheeting. When directed, the sheeting shall be driven to the full depth of the trench or to such additional depths as may be required for the protection of the work.
- .2 Trench bracing may be removed when the backfilling has reached the respective level of such bracing. Sheeting shall be removed as the backfilling proceeds. Backfilling of holes left by sheeting below the trench bottom shall be carefully compacted, and thereafter backfilling and withdrawal of sheeting shall proceed together. No voids shall be left in the backfill by the withdrawal of the sheeting.
- .3 When a cage or shield is used in the trench instead of shoring, special care shall be taken to ensure that there is no lateral or longitudinal movement of the pipe when the cage is moved. The cage shall be raised vertically so that the bottom member is clear of the crown of the pipe before the cage is pulled forward in the trench.

3.6 <u>Trench Drainage and Stormwater Management</u>

- .1 Gutters and natural drainage channels shall not be obstructed. Satisfactory provisions shall be made for alternate drainage where this is impractical.
- .2 The trench shall be so drained that the workmen may work safely and effectively. All water encountered in trenches whether caused by high water table, rain or surface runoff shall be pumped or bailed out, and in no case shall the pipe be used as a drain for such water. It is essential that the discharge of the trench dewatering pumps be conducted away from the site of the work and into natural drainage channels, drains or storm sewers.

- .3 Keep excavations free of water while work is in progress.
- .4 Protect open excavations against flooding and damage due to surface run-off.
- .5 Manage flows in active storm sewer during construction.
- .6 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction.
- .7 Submit details of proposed surface and stormwater management methods to Engineer for approval prior to start of work.
- .8 All surface run-off, trench drainage and Stormwater Management activities are the responsibility of the contractor. Contractor is to familiarize himself with the geotechnical report (if available) and determine the amount of dewatering effort that will be required to do the work in a safe and efficient manner. No separate payment will be made for dewatering.

3.7 Backfilling

- .1 Bedding and initial backfilling shall be as specified for the particular pipe installed.
- .2 General backfilling:
 - .1 Class 1 backfill as defined in Section 1.1 Definitions shall be used underneath all existing asphalt road or concrete areas. Class 2 backfill as defined in Section 1.1 Definitions shall be used in all other areas including future roads, boulevards and open areas
 - .2 No boulders, rock, ice, snow, organic material or debris shall be permitted in the trench. These unsuitable materials shall be hauled away.
 - .3 All surplus excavated material shall also be hauled away, or disposed of as directed. In the event of deficiency of backfill material, suitable material shall be supplied by the Contractor at his expense.
 - .4 All trenches shall be backfilled as the work proceeds and no more than 30 m shall be left open at the end of a days work.

- .1 The Contractor shall be responsible for adequate compaction of the trenches and for the correction of settlement during the maintenance period of the Contract. Mechanical compaction equipment shall not be used until there is sufficient cover to prevent damage to the pipe.
- .2 The type of compaction equipment shall be chosen with regard to minimizing the vibration effect on nearby buildings and utilities. The Contractor shall inspect the condition of buildings prior to construction. The Contractor is responsible for any damage caused to buildings due to construction.

3.9 Testing Backfill Compaction

- .1 Compaction results shall be based on a minimum of one density test per 100 metres of trench for each 1.0 meter of compacted vertical backfill. Additional tests may be called for by the Engineer as deemed necessary.
- .2 If a density test indicates insufficient compaction at any depth, then two more densities, where are proportionally representative of trench length, shall be taken at that depth. If the average of these tests is below the required density, the trench shall be re-excavated and recompacted to meet the specified density.
- .3 This testing in no way relieves the Contractor of his maintenance responsibilities with respect to settlements as specified. The Contractor shall repair any settlement and damaged surface improvements due to the settlement which occurs during the maintenance period.
- .4 The cost of all initial testing will be borne by the Contractor. Non-conformity with the specified density or moisture content shall constitute sufficient grounds for rejection of the work.

3.10 Augered/Bored Crossings

- .1 The augering/boring machine shall be aligned and set to the required grade. If the hole deflects from desired course, another hole shall be bored in a location specified. Minimum allowable grades and maximum allowable bends shall be as specified by water mains laid in an open trench.
- .2 The bored hole shall be of sufficient size to allow the carrier pipe or casing pipe, as specified, to pass through unrestricted. After installation of the pipe, the bored hole void shall be backfilled with pneumatically blown free running sand or sealed with 5 MPa pressure grouting.

- .3 Highway crossings shall be cased as shown on the drawings. Casing pipe joints shall be welded. Each joint shall be coated and wrapped with primer and tape.
- .4 Anodes and warning signs shall be installed as specified.

3.11 Fences and Gates

- .1 Maintain gates and fences along and crossing the right-of-way and on access roads.
- .2 Do not open fences crossing the construction right-of-way unless installing the pipe underneath the fence is not feasible.
- .3 Notify landowners and tenants if a fence must be opened. Install temporary gates in accordance with the wishes of the landowners and tenants.
- .4 Return fences to original condition as soon as fence openings or alterations are no longer required for construction.

END OF SECTION

1.0 GENERAL

1.1 Related Work

.1 Trenching, Backfilling and Compaction: Section 02315.

1.2 <u>Measurement for Payment</u>

- .1 Excavation and backfill for culverts will not be measured separately.
- .2 Supply and installation of pipe culvert including trenching, backfilling ,compaction, geotech fabric, riprap and culvert markers will be measured as indicated on the tender form in place for each size, type and class of pipe.

2.0 PRODUCTS

2.1 Corrugated Steel Pipe

.1 Corrugated steel pipe: to CSPI-501-78 metric (interim). Corrugated steel pipe. Note: CSPI specifications may be obtained from Corrugated Steel Pipe Institute, Suite 207, Crestview Plaza, 1640 Crestview Avenue, Mississauga, Ontario, L5G 3P9 or affiliated member.

3.0 EXECUTION

3.1 Excavation and Preparation of Base

- .1 Excavation for the culvert base shall be to a depth of not less than 0.3m below the invert grade, and shall be of sufficient width to permit assembly of the pipe and the operation of compaction equipment on either side of the pipe. All soft, yielding, or unsuitable material at this level shall be removed to a depth as directed by the Engineer, and replaced with gravel or other suitable material to provide a firm foundation of uniform density throughout the entire length of the pipe.
- .2 On completion of excavation for the culvert base and the removal and replacement of any soft, yielding or unsuitable material the Contractor shall compact the exposed surface to uniform density. The Contractor shall then construct the culvert bed to the established elevation using gravel material or other material acceptable to the Consultant. The culvert bed shall be compacted in accordance with Section 02315. The width of the culvert bed shall be 3 times the culvert diameter.
- .3 Contractor to ensure sufficient clay "cap" compacted around the culvert to prevent erosion on the sides of the culvert.

- .4 When the culvert installation is in rock, excavation for the culvert base shall be carried out to a depth of not less than 0.2m below the invert grade. The width of the culvert bed shall be a minimum of 1.5 times the diameter of the pipe.
- .5 Where gravel bedding or backfill is used, impervious, compacted clay cut-offs shall be constructed at both ends of the culvert.
- .6 Do trenching and backfill work to Section 02315.
- .7 Do not backfill until pipe grade and alignment checked and accepted by the Engineer.

4.0 INSTALLATION

4.1 General

- .1 The culvert shall be installed on the prepared base, true to the designed lines and grades unless otherwise established by the Engineer. Separate sections shall be securely joined in accordance with the manufacturer's instructions. Coupler bands shall be used for metal and polyethylene pipe unless otherwise specified, rubber gasket type joints shall be prepared and made between sections or reinforced concrete pipe. At all coupling and joint areas and at areas of concrete pipe that have external bells, depressions shall be constructed in the culvert bed so that the pipe is uniformly supported along its entire length.
- .2 Contractor to install culvert markers as per detail on page 5. Approved supplier for culvert markers: Canada Culvert Steelcor CSP or similar acceptable product to be approved by Engineer.
- .3 The Contractor shall use due care when installing pipe to avoid damaging the pipe. Damaged pipe shall be removed and replaced by the Contractor at his expense.

4.2 <u>Installation of Corrugated Metal Pipe and Pipe Arches</u>

- .1 When required, elbows shall be installed to accommodate sharp changes in gradient or direction of the pipe.
- .2 Pipe shall be carefully handled to prevent damage to the protective coating. Any damage to coatings shall be repaired by the Contractor at his own expense.
- .3 Ensure bottom of pipe is in contact with shaped bed or compacted fill throughout its length. Ensure proper clay "cap" surrounding the pipe to prevent erosion.

- .4 Lay pipe with outside circumferential laps facing upstream.
- .5 Do not allow water to flow through pipes during construction except as permitted by Engineer.

4.3 Joints: Corrugated Steel Culverts

- .1 Corrugated steel pipe:
 - .1 Match corrugations or identifications of coupler with pipe sections before tightening.
 - .2 Tap couplers firmly as they are being tightened, to take up slack and ensure a snug fit.
 - .3 Insert and tighten bolts.

4.4 Installation of Reinforced Concrete Pipe

- .1 Reinforced Concrete Pipe shall be placed beginning at the downstream or lower end of the culvert. The pipes shall be placed with the bell or grooved ends facing upstream.
- .2 Pipe shall be joined using either a wedge and block or mechanical pipe pullers to bring the pipe to the homed position. Joints shall not be deflected beyond the manufacturer's recommended maximum.
- .3 End sections shall be anchored to adjacent sections by tie bars, where provided. Lifting holes and holes for engaging bars shall be filled with mortar and finished flush with the pipe surface.

4.5 <u>Installation of Polyethylene Pipe</u>

- .1 The culvert bed shall be shaped to the curvature of the pipe to a depth of 75mm using a template.
- .2 Blocking shall not be used to bring the pipe to grade. The pipe shall be placed on the prepared base to the lines and grades established by the Engineer, with the separate sections securely joined with the applicable welds and gasket joints.
- .3 Temporary hold downs shall be used to maintain the position of the pipe during installation.
- .4 Section of pipe with a minimum length of 6m shall be used on each end of each culvert.

4.6 Extension of Existing Culvert

- .1 Extensions to existing culverts will be considered as new installations. Where an existing culvert is to be extended, the removal, salvage and reinstallation of the existing sloped end sections may be required as directed by the Engineer.
- .2 Where the existing pipe was manufactured to imperial dimensions and the new pipe is manufactured to metric dimensions and a mismatch occurs at the joint, the Contractor shall caulk the joint with oakum or fillcrete to obtain a water resistant joint.

5.0 BACKFILLING

5.1 General

- .1 Backfill under the haunches and immediately adjacent to the pipe extending from the culvert base up to an elevation of 30 percent of the vertical height of the pipe shall be comprised of select gravel or soil material, as directed by the Engineer. Backfill immediately adjacent to the pipe above this level shall be comprised of select soil material. All backfill material shall be free from frozen lumps and organic material. Backfill with 300mm of the pipe wall shall be free from stones of diameter larger than 80mm.
- .2 All backfill material shall be placed in layers not exceeding 0.15m in depth. Each layer shall be thoroughly compacted at optimum moisture content by means of pneumatic or other mechanical tamping equipment. Backfill and compaction layers shall be brought up simultaneously and evenly on both sides of the pipe filling all corrugations and ensuring firm contact with the entire bottom surface of the pipe. This compaction procedure shall be continued until the backfill reaches a minimum elevation of 0.3m above the top of the pipe, or greater if necessary to carry the weight of construction equipment without damage to the pipe.
- .3 The Contractor is to ensure a proper seal around the culvert ends at both ends of the culvert. This can be achieved with suitable material such as Clay to ensure the water does not erodes the sides and underside of the culverts eventually rendering the culvert ineffective possibly causing a washout of the road. The "clay" cap should be a minimum of 1.0m in length.
- .4 If during the warranty period, it is determine by the Engineer that the culvert is rendered ineffective due to improper seal at both ends of the culvert, the Contractor will be responsible at his own cost to repair all the damages which may include but not limited to installing a new culvert, bringing new borrow material for proper culvert installation,

geotech fabric, riprap, and for the road restauration: subgrade preparation, gravel, asphalt, line painting as detailed in the contract) that may have been caused by the poor workmanship. Contractor responsible to carry-out the repairs to the approval of the Engineer. Contractor to refer to Special Provision 2000 with regards to Emergency Repairs.

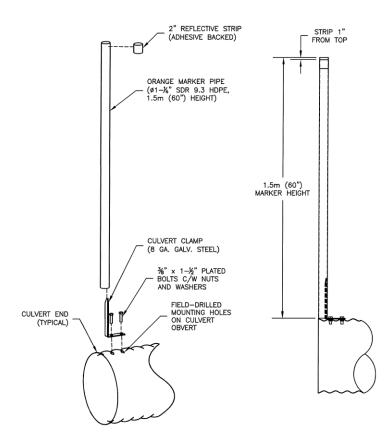
.5 Backfilling of the remainder of the culvert excavation, beyond the immediate region of the pipe, shall be carried out in accordance with section 2315. Compacting equipment shall be operated parallel to the longitudinal axis of the culvert, until sufficient acceptable fill has been placed to proceed with construction of the embankment in the normal manner.

5.2 Backfilling Polyethylene Pipe

.1 The minimum height of fill above the top of the pipe is 0.6m rather than 0.3m. Immediately after backfill is completed, the Contractor shall saw cut the sloped ends at a ratio of 4:1.

5.3 Culvert Markers

.1 Contractor to submit shop drawings to the engineer for approval the culvert marker selected. Culvert marker is to be bright color (orange or red) similar to orange tubing of the SteelCor CSP Culvert Markers. Culvert Marker to be affix with spring loaded tubing so it does not brake if accidently hit (refer to detail in this specification section.



END OF SECTION

1.0 GENERAL

1.1 Measurement for Payment

- .1 Riprap will be measured as indicated on the tender form to the top of finished surface for the quantity of rock riprap acceptably supplied and placed within the dimensions indicated on the drawings or as required by the Engineer.
- .2 Where indicated on the tender form, payment for riprap on culverts will be included as part of the culvert installation.
- .3 Materials placed outside the specific areas will not be measured. Payment shall be compensation in full for transportation, excavation, bedding, backfilling and all other incidentals necessary to complete the work prescribed. Unless otherwise indicated no direct measurement will be made for the supply and placement of the synthetic filter fabric which shall be considered incidental to work.
- .4 Measurement for geotextile fabric will be included as part of the culvert installation.

2.0 PRODUCTS

2.1 Rock Riprap

- .1 Materials for rock riprap shall be sound and durable field stone, or rough unhewn quarry stone as nearly rectangular as practicable, conforming to the following graduation and weight range:
 - .1 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered. All damage incurred shall be repaired by the contractor at his expense.

Sieve Size [mm]	Weight [kg]	Percent Passing [by weight]
300	21	100% smaller
200	11	20% larger
150	5	50% larger
100	2	80% larger

.2 The rock riprap shall be graded between the weights specified.

2.2 <u>Filter Fabric (Geotextile)</u>

.1 The synthetic filter fabric shall consist of a durable, permeable, woven, polypropylene fabric composed of continuous synthetic filaments with typical properties as follows:

Tensile Grab Strength — ASTM D4632	890 N
Trapezoid Tear Strength — ASTM D4533	330 N
Mullen Burst Strength — ASTM D3786	2,750 kPa
Puncture—ASTM	400 N

Filter fabric shall be woven Propex 2002, Layfield LP200 or approved equal.

3.0 <u>EXECUTION</u>

3.1 Placing

- .1 The hand laid rock riprap erosion protection shall be placed in the areas indicated on the Drawings or as designated by the Engineer
- .2 Placement of Filter Fabric
 - .1 The surface to receive the riprap shall be smooth, well dressed and prepared with the synthetic filter fabric.
 - .2 The areas to be covered by the synthetic filter fabric shall be trimmed and dressed to the lines and grades shown on the Drawings or as required by the Engineer.
 - .3 The synthetic filter fabric shall be placed on the dressed surfaces to cover the areas that are the rock riprap erosion protection. The fabric shall be overlapped a minimum of 500 mm at all joints to provide a full, continuous mat and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. Securing pins and washers shall be inserted through both strips of overlapped fabric at no greater than 1 m intervals along a line through the midpoint of the overlap, and at intervals necessary to prevent slippage of the fabric on the downslopes. Each securing pin shall be pushed through the fabric until the washer bears against the fabric firmly and secures it to the foundation. The indicated filter fabric may also be overlapped as specified and welded at the seams.

.4 The fabric placed on the inlet and outlet aprons shall be laid perpendicular to the centre line of the culvert and shall be laid so that the upslope strip of fabric will overlap the downslope strip

.3 Riprap Placement:

- .1 Nominal size 150 mm riprap, as defined in Section 2.0- Products shall be used.
- .2 The riprap stones shall be placed on the surface to be covered as shown by the plans or as directed by the Engineer, on slopes not exceeding 1 1/2H:1V starting with the larger stones on the bottom row. Each stone shall be placed with the broad flat surface resting on a horizontal earth bed prepared for it such that the weight of the stone is carried by the earth and not by the underlying stones. Stones shall be laid in successive rows, or layers, proceeding upward with the joints staggering those of the adjacent rows as so to secure a 'shingled' effect, evenly stepped. Voids between stones shall be filled wit6hspalls rammed into place.
- .3 Care shall be taken not to puncture the synthetic filter fabric when placing the riprap. Any damaged filter fabric shall be repaired or replaced at the contractor's expense as directed by the Engineer.

END OF SECTION

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



APPENDIX D

Culvert Inspection Reports – Sorted By Location

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



48A Avenue Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Loc	cation:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	Locationi	S.V. of Sunset Point	48A Avenue	Lot 55 & 54 Approach	S. Side	2685 - D07

	Shape (Select One)			
Pipe Details:	Arch			
	Circular	√		
	Elliptical			
	Box			

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	1.6	%			
Length	12.35	m			

Overall Rating	
9	

Roadway Over Pipe	Response
Pavement crackes or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

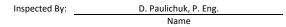
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 Year

Comments

No Backslope along ditch; risk of flow going into Lot. Flow will be increased here due to changes upstream.











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020

Culvert: 2685 - D07

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 820.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$	350.00	\$ 4,900.00
4		Supply & Install 600mm C.S.P. Culvert Sloped Ends	m	3	\$	350.00	\$ 1,050.00
5		Supply & Install Rip Rap	unit	4	\$	150.00	\$ 600.00
6		Light Grading	lump sum	1	\$	1,500.00	\$ 1,500.00
7		Backslope Building/Grading	lump sum	1	\$	2,000.00	\$ 2,000.00
					1	Sub-Total	11,020.00 1,102.00
					8% Ad	min & Engineering:	\$ 881.60
						TOTAL:	\$ 13,100.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Novemer 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 53 Approach	N. Side	2686 - F17

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1 6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.8	%		
Length	8.16	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5 - 1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
Blo	ockage	No
Su	bmerged in Water	No
Inle	et Damage	No
Ou	itlet damage	No
Со	rrosion / Abrasion	No
Ou	it of Round	Yes
Set	ttlement	No
Sag	g / Bow	No
Inf	iltration	No
Pip	ping	No
Cra	acking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible







Paved Approach.

Barrell pushed in on one end.

Inspected By: D. Paulichuk, P. Eng.
Name



Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2686 - F17

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 395.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
					Sub-Total	\$ 4,345.00
					10% Contingencies:	\$ 434.50
				8	8% Admin & Engineering:	\$ 347.60
					TOTAL:	\$ 5,200.00

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 56 Approach	S. Side	2687 - D06

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	0.5	%			
Length	10.09	m			

lack	Overall Rating
9	9

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

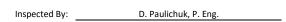
Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 Year

Comments

Very good condition except for bent East end. East end bent on top. Straight faced ends.

Some rip rap. 0.3 cover

Flow will be increased here due to changes upstream.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2687 - D06

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 750.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	12	\$ 350.00	\$ 4,200.00
4		Supply & Install 600mm C.S.P. Culvert Sloped Ends	m	3	\$ 350.00	\$ 1,050.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,500.00	\$ 1,500.00
					Sub-Total	\$ 8,250.00
10% Contingencies:					\$ 825.00	
8% Admin & Engineering:				\$ 660.00		
					TOTAL:	\$ 9,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
Location.	S.V. of Sunset Point	48A Avenue	Lot 20 & 19 Approach	N. Side	2688 - D17

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	√		
	Elliptical			
	Вох			

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	2.2	%			
Length	10.01	m			

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5 - 1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments
Lot 19 vacant. Dual approach. Ends bent
Lots of grass. No rip rap.
0.5 - 1.0 cover

Inspected By: D. Paulichuk, P. Eng.
Name







Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2688 - D17

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost	\Box
1		Mobilization - 10%	lump sum			\$ 455.	00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.	00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$ 300.00	\$ 3,600.	00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.	00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.	00
					Sub-Total	\$ 5,005.	00
					10% Contingencies:	\$ 500.	50
				8	8% Admin & Engineering:	\$ 400.	40
					TOTAL	\$ 6,000.	00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 57 Approach	S. Side	2689 - D05

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	1.2	%		
Length	10.26	m		

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 Year

Comments

Very good condition. 0.3m cover.

Rip rap on top. Poor rip rap apron. Grown over with grass Straight face end.

Flow will be increased here due to changes upstream.











Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2689 - D05

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 750.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	12	\$	350.00	\$ 4,200.00
4		Supply & Install 600mm C.S.P. Culvert Sloped Ends	m	3	\$	350.00	\$ 1,050.00
5		Supply & Install Rip Rap	unit	4	\$	150.00	\$ 600.00
6		Light Grading	lump sum	1	\$	1,500.00	\$ 1,500.00
						Sub-Total	\$ 8,250.00
						10% Contingencies:	\$ 825.00
				:	8% Ad	min & Engineering:	\$ 660.00
						TOTAL:	\$ 9,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Large Area Approach	S. Side	2690 - D04

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1 6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.7	%	
Length	12.29	m	

Overall Rating	
9	

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 Year

Comments

Very good condition. Approach to empty bush. Rip rap on top of culvert but need on apron Straight ends.

Flow will be increased here due to changes upstream.

Inspected By: D. Paulichuk, P. Eng.

Name







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2690 - D04

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1	1	Mobilization - 10%	lump sum		<u> </u>	\$ 820.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$ 350.00	\$ 4,900.00
4		Supply & Install 600mm C.S.P. Culvert Sloped Ends	m	3	\$ 350.00	\$ 1,050.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,500.00
					Sub-Tota	\$ 9,020.00
					10% Contingencies	\$ 902.00
				8	3% Admin & Engineering	721.60
						40 700 00
					TOTAL	\$ 10,700.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 21 & 22 Approach	N. Side	2691 - D16

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1 6mm	

Pipe Size		
Span		mm
Rise		mm
Diameter	300	mm
Slope	1.6	%
Length	15.69	m

Overall Rating
4

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments

Good shape. Straight face end - very slightly bent. Pavement failure on approaches, Centerline crac over culvert. Low cover <0.2m on East end. No rip rap, lots of grass
Standing water in culvert, no rust. Cover on west end 0.7m.

Name











Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2691 - D16

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 623.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	17.6	\$	300.00	\$ 5,280.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
						Sub-Total	\$ 6,853.00
					1	.0% Contingencies:	\$ 685.30
					8% Adı	min & Engineering:	\$ 548.24
						TOTAL:	\$ 8,100.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c.

Date:

November 18, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	E. End of 48A Ave.	Centreline	2693 - D08

	Shape (Shape (Select One)				
	Arch					
Pipe Details:	Circular	✓				
	Elliptical					
	Вох					

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size						
Span		mm				
Rise		mm				
Diameter	600	mm				
Slope	0.9	%				
Length	22.22	m				

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	<1.0

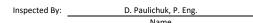
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5Yrs.

Comments

Improvements to the flow coming from east of the old railway embankment are anticipated to take most of flow away from this culvert. However, this culvert is expected to drain the west area of the embankment area, taking away runoff from the backyards of the lots. Improvements for this culvert are more in the line of grading upstream to ensure the flow reaches this culvert.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2693 - D08

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	685.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Supply & Install 600mm C.S.P. Culvert Sloped Ends	m	4	\$	350.00	\$	1,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Re-Grading Upstream Ditch	lump sum	1	\$	5,000.00	\$	5,000.00
						Sub-Total	Ś	7,535.00
					1	0% Contingencies:		753.50
				s		min & Engineering:		602.80
				·	5,5 / tui	& 25	Ψ	002.00
						TOTAL:	Ś	8,900.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web; www.sedesign.ca

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 23 & 24 Approach	N. Side	2730 - D15

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	√			
	Elliptical				
	Box				

Material (Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	300	mm	
Slope	0.7	%	
Length	11.98	m	

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5 Yrs.

Comments

Ok shape, Small culvert and grass grown in. Lots of grasss grown around ends. Dual approach for lot 24 & 23, being used. No sloped ends, no noticeable rust, no rip rap.







nspected By:	D. Paulichuk, P. En	g

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020

Culvert: 2730 - D15

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	Quantity	Oille Frice	Cost
1		Mobilization - 10%	lump sum			\$ 515.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	14	\$ 300.00	\$ 4,200.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
					Sub-Total	\$ 5,665.00
					10% Contingencies:	\$ 566.50
				8	3% Admin & Engineering:	\$ 453.20
					TOTAL:	\$ 6,700.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

October 17, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 24 Approach	N. Side	2731 - D14

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	1.8	%		
Length	14.78	m		

Overall Rating
4

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Needs More

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments

Fairly good shape. 1m cover. Outlet (rip rap around pipe but needs more on apron. Dual approach - Lot 25 not being used used. No rip rap on inlet side, no slope ends, no noticeable rust or dip. Water in pipe.











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020

Culvert: 2731 - D14

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 605.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	17	\$ 300.00	\$ 5,100.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
					Sub-Tota	\$ 6,655.00
					10% Contingencies	\$ 665.50
				8	8% Admin & Engineering	\$ 532.40
					TOTAL	\$ 7,900.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 25 & 26 Approach	N. Side	2732 - D13

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	√	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.6	%		
Length	16.2	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.2 - 1.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments

48 A Ave, North Side, 2nd approach to resident. 1.2 - 1.5 m cover. No rip rap. Clean grass away from culvert ends. Part of culvert is for dual approach but not used to Lot 25 to the East. No one in Lot 25. Water in pipe.











Inspected By:

D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date:

February 15, 2020 2732 - D13

Culvert:

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		•		\$ 635.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	18	\$	300.00	\$ 5,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00

Sub-Total \$ 6,985.00

10% Contingencies: \$ 698.50

8% Admin & Engineering: \$ 558.80

TOTAL: \$ 8,300.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: September 27, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 26 Approach	N. Side	2733 - D12

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Box			

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.5	%		
Length	6.47	m		

Overall Rating
4

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3 - 0.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments

North side of 48A Ave. 0.3 to 0.5m cover. No rip rap. Clean grass away from culvert ends. Water in pipe.



Name





Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2733 - D12

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 365.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$ 2,700.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
					Sub-Total	\$ 4,015.00
					10% Contingencies:	\$ 401.50
				89	% Admin & Engineering:	\$ 321.20
					TOTAL:	\$ 4,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	Lot 27 Approach	N. Side	2734 - D11

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)							
Aluminum							
Concrete							
Plastic							
Steel	✓						
Thickness	1 6mm						

Pipe Size								
Span		mm						
Rise		mm						
Diameter	300	mm						
Slope	1.4	%						
Length	8.87	m						

Overall Rating
4

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.6 - 0.9

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 yrs

Comments

N. Side 48 A Avenue - Approach to Resident. Lots of grass at ends of culvert that could be cleaned out. No rip rap. Cover 0.6 to 0.9. No dip. Water in pipe.

Name











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2734 - D11

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	425.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$	300.00	\$	3,300.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	1	\$	500.00	\$	500.00
						Sub-Total	ċ	4.675.00
						Sub-Total	Ş	4,675.00
				10)% C	ontingencies:	\$	467.50
				8% Adm	in &	Engineering:	\$	374.00
						TOTAL:	\$	5,600.00

713 LAKESHORE DRI COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

aivert mspection report

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	N. Side, E. of Sunset Dr.	Multi-Use Trail	2735 - D10

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.2	%		
Length	2.32	m		

Date:

7	Overall Score
	7

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating	
	Blockage	No	
	Submerged in Water	No	
	Inlet Damage	Yes	
	Outlet damage	Yes	
	Corrosion / Abrasion	No	
	Out of Round	No	
	Settlement	No	
	Sag / Bow	No	
	Infiltration	No	
	Piping	No	
	Cracking	No	

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5 yrs



Straight ends, no cover, no rust, no dip, no rip rap, could clean outside ends of grass buildup, scape marks on top with galvanization, could be painted.











Inspected By: D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2735 - D10

Item	Spec. No.	Description	Unit	Quantity	Uı	nit Price		Cost
1		Mobilization - 10%	lump sum				\$	245.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Supply & Install 500mm C.S.P. Culvert	m	5	\$	300.00	\$	1,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	1	\$	500.00	\$	500.00
						C T-1-1	•	2 605 00
						Sub-Total	>	2,695.00
				10	0% Cor	ntingencies:	\$	269.50
				8% Adm	nin & E	ngineering:	\$	215.60
						TOTAL:	\$	3,200.00

713 LAKESHORE DRI COLD LAKE, ALBERT T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	E. Side of Sunset Dr.	Centreline	2736 - D09

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	√	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	0.6	%		
Length	13.96	m		

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.0

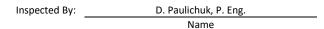
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 yrs

Comments

48A Avenue Culvert to Sunset Drive - East side of Sunset Drive. Damaged North end and South end. No rip rap. Ends need cleaning (very bad), Steep S/S N. end and S. End. Make longer 1m per end. Culvert clogged and can not see thru. Dipping in the center and towards the lake. Area is not draining and this culvert needs to be lowered as a overall area lowering of the ditches and culverts to the lake.













713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2736 - D09

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 725.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	16	\$	425.00	\$ 6,800.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
						Sub-Total	\$ 10,450.00
				:	10% (Contingencies:	\$ 1,045.00
				8% Ad	min 8	& Engineering:	\$ 836.00
						TOTAL:	\$ 12,400.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Fax: 780-594-4486 Web: www.sedesign.c

Date:

September 27, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	48A Avenue	S. Side, E. of Sunset Dr.	Multi-Use Trail	2737 - D03	

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thicknoss	1 6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.36	%	
Length	2.76	m	

10

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0

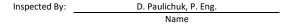
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 yrs

Comments

48A Avenue, South side, East of Sunset Drive. Quad trail over culvert. Straight ends. Ends damaged. No rust, no dip. Grass cover culvert ends. No rip rap. Flow will be increased here due to changes upstream.







713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

Date: February 15, 2020

Culvert: 2737 - D03

7,100.00

Item	Spec. No.	Description	Unit	Quantity	U	Init Price	Cost
1		Mobilization - 10%	lump sum				\$ 495.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	6	\$	350.00	\$ 2,100.00
4		Supply & Install 600mm C.S.P. Culvert	m	6	\$	350.00	\$ 2,100.00
5		Supply & Install Rip Rap	unit	4	\$	150.00	\$ 600.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
						Sub-Total	5,945.00
				1	0% Co	ntingencies:	\$ 594.50
				8% Adn	nin &	Engineering:	\$ 475.60

SE DESIGN AND CONSULTING INC.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48A Avenue	S. Side, E. of Sunset Dr.	Multi-Use Trail	2737 - D03

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	√
	Elliptical	
	Вох	

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.36	%	
Length	2.76	m	

Overall Score

Roadway Over Pipe	Response
Pavement crackes or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0

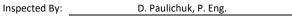
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	<5 yrs

Comments

48A Avenue, South side, East of Sunset Drive. Quad trail over culvert. Straight ends. Ends damaged. No rust, no dip. Grass cover culvert ends. No rip rap. Flow will be increased here due to changes upstream.











Light Grading

6

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

February 15, 2020 Culvert: 2737 - D03

Item	Spec. No.	Description	Unit	Quantity	U	nit Price	Cost
1		Mobilization - 10%	lump sum				\$ 495.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	6	\$	350.00	\$ 2,100.00
4		Supply & Install 600mm C.S.P. Culvert	m	6	\$	350.00	\$ 2,100.00
5		Supply & Install Rip Rap	unit	4	\$	150.00	\$ 600.00

lump sum

Sub-Total \$ 5,945.00 10% Contingencies: \$ 594.50

8% Admin & Engineering: \$ 475.60

500.00 \$

\$

1

TOTAL: \$ 7,100.00

500.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



Old Railway Embankment Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c Date:

November 18, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	
	S.V. of Sunset Point	Old Railway Embankment	N. of 48A Avenue	Centreline	2692 - RE02

	Shape (Select One)					
	Arch					
Pipe Details:	Circular	√				
	Elliptical					
	Box					

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1 6mm

P	ipe Size		Overall Rating
Span		mm	
Rise		mm	1 12
Diameter	500	mm	1 T2
Slope	1.8	%	
l ength	15.5	m	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	>1.0

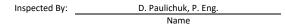
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Flow is very high and flowing to the west and should be draining to the south along old railway embankment. Improvements are recommended to take flow coming from east of the old railway embankment which will take all of the flow away from this culvert. This culvert should be removed as it will become redundant. Improvement work will take flow from the Golf Course and redirect to south ditch of 48A Avenue via an underground storm sewer.

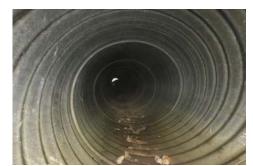












713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2692 - RE02

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	2,175.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Remove and Salvage Existing 500mm CSP	m	16	\$	100.00	\$	1,600.00
4		Re-Grading Upstream Ditch, West Side of Embank. for 200m	lump sum	1	\$	20,000.00	\$	20,000.00
5		Install Underground Storm Sewer with Manholes - See Estimate Below	m	16	\$	100.00	\$	97,264.84
						Sub-Total	\$	121,189.84
					1	10% Contingencies:	\$	12,118.98
				:	8% Adı	min & Engineering:	\$	9,695.19
						TOTAL:	\$	143,100.00
	North Side	Only						Factored
		General Requirements	lump	1	\$	10,000.00	Ś	4,062.50
		Clearing and Grubbing	ha	0.25	\$	6,500.00		660.16
		Topsoil Stripping and Stockpiling	m2	3800	\$	•	\$	3,473.44
		Remove & Salvage Existing Culvert	unit	1	\$	1,500.00	\$	1,500.00
		Trenching & Backfilling for Storm Sewer Pipe	m	330	\$	140.00		18,768.75
		Supply and Install 450mm Ultrarib Storm Pipe	m	320	\$	145.00	\$	18,850.00
		Supply and Install 600mm Ultrarib Storm Pipe	m	10	\$	245.00	\$	2,450.00
		Supply and Install 450mm End Treatment	unit	2	\$	4,000.00	\$	8,000.00
		Supply and Install 600mm End Treatment	unit	1	\$	4,500.00	\$	4,500.00
		Supply and Install 900mm Catchbasin	unit	1	\$	6,500.00		6,500.00
		Supply and Install 1800mm Catchbasin Mahole						•
		w/Control	unit	1	\$	22,000.00	\$	22,000.00
		Replace Topsoil and Groom	m2	4000	\$	4.00	\$	6,500.00
							\$	97,264.84

713 LAKESHORE DRI COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: November 18, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	
	S.V. of Sunset Point	Old Railway Embankment	N. of 48A Avenue	Centreline	2692 - RE02b

	Shape (Select One)				
	Arch				
Pipe Details:	Circular				
	Elliptical				
	Box				

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	
Thickness	

Pipe Size			Overall Rating
Span		mm	
Rise		mm	1 1 2
Diameter		mm	1 1 3
Slope		%	
Length		m	

Roadway Over Pipe	Response
Pavement Cracks or Patches	
Sag in Roadway	
Recent signs of high water	
Amount of Cover (m)	

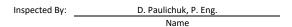
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	
Embankment Erosion	
Sideslopes too Steep	
Drift - wood, debris around pipe	
Vegetation - trees, brush etc.	
Silt	
Rip Rap	

Pipe Barrel		Rating
	Blockage	
	Submerged in Water	
	Inlet Damage	
	Outlet damage	
	Corrosion / Abrasion	
	Out of Round	
	Settlement	
	Sag / Bow	
	Infiltration	
	Piping	
	Cracking	

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Could not find this culvert. Records from the old railway embankment construction indicate that a culvert did exist in this area. Flow is high in this area coming from the golf course. Flow should mostly go south along old railway embankment. Improvements are recommended to take this flow mostly to the south to 48A Avenue on both sides of the railway embankment. Some flow is to go to the north where a new drainage course is to be constructed north of the lots. This culvert will be redundant after improvements.







Did Not Find this Culvert



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

Date: February 15, 2020 Culvert: 2692b - RE02b

26,000.00

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 2,000.00
4		Re-Grading Upstream Ditch, West Side of Embank. for 250m	lump sum	1	\$ 20,000.00	\$ 20,000.00
					Sub-Total	\$ 22,000.00
					10% Contingencies:	\$ 2,200.00
				8	8% Admin & Engineering:	\$ 1,760.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 18, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	
	S.V. of Sunset Point	Old Railway Embankment	S. of 48A Avenue	Centreline	2692c - RE02c

	Shape (Select One)		
	Arch		
Pipe Details:	Circular		
	Elliptical		
	Box		

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	
Thickness	

Pipe Size			Overall Rating
Span		mm	
Rise		mm	1 10
Diameter		mm	I TU
Slope		%	
Length		m	

Roadway Over Pipe	Response
Pavement Cracks or Patches	
Sag in Roadway	
Recent signs of high water	-
Amount of Cover (m)	•

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	_
Embankment Erosion	_
Sideslopes too Steep	_
Drift - wood, debris around pipe	_
Vegetation - trees, brush etc.	_
Silt	_
Rip Rap	-

Pipe Barrel		Rating
	Blockage	
	Submerged in Water	
	Inlet Damage	
	Outlet damage	<u></u>
	Corrosion / Abrasion	
	Out of Round	
	Settlement	
	Sag / Bow	
	Infiltration	
	Piping	
	Cracking	

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Did Not Inspect this Culvert

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Flow is high and is not propertly set in elevation as water flow goes from the west and goes east into golf course. All flow should go to the west through vacant land. Improvements are recommended to take flow coming from east of the old railway embankment which will take all of the flow away from this culvert. This culvert should be removed as it will become redundant. Improvement work will take flow from the Golf Course and redirect to south ditch of 48A Avenue via an underground storm

Inspected By:	D. Paulichuk, P. Eng.
•	Name

Culvert Improvement Cost Estimate

\$

97,264.84

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2692c - RE02c

		Culvert:		ivert: 2692C - RE				
Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	175.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Remove and Salvage Existing 500mm CSP	m	16	\$	100.00	\$	1,600.00
4		Install Underground Storm Sewer with Manholes - See Estimate Below	m	16	\$	100.00	\$	94,960.16
						Sub-Total	\$	96,885.16
					10	% Contingencies:	\$	9,688.52
					8% Adm	in & Engineering:	\$	7,750.81
						TOTAL:	\$	114,400.00
	South Side	Only						
		General Requirements Clearing and Grubbing Topsoil Stripping and Stockpiling Remove & Salvage Existing Culvert Trenching & Backfilling for Storm Sewer Pipe Supply and Install 450mm Ultrarib Storm Pipe Supply and Install 600mm End Treatment Supply and Install 600mm End Treatment Supply and Install 900mm Catchbasin Supply and Install 1800mm Catchbasin Supply and Install 1800mm Catchbasin Mahole w/Control Replace Topsoil and Groom	lump ha m2 unit m m unit unit unit unit unit	1 0.25 3800 1 330 320 0 1 0 2	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	10,000.00 6,500.00 2.25 1,500.00 140.00 145.00 245.00 4,500.00 6,500.00 22,000.00 4.00	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	5,937.50 964.84 5,076.56 1,500.00 27,431.25 27,550.00 - 4,000.00 - 13,000.00
	North Side	· Only						
		General Requirements	lump	1	ċ	10,000.00	ć	<u>Factored</u> 4,062.50
		Clearing and Grubbing	ha	0.25	\$ \$	6,500.00		4,062.30
		Topsoil Stripping and Stockpiling	m2	3800	\$	2.25		3,473.44
		Remove & Salvage Existing Culvert	unit	1	\$	1,500.00	\$	1,500.00
		Trenching & Backfilling for Storm Sewer Pipe	m	330	\$		\$	18,768.75
		Supply and Install Community Storm Pipe	m	320	\$	145.00		18,850.00
		Supply and Install 600mm Ultrarib Storm Pipe Supply and Install 450mm End Treatment	m unit	10 2	\$ \$	245.00 4,000.00	\$ \$	2,450.00 8,000.00
		Supply and Install 450mm End Treatment Supply and Install 600mm End Treatment	unit	1	\$ \$	4,500.00		4,500.00
		Supply and Install 900mm Catchbasin	unit	1	\$	6,500.00		6,500.00
		Supply and Install 1800mm Catchbasin Mahole	anne	-	7	2,300.00	Ψ	0,500.00
		w/Control	unit	1	\$	22,000.00	\$	22,000.00
		Replace Topsoil and Groom	m2	4000	\$	4.00	\$	6,500.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



48th Street Culvert Inspection Reports

713 LAKESHORE DRIVI COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 41 & 42 Approach	E. Side	2654 - F26

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.8	%		
Length	8.72	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Culvert in fair condition. Approach is not paved. End treatments poor & damaged; could use sloped ends. Some silt.







Inspected By: D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2654 - F26

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 5,745.00
					1	0% Contingencies:	\$ 574.50
					8% Adn	nin & Engineering:	\$ 459.60
						TOTAL:	\$ 6,800.00

713 LAKESHORE DRIT COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 11 & 12 Approach	W. Side	2655 - F20

	Shape (S	Select One)		Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
			_	Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	300	mm	
Slope	1.6	%	
Length	6.08	m	

5

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
·	Infiltration	No
·	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible





Comments

Culvert in fair condition. Approach is not paved. North end is damaged; can't find south end & may be buired; could use sloped ends. Trees on south end make drainage difficult.

Inspected By: D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Saturday, February 15, 2020

Culvert: 2655 - F20

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 395.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$ 40.00	\$ 1,400.00
					Sub-Total	\$ 5,745.00
					10% Contingencies:	\$ 574.50
					8% Admin & Engineering:	\$ 459.60
					TOTAL:	\$ 6,800.00

Friday, November 8, 2019

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 42 & 43 Approach	E. Side	2656 - F25

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material	Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size						
Span		mm				
Rise		mm				
Diameter	300	mm				
Slope	3.9	%				
Length	14.01	m				

Date:

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	Yes
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Culvert in fair condition. Dips on Approach that hold water. Approach is not paved. End treatments poor & damaged; could use sloped ends. Can't see through culvert. 1/3 full of silt.









Inspected By: D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,800.00

Date: Saturday, February 15, 2020

Culvert: 2656 - F25

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		<u> </u>		\$ 545.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	15	\$	300.00	\$ 4,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 7,395.00
						10% Contingencies:	\$ 739.50
					8% A	dmin & Engineering:	\$ 591.60

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 44 & 45 Approach	E. Side	2670 - F24

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size					
Span		mm			
Rise		mm			
Diameter	500	mm			
Slope	3.3	%			
Length	7.6	m			

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	Yes
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year





Comments

Culvert in fair to good condition. Dip on Approach that holds water. Approach is not paved. End treatments poor; could use sloped ends. Tree/bush at S. End needs to be cleared.





Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2670 - F24

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	I	Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 5,745.00
					1	0% Contingencies:	\$ 574.50
					8% Adr	nin & Engineering:	\$ 459.60
						TOTAL:	\$ 6,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Rating

No

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lots 44/45 to Lot 39a	Centerline	2671 - F08

	Shape (S	Select One)		Material (Select One)
	Arch			Aluminum	
ipe Details:	Circular	✓		Concrete	
·	Elliptical			Plastic	
	Box			Steel	✓
			•	Thickness	1.6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	0.8	%		
Length	13.56	m		

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

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Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	100 Year



Comments

Pipe Barrel

Blockage

Culvert interior is in good condition. Culverts need sloped ends. On Major Drainage path from old railway embankment. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert.





Inspected By: D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

13,000.00

Date: Saturday, February 15, 2020

Culvert: 2671 - F08

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 815.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m	0	\$	100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	15	\$	480.00	\$ 7,200.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	24	\$	82.50	\$ 1,980.00
						Sub-Total	\$ 10,945.00
						10% Contingencies:	\$ 1,094.50
					8% A	dmin & Engineering:	\$ 875.60

Friday, November 8, 2019

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 47 & 48 Approach	E. Side	2672 - F27

	Shape (Select One)		Material (Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
	-		=	Thickness	1 6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	2.0	%		
Length	11.55	m		

Date:

5

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	Yes
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

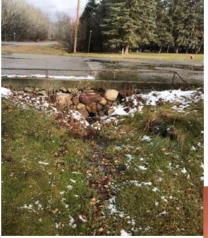
Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert in fair to good condition. Mostly submerged which is concerning as it provides little capacity for more flow. Low flow area. Expensive driveway replacement. End treatments poor; could use sloped ends.

Inspected By:	D. Paulichuk, P. Eng.
·	Name







713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2672 - F27

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 585.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$ 350.00	\$ 4,900.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$ 82.50	\$ 2,475.00
					Sub-Total	\$ 8,910.00
					10% Contingencies:	\$ 891.00

TOTAL: \$ 10,600.00

712.80

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 39a Approach	W. Side	2673 - F10
				Di di	0

	Shape (Select One)		Material	(Select One)
	Arch		Aluminum	
Pipe Details:	Circular	✓	Concrete	
	Elliptical		Plastic	
	Box		Steel	✓
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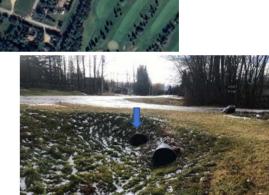
Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	1.9	%		
Length	10.19	m		

Overall Rating
2

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

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Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	100

Comments

Culvert interior is in very good condition. Some water and little siltation. With future drainage re-direction upstream at the old railway embankment, this flow path will change from a Major Flow path to a Minor Flow path. Recommend once this culvert has aged and reached its design life, remove and will be replaced by 2674/F09.

Inspected By: D. Paulichuk, P. Eng.
Name



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020 Culvert: 2673 - F10

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	•	Mobilization - 10%	lump sum		•		\$ -
2		Channel Excavation	m3	0	\$	150.00	\$ -
3		Supply & Install 800mm C.S.P. Culvert	m	0	\$	480.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -

Sub-Total \$ -

10% Contingencies: \$ -

8% Admin & Engineering: \$ -

TOTAL: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2673 - F10

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3					
1		Mobilization - 10%	lump sum				\$ 142.50
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 600mm C.S.P. Culvert	m	10.2	\$	125.00	\$ 1,275.00
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 1,567.50
						10% Contingencies:	156.75
					8% A	dmin & Engineering:	125.40
						TOTAL:	\$ 1,900.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 39a Approach	W. Side	2674 - F09

	Shape (Select One)	Ī	Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
	-		•	Thickness	1.6mm

Pipe Size							
Span		mm					
Rise		mm					
Diameter	600	mm					
Slope	0.3	%					
Length	12.09	m					

Overall Rating

2

	-
Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

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7.7	

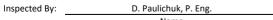
Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	100



Comments

Culvert interior is in very good condition. Some water and little siltation. Flat grade within a major flow path. Culverts stick out too much and need sloped ends. With future drainage re-direction upstream at the old railway embankment, this flow path will change from a Major Flow path to a Minor Flow path. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert.



Name



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2674 - F09

764.72

11,300.00

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 719.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	13	\$	480.00	\$ 6,240.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	20	\$	82.50	\$ 1,650.00
						Sub-Total	\$ 9,559.00
					:	10% Contingencies:	\$ 955.90

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2674 - F09

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3			•		
1		Mobilization - 10%	lump sum				\$ 425.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove, Salvage & Reinstall 600mm C.S.P. Culvert	m	12	\$	150.00	\$ 1,800.00
3		Supply & Install 800mm C.S.P. Culvert	m	4	\$	375.00	\$ 1,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	20	\$	82.50	\$ 1,650.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 6,325.00
					1	10% Contingencies:	\$ 632.50
					8% Ad	min & Engineering:	\$ 506.00
						TOTAL:	\$ 7,500.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 46 to Lot 13	Centerline	2675 - F11

	Shape (Select One)			
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size							
Span		mm					
Rise		mm					
Diameter	600	mm					
Slope	1.2	%					
Length	13.99	m					

Overall Rating	
2	

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	100 Year



Comments

Culvert interior is in very good condition. Culverts stick out too much and need sloped ends. With future drainage re-direction upstream at the old railway embankment, this flow path will change from a Major Flow path to a Minor Flow path. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.
Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2675 - F11

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ -
2		Channel Excavation	m3	0	\$ 150.0	0 \$ -
3		Remove & Salvage 500mm C.S.P. Culvert	m	0	\$ 100.0	0 \$ -
4		Supply & Install 800mm C.S.P. Culvert	m	0	\$ 480.0	0 \$ -
5		Supply & Install Rip Rap	unit	0	\$ 150.0	0 \$ -
6		Light Grading	lump sum	0	\$ 500.0	0 \$ -
7		Re-Grade Ditch	lump sum	0	\$ 2,000.0	0 \$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.5	0 \$ -
					Sub-To	ral \$ -
					10% Contingenci	es: \$ -
					8% Admin & Engineerir	g: \$ -

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2675 - F11

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	I	LOWERING GRADE, PROJECT #2 Phase 3					
1		Mobilization - 10%	lump sum				\$ 410.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove, Salvage & Reinstall 600mm C.S.P. Culvert	m	14	\$	150.00	\$ 2,100.00
3		Supply & Install 600mm C.S.P. Culvert	m	3	\$	350.00	\$ 1,050.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	20	\$	82.50	\$ 1,650.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 6,160.00
						10% Contingencies:	\$ 616.00
					8% Ac	dmin & Engineering:	\$ 492.80
						TOTAL:	\$ 7,300.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: Fr

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 13 & 14 Approach	W. Side	2676 - F28
-					

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	0.6	%			
Length	16.05	m			

3	Overall Rating
	3

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate



Comments

Culvert in fair to good condition. Little siltation. Flat grade but not within a major flow path. Capacity is noted as inadequate from capacity analysis however this is mainly due to pipe slope and not high flow. Recommend not to rate capacity as inadequate but as 25 year capacity.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2676 - F28

770.00

11,400.00

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 635.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	18	\$ 300.00	\$ 5,400.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	32	\$ 82.50	\$ 2,640.00
					Sub-Total	\$ 9,625.00
					10% Contingencies:	\$ 962.50

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 47 & 48 Approach	E. Side	2677 - F13

	Shape (Select One)			Material	l (Select One)	
	Arch			Aluminum		
Pipe Details:	Circular	✓		Concrete		
	Elliptical			Plastic		
	Box			Steel	✓	
	-		•	Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	0.6	%	
Length	12.3	m	

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None



Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5 Year

Comments

Culvert in very good condition. Little siltation. Flat grade but not within a major flow path. Capacity is noted as 5 Year from capacity analysis however this is mainly due to pipe slope and not high flow. Recommend not to rate capacity as inadequate but as 25 year capacity. End treatments poor; could use sloped ends.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2677 - F13

638.00

9,500.00

Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
1		Mobilization - 10%	lump sum			\$	515.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Supply & Install 500mm C.S.P. Culvert	m	14	\$ 300.00	\$	4,200.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	1	\$ 500.00	\$	500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	28	\$ 82.50	\$	2,310.00
					Sub-Tota	ıl \$	7,975.00
					10% Contingencies	:: \$	797.50

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Date: Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 15 & 16 Approach	W. Side	2678 - F29

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	0.8	%		
Length	19.9	m		

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

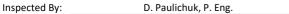
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate

Comments

Culvert in fair to good condition. Little siltation. Flat grade but not within a major flow path. Capacity is noted as inadequate from capacity analysis however this is mainly due to pipe slope and not high flow. Recommend not to rate capacity as inadequate but as 25 year capacity.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2678 - F29

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 695.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	20	\$ 300.00	\$ 6,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	40	\$ 82.50	\$ 3,300.00
					Sub-Total	\$ 10,945.00
					10% Contingencies:	1,094.50
				;	8% Admin & Engineering:	\$ 875.60
					TOTAL	\$ 13,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 49 & 50 Approach	E. Side	2679 - F14a

	Shape (Select One)			Material ((Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box]	Steel	✓
	-	-	_	Thickness	1.6mm

Pipe Size		
Span		mm
Rise		mm
Diameter	500	mm
Slope	0.9	%
Length	12.3	m

Overall Rating
7

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

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Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert interior is in very good condition. Lots of issues with end treatments. Flat grade but not within a major flow path. Water ponds in ditch to the south; home owner uses sump pump to pump from ditch to culvert. Ditch re-grading and culvert elevation reset required.





Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Saturday, February 15, 2020

Culvert: 2679 - F14a

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 625.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m	12.5	\$	100.00	\$ 1,250.00
4		Supply & Install 600mm C.S.P. Culvert	m	13	\$	350.00	\$ 4,550.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	0	\$	500.00	\$ -
7		Re-Grade Ditch	lump sum	1	\$	2,000.00	\$ 2,000.00
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	24	\$	82.50	\$ 1,980.00
						Sub-Total	\$ 10,855.00
					:	10% Contingencies:	\$ 1,085.50
					8% Ad	min & Engineering:	\$ 868.40
						TOTAL:	\$ 12,900.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2679 - F14a

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	I	LOWERING GRADE, PROJECT #2 Phase 3			-1		
1		Mobilization - 10%	lump sum				\$ 342.50
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove, Salvage & Reinstall 500mm C.S.P. Culvert	m	12.5	\$	150.00	\$ 1,875.00
3		Supply & Install 500mm C.S.P. Culvert	m	2	\$	300.00	\$ 600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	20	\$	82.50	\$ 1,650.00
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 5,417.50
						10% Contingencies:	\$ 541.75
					8% Ac	lmin & Engineering:	\$ 433.40
						TOTAL:	\$ 6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 49 & 50 Approach	E. Side	2679 - F14b

	Shape (Select One)			Material (Select One)			
	Arch			Aluminum			
Pipe Details:	Circular	✓		Concrete			
	Elliptical			Plastic			
	Box			Steel	✓		
	-		-	Thickness	1 6mm		

Pipe Size						
Span		mm				
Rise		mm				
Diameter	500	mm				
Slope	0.0	%				
Length	11.6	m				

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None



Pipe Barrel		Rating
	Blockage	Yes
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert interior is in fair to good condition. Lots of issues with end treatments. Flat grade but not within a major flow path. Water ponds in ditch to the south; home owner uses sump pump to pump from ditch to culvert. Ditch re-grading and culvert elevation reset required. This culvert not needed.





Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

1,700.00

Date: Saturday, February 15, 2020

Culvert: 2679 - F14b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	•	Mobilization - 10%	lump sum		•		\$ 125.00
2		Channel Excavation	m3	0	\$	150.00	\$ -
3		Remove & Salvage 500mm C.S.P. Culvert	m	12.5	\$	100.00	\$ 1,250.00
4		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
5		- reset elevation Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
6		Light Grading	lump sum	0	\$	500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
						Sub-Total	\$ 1,375.00
						10% Contingencies:	\$ 137.50
					8% A	dmin & Engineering:	\$ 110.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2679 - F14b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
		LOWERING GRADE, PROJECT #2 Phase 3		ı	1		
1		Mobilization - 10%	lump sum				\$ 160.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 600mm C.S.P. Culvert	m	11.6	\$	125.00	\$ 1,450.00
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 1,760.00
						10% Contingencies:	\$ 176.00
					8% Ac	dmin & Engineering:	\$ 140.80
						TOTAL:	\$ 2,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c.

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	48 Street	Lot 17 Approach	W. Side	2680 - F30	
	Shape (Select One)	Material (Select One)		Pipe Size	Overall Rating	

	Shape (Select One)		Material (Select One		
	Arch			Aluminum		
Pipe Details:	Circular	✓		Concrete		
	Elliptical			Plastic		
	Box			Steel	✓	
			•	Thickness	1 6mm	

Pipe Size						
Span		mm				
Rise		mm				
Diameter	300	mm				
Slope	0.4	%				
Length	4.9	m				

4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

E.		
	14	

Blockage	No	
Submerged in Water	No	
Inlet Damage	No	The second secon
Outlet damage	No	The second secon
Corrosion / Abrasion	No	and the second
Out of Round	Yes	La Control Physics
Settlement	No	
Sag / Bow	No	
Infiltration	No	
Piping	No	
Cracking	No	order.
		10000
		TOTAL STATE OF THE PARTY OF THE

Rating

The Park

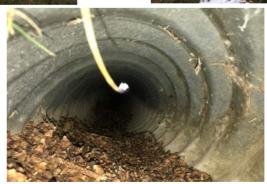
Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate

Comments

Pipe Barrel

Culvert in fair to good condition. Some internal staining. Some siltation. Flat grade but not within a major flow path. Capacity is noted as inadequate from capacity analysis however this is mainly due to pipe slope and not high flow. Recommend not to rate capacity as inadequate but as 25 year capacity.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2680 - F30

294.80

4,400.00

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 335.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
						Sub-Total	\$ 3,685.00
					í	10% Contingencies:	\$ 368.50

Friday, November 8, 2019

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 18 Approach	W. Side	2681 - F31

	Shape (S	Select One)	Ī	Material (Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
			•	Thickness	1.6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	0.4	%		
Length	11.2	m		

Date:

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs More

			19.25
	1	AL ALL	44.
	*** T		* A

i ipe bairei	Ruting
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert in fair to good condition. Some internal staining with some rust. Flat grade but not within a major flow path. Capacity is noted as inadequate from capacity analysis however this is mainly due to pipe slope and not high flow. Recommend not to rate capacity as inadequate but as 25 year capacity.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2681 - F31

8,300.00

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	24	\$	82.50	\$ 1,980.00
						Sub-Total	\$ 6,985.00
						10% Contingencies:	\$ 698.50
					8% Ac	lmin & Engineering:	\$ 558.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 52 Approach	E. Side	2682 - F15

	Shape (S	Select One)	Material	(S
	Arch		Aluminum	Τ
Pipe Details:	Circular	✓	Concrete	Ι
	Elliptical		Plastic	Ι
	Box		Steel	Ī
				Т

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
This lange	1 (

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.7	%		
Length	11.5	m		

3

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs More

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Co	m	m	er	nts

Culvert in good condition. Ponding in the ditch due to poor ditch grading. Lots of rock, but very little rock for apron.









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2682 - F15

558.80

8,300.00

	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 455.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$ 300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	24	\$ 82.50	\$ 1,980.00
					Sub-Total	\$ 6,985.00
					10% Contingencies:	\$ 698.50

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 53 Approach	E. Side	2683 - F16

	Shape (Select One)		Material (Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
			•	Thickness	1 6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	0.7	%		
Length	9.4	m		

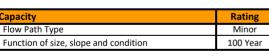
3	Overall Rating
	3

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.3

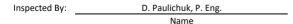
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs More

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Culvert in very good condition. Ponding in the ditch due to poor ditch grading. Culvert is sticking out on one end which is hazardous.









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

Date: Saturday, February 15, 2020

Culvert: 2683 - F16

7,700.00

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 425.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$	300.00	\$ 3,300.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	22	\$	82.50	\$ 1,815.00
						Sub-Total	\$ 6,490.00
						10% Contingencies:	\$ 649.00
					8% Ac	dmin & Engineering:	\$ 519.20

713 LAKESHORE DRI' COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	48 Street	Lot 46 to Lot 13	Centerline	2694 - F12

Pipe Details:	Shape (S	ľ	Mat	
	Arch			Aluminu
	Circular	✓		Concret
	Elliptical			Plastic
	Box			Steel

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1 6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.2	%	
Length	13.99	m	

2

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slone and condition	100 Vear





Comments

Culvert interior is in very good condition. Culverts stick out too much and need sloped ends. With future drainage re-direction upstream at the old railway embankment, this flow path will change from a Major Flow path to a Minor Flow path. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

13,000.00

Date: Saturday, February 15, 2020

Culvert: 2694 - F12

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
iteiii	Spec. No.	Description	Onic	Quantity		Onit Frice	Cost
1		Mobilization - 10%	lump sum				\$ 815.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m	0	\$	100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	15	\$	480.00	\$ 7,200.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	24	\$	82.50	\$ 1,980.00
						Sub-Total	\$ 10,945.00
						10% Contingencies:	\$ 1,094.50
					8% A	dmin & Engineering:	\$ 875.60

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2694 - F12

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3					
1		Mobilization - 10%	lump sum				\$ 190.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 600mm C.S.P. Culvert	m	14	\$	125.00	\$ 1,750.00
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 2,090.00
						10% Contingencies:	\$ 209.00
					8% Ac	dmin & Engineering:	\$ 167.20
						TOTAL:	\$ 2,500.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



49A Avenue Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Date:

Friday, November 8, 2019

PROJECT NAME

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 10 & 12 Approach	N. Side	2657 - F19

	Shape (Select One)			Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
	-		_	Thickness	1.6mm

Pipe Size		
Span		mm
Rise		mm
Diameter	300	mm
Slope	0.9	%
Length	12.14	m

Overall Rating
4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel		Rating
В	lockage	No
Sı	ubmerged in Water	No
In	llet Damage	No
0	utlet damage	No
C	orrosion / Abrasion	No
0	ut of Round	No
Se	ettlement	No
Sa	ag / Bow	No
In	filtration	No
Pi	iping	No
C	racking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible

Culvert in fair condition (S. Culvert). Approach is not paved. Bushes near east end will make drainage difficult and should be cleared. When replaced, it is important to re-set slope on culvert to ensure flow is from east to west. Second culvert (smoothwall) is private and drains Lot 12 into ditch. This private culvert makes approach culvert redundant. Lot grading should be reviewed before any repalcement work is done. Ideally, this location should be reduced to 1 culvert

Inspected By:	D. Paulichuk, P. Eng.
	Name









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,400.00

Date: Saturday, February 15, 2020

Culvert: 2657 - F19

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 515.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	14	\$	300.00	\$ 4,200.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 7,065.00
						10% Contingencies:	\$ 706.50
					8% A	dmin & Engineering:	\$ 565.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 39A Approach	S. Side	2658 - F07a

	Shape (Select O						
	Arch						
Pipe Details:	Circular	√					
	Elliptical						
	Вох						

Material (Select One)						
Aluminum						
Concrete						
Plastic						
Steel	✓					
Thickness	1.6mm					

Pipe Size								
Span		mm						
Rise		mm						
Diameter	400	mm						
Slope	0.2	%						
Length	12.24	m						

Overall Rating
8

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	Yes
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	Yes
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Culvert in fair condition (S. Culvert). Approach is not paved. Some issues with deformation. Bushes near ends will make drainage difficult and should be cleared. When replaced, it is important to re-set slope on culvert to ensure flow is from east to west.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2658 - F07a

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum			·	\$ 585.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$	350.00	\$ 4,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 7,835.00
					:	10% Contingencies:	\$ 783.50
					8% Ad	min & Engineering:	\$ 626.80
						TOTAL:	\$ 9,300.00

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: Saturday, February 15, 2020 Culvert: 2658 - F07a

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	<u> </u>	LOWERING GRADE, PROJECT #2 Phase 3			<u> </u>		
1		Mobilization - 10%	lump sum				\$ 845.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Dipose 400mm C.S.P. Culvert	m	12.5	\$	120.00	\$ 1,500.00
3		Supply & Install 800mm C.S.P. Culvert	m	16	\$	375.00	\$ 6,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$	82.50	\$ 2,887.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 12,182.50
						10% Contingencies:	\$ 1,218.25
					8% Ac	lmin & Engineering:	\$ 974.60
						TOTAL:	\$ 14,400.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 39A Approach	S. Side	2659 - F07b

	Shane (Select One)		Material (Select One
		ocicce one,			Sciece One
	Arch	,		Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
		· · · · · · · · · · · · · · · · · · ·	•		

Pipe Size						
Span		mm				
Rise		mm				
Diameter	600	mm				
Slope	0.3	%				
Length	12.23	m				

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	Yes
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Culvert in poor condition (N. Culvert) and has reduced capacity.

Approach is not paved. Bushes near ends will make drainage difficult and should be cleared. When replaced, it is important to re-set slope on culvert to ensure flow is from east to west.











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Culvert Improvement Cost Estimate

TOTAL: \$

9,300.00

Date: Saturday, February 15, 2020

Culvert: 2659 - F07b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 585.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$	350.00	\$ 4,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 7,835.00
					1	LO% Contingencies:	\$ 783.50
					8% Ad	min & Engineering:	\$ 626.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2659 - F07b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3		!	 		
1		Mobilization - 10%	lump sum				\$ 171.25
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 400mm C.S.P. Culvert	m	12.5	\$	125.00	\$ 1,562.50
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	15	\$	82.50	\$ 1,237.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 3,121.25
					1	.0% Contingencies:	\$ 312.13
					8% Adı	min & Engineering:	\$ 249.70
						TOTAL:	\$ 3,700.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 8 & 9 Approach	N. Side	2660 - F18

	Shape (Select One)			Material (Select One)		
	Arch		Aluminum			
Pipe Details:	Circular	✓		Concrete		
	Elliptical			Plastic		
	Box			Steel	✓	
	-		_	Thickness	1.6mm	

Pipe Size						
Span		mm				
Rise		mm				
Diameter	300	mm				
Slope	0.3	%				
Length	9.89	m				

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	Yes
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	BLOCKED





Comments

Culvert in fair condition but appears to be blocked. Approach is not paved. Ends are damaged. When replaced, it is important to re-set slope on culvert to ensure flow is from east to west.

Inspected By: D. Paulichuk, P. Eng.



Culvert Improvement
Cost Estimate

TOTAL: \$

7,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2660 - F18

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
						Sub-Total	\$ 6,405.00
					1	0% Contingencies:	\$ 640.50
					8% Adr	min & Engineering:	\$ 512.40

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4

Rating

Phone: 780-594-5380 Fax: 780-594-4486

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 37 & 38 Approach	S. Side	2661 - F05

	Shape (S	Material (Select One)		
	Arch		Aluminum	
Pipe Details:	: Circular ✓		Concrete	
	Elliptical		Plastic	
	Box		Steel	✓
			 Thickness	1 6mm

Pipe Size						
Span		mm				
Rise		mm				
Diameter	400	mm				
Slope	0.8	%				
Length	12.21	m				

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Sideslope

		MAL
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Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

Comments

Pipe Barrel

Culvert in fair condition. Rusting should be monitored. Approach is paved with a headwall on the east side.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

10,100.00

Date: Saturday, February 15, 2020

Culvert: 2661 - F05

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
		I				
1		Mobilization - 10%	lump sum			\$ 585.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$ 350.00	\$ 4,900.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$ 82.50	\$ 2,062.50
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
					Sub-Total	\$ 8,497.50
					10% Contingencies:	\$ 849.75
					8% Admin & Engineering:	\$ 679.80

713 LAKESHORE DRIVI COLD LAKE, ALBERTA Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2661 - F05

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
		LOWERING GRADE, PROJECT #2 Phase 3					
1		Mobilization - 10%	lump sum				\$ 171.25
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 400mm C.S.P. Culvert	m	12.5	\$	125.00	\$ 1,562.50
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	15	\$	82.50	\$ 1,237.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 3,121.25
						10% Contingencies:	\$ 312.13
					8% Ad	lmin & Engineering:	\$ 249.70
						TOTAL:	\$ 3,700.00

Date:

Friday, November 8, 2019

PROJECT NAME

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 37 & 38 Approach	S. Side	2662 - F06

	Shape (S	Select One)		Material (Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
			•	Thickness	1 6mm

Pip	e Size	
Span		mm
Rise		mm
Diameter	600	mm
Slope	1.6	%
Length	11.94	m

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Sideslope

dia	Link	(a) (c)	
	1		
	4		



Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate

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Culvert in very good condition. Approach is paved with a headwall on the east side.



Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2662 - F06

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 585.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	14	\$ 350.00	\$ 4,900.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$ 82.50	\$ 2,062.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
					Sub-Total	\$ 8.497.50

Sub-Total \$ 8,497.50

10% Contingencies: \$ 849.75

8% Admin & Engineering: \$ 679.80

TOTAL: \$ 10,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2662 - F06

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3			<u> </u>		
1		Mobilization - 10%	lump sum				\$ 764.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Dipose 600mm C.S.P. Culvert	m	12	\$	120.00	\$ 1,440.00
3		Supply & Install 800mm C.S.P. Culvert	m	14	\$	375.00	\$ 5,250.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$	82.50	\$ 2,887.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 11,291.50
					1	.0% Contingencies:	\$ 1,129.15
					8% Adı	min & Engineering:	\$ 903.32
						TOTAL:	\$ 13,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 37 to Lot 7/8	Centerline (East)	2663 - F03

	Shape (S	Select One)	Material ((Select One)
	Arch		Aluminum	
Pipe Details:	Circular	✓	Concrete	
	Elliptical		Plastic	
	Box		Steel	✓
			 Thickness	1.6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	0.5	%		
Length	18.23	m		

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

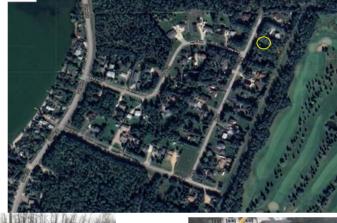
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Sideslope

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	10 Year

Comments

Culvert in very good condition. Steep sideslope on south side; grassed headwall north side. When replacing, ensure to provide some slope from south the north.







Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2663 - F03

Item	Spec. No.	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 795.00	
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00	
3		Supply & Install 600mm C.S.P. Culvert	m	20	\$ 350.00	\$ 7,000.00	
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00	
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00	
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$ 82.50	\$ 2,475.00	
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -	

Sub-Total \$ 11,220.00

10% Contingencies: \$ 1,122.00

8% Admin & Engineering: \$ 897.60

TOTAL: \$ 13,300.00

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2663 - F03

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	I	LOWERING GRADE, PROJECT #2 Phase 3					
1		Mobilization - 10%	lump sum				\$ 1,067.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Dipose 600mm C.S.P. Culvert	m	18.5	\$	120.00	\$ 2,220.00
3		Supply & Install 800mm C.S.P. Culvert	m	20	\$	375.00	\$ 7,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	40	\$	82.50	\$ 3,300.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 15,037.00
					1	.0% Contingencies:	\$ 1,503.70
					8% Adı	min & Engineering:	\$ 1,202.96
						TOTAL:	\$ 17,800.00

Friday, November 8, 2019

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
2002110111	S.V. of Sunset Point	49A Avenue	Lot 37 to Lot 7/8	Centerline (West)	2664 - F04
	Shape (Select One)	Material (Select One)		Pipe Size	Overall Rating

	Shape (S	Select One)	Ī	Material (Select One)
	Arch			Aluminum	
Pipe Details:	Circular	√		Concrete	
	Elliptical			Plastic	
	Вох			Steel	✓
			•	Thickness	1.6mm

Pipe Size								
Span		mm						
Rise		mm						
Diameter	600	mm						
Slope	0.4	%						
Length	18.23	m						

Date:

Overall Rating

4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

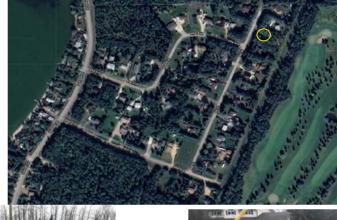
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Sideslope

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	10 Year

Comments

Culvert in very good condition. Steep sideslope on south side; grassed headwall north side. When replacing, ensure to provide some slope from south the north.







Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2664 - F04

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost	
1		Mahilization 100/	luman aum		<u> </u>		Ć 705	
1		Mobilization - 10%	lump sum				\$ 795	.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150).00
3		Supply & Install 600mm C.S.P. Culvert	m	20	\$	350.00	\$ 7,000).00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300	0.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500	0.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475	.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$	-

Sub-Total \$ 11,220.00

10% Contingencies: \$ 1,122.00

8% Admin & Engineering: \$ 897.60

TOTAL: \$ 13,300.00

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2664 - F04

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	•	LOWERING GRADE, PROJECT #2 Phase 3			•		
1		Mobilization - 10%	lump sum				\$ 246.25
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove and Dispose of 600mm C.S.P. Culvert	m	18.5	\$	125.00	\$ 2,312.50
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$	350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$	150.00	\$ -
5		Light Grading	lump sum	0	\$	500.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
						Sub-Total	\$ 2,708.75
						10% Contingencies:	\$ 270.88
					8% Ac	lmin & Engineering:	\$ 216.70
						TOTAL:	\$ 3,200.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Rating

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 6 & 7 Approach	N. Side	2665 - F21

	Shape (Select One)			Material ((Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
				Thickness	1.6mm

Pipe Size						
Span		mm				
Rise		mm				
Diameter	300	mm				
Slope	3.0	%				
Length	11.08	m				

Date:

2
3

Roadway Over Pipe	Response
Pavement Cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

	iges;		
		四十	1
2			
\$			



Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible

Pipe Barrel

Culvert in fair condition. Approach is paved with concrete finished headwalls. Expensive replacement due to headwalls.

D. Paulichuk, P. Eng. Inspected By:

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

10,800.00

Date: Saturday, February 15, 2020

Culvert: 2665 - F21

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	l	Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	50	\$	82.50	\$ 4,125.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 9,130.00
						10% Contingencies:	\$ 913.00
					8% A	dmin & Engineering:	\$ 730.40

Friday, November 8, 2019

Date:

PRO	OJECT NAME:	20	20 S.V. of Suns	set Point Storm Water Management Plan	n & Rehabilitatio	n Plan			
Location:	City/County/MD	Road Nam	e/No. Station Number		Alignment W. Side		Culvert No./Name		
	S.V. of Sunset Point		nue	Reserve Approach			2666 - F22		
	Shape (Select One)	Material (Select One)		Pipe Size		Overall Rating		
	Arch	Aluminum		Span		mm			
Pipe Details:		Concrete		Rise		mm	1		
	Elliptical	Plastic		Diameter	300	mm	4		
	Вох	Steel	✓	Slope	1.4	%	•		
		Thickness	1.6mm	Length	8.53	m			
ir					THE PERSON NAMED IN COLUMN TWO	THE CHIEF BANCO			
Roadway Over Pipe		Response							
	Pavement Cracks or Patches								
Sag in Roadway		No	1		- T				
	Recent signs of high water		750	(A) 新疆域(1918年/6月)			4		
	Amount of Cover (m)	0.70		· · · · · · · · · · · · · · · · · · ·					
				THE PARTY OF THE P		1000	t in the second		
Inlet / Outlet F	Protection	Rating			7	11/20			
	Channel scour at Inlet/Outlet	No		Jan Barrier Land	The state of the s				
	Embankment Erosion	No	1 10	以为一个一个一个一个	A CANADA		§		
	Sideslopes too Steep	No	100		100				
	Drift - wood, debris around pipe	No		VI		161 13			
Vegetation - trees, brush etc.		No							
Silt		No							
Rip Rap		None			- B N 10	1 100	8		
					THE CAN	1			
Pipe Barrel		Rating	7 5		THE PLANT				
	Blockage	No	The state of the s	The state of the s		法部种籍 和 等相			
	Submerged in Water	No							

ripe barrer	Nating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	Yes
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible

Culvert in fair to poor condition. Approach is not paved. Approach not being used.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

6,800.00

Date: Saturday, February 15, 2020

Culvert: 2666 - F22

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 5,745.00
						10% Contingencies:	\$ 574.50
					8% Ac	dmin & Engineering:	\$ 459.60

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 5 Approach	W. Side	2667 - F23

	Shape (S	Ī	Mater	
	Arch			Aluminun
Pipe Details:	Circular	✓		Concrete
	Elliptical			Plastic
	Вох			Steel
			=	

Material (Select One)				
Aluminum	,			
Concrete				
Plastic				
Steel	✓			
Thicknoss	1 6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	1.9	%			
Length	10.28	m			

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible

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Comments

Culvert in fair condition. Approach is paved. Approach not being used.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,900.00

Saturday, February 15, 2020

Culvert: 2667 - F23

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 7,480.00
						10% Contingencies:	\$ 748.00
					8% Ac	dmin & Engineering:	\$ 598.40

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c: Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 35/36 Approach	E. Side	2668 - E07

	Shape (Select One)			Material (Select One)		
	Arch			Aluminum		
Pipe Details:	Circular	✓		Concrete		
	Elliptical			Plastic		
	Box]	Steel	✓	
	-		_	Thickness	1.6mm	

Pipe Size					
Span		mm			
Rise		mm			
Diameter	400	mm			
Slope	1.6	%			
Length	11.48	m			

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None





Pipe Barrei	Kating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert in fair condition. Approach is paved. Approach not being used.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Saturday, February 15, 2020

Culvert: 2668 - E07

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	•	Mobilization - 10%	lump sum				\$ 485.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	13	\$	300.00	\$ 3,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 7,810.00
						10% Contingencies:	\$ 781.00
					8% A	dmin & Engineering:	\$ 624.80
						TOTAL:	\$ 9,300.00

Friday, November 8, 2019

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 33/34 Approach	E. Side	2669 - E06

	Shape (Select One)		Material ((Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
			•	Thickness	1 6mm

Pipe Size						
Span		mm				
Rise		mm				
Diameter	400	mm				
Slope	1.5	%				
Length	10.47	m				

Date:

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.90

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

ripe barrei		Kating	TANKS OF THE PARTY
	Blockage	No	
	Submerged in Water	No	
	Inlet Damage	No	
	Outlet damage	No	The State of the S
	Corrosion / Abrasion	No	DA.
	Out of Round	Yes	
	Settlement	No	
	Sag / Bow	No	Control of the last
	Infiltration	No	
	Piping	No	
	Cracking	No	
			and side of the

A A A A A A A A A A A A A A A A A A A	MAZ	
		T

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert in poor condition. Approach is paved. Culvert end is deformed as dog is pointing out.

Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,900.00

Date: Saturday, February 15, 2020

Culvert: 2669 - E06

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 7,480.00
						10% Contingencies:	\$ 748.00
					8% Ad	lmin & Engineering:	\$ 598.40

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	E. Side of Sunset Dr.	Centreline	2720 - E15

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	-0.1	%			
Length	14.11	m			

5	Overall Rating
	5

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate

Comments

Needs sloped ends with rip rap. Make longer 1m per end. No signs of capacity issues such as flowing over road. No ponding evident.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: Saturday, February 15, 2020 Culvert: 2720 - E15

ltem	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 725.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	16	\$ 425.00	\$ 6,800.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$ 82.50	\$ 2,475.00
					Cub Tatal	10.450.00

Sub-Total \$ 10,450.00

10% Contingencies: \$ 1,045.00

8% Admin & Engineering: \$ 836.00

TOTAL: \$ 12,400.00

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	S. Side, E. of Sunset Dr.	Multi-Use Trail	2721 - E16

	Shape (S	Select One)		Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
	-		_	Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	500	mm	
Slope	5.1	%	
Length	1.96	m	

Date:

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

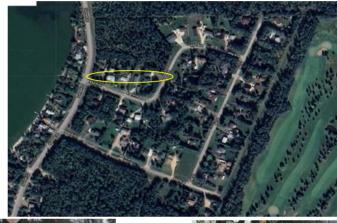
Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	25-Year

Cracking	No
Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	25-Year

Comm	en	its	
Culvert	in	fair	

to good condition. No immediate concerns.









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

3,600.00

Date: Saturday, February 15, 2020

Culvert: 2721 - E16

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost	
1		Mobilization - 10%	lump sum				\$ 2	75.00
2		Channel Excavation	m3	1	\$	150.00	\$ 1	50.00
3		Supply & Install 500mm C.S.P. Culvert	m	6	\$	300.00	\$ 1,8	00.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 3	00.00
5		Light Grading	lump sum	1	\$	500.00	\$ 5	00.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$	-
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$	-
						Sub-Total	\$ 3,0	25.00
						10% Contingencies:	\$ 3	02.50
					8% A	dmin & Engineering:	\$ 2	42.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	S. Side, E. of Sunset Dr.	Multi-Use Trail	2722 - E03

	Shape (S	Select One)		Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box]	Steel	✓
	-		_	Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.9	%	
Length	2.34	m	

Date:

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
Block	age	No
Subm	erged in Water	No
Inlet	Damage	No
Outle	t damage	Yes
Corro	sion / Abrasion	No
Out o	of Round	No
Settle	ement	No
Sag /	Bow	No
Infiltr	ation	No
Pipin	g	No
Crack	ing	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

		nts	

Culvert in fair to good condition. Culvert alignment is poor to flow with ditch to the east.

Inspected By:	D. Paulichuk, P. Eng.
	Name









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

3,600.00

Date: Saturday, February 15, 2020

Culvert: 2722 - E03

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		•		\$ 275.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	6	\$	300.00	\$ 1,800.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 3,025.00
					:	10% Contingencies:	\$ 302.50
					8% Ad	min & Engineering:	\$ 242.00

Friday, November 8, 2019

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 1/2 Approach	N. Side	2723 - E15

	Shape (Select One)			Material (Select One)			
	Arch			Aluminum			
Pipe Details:	Circular	✓		Concrete			
	Elliptical			Plastic			
	Box]	Steel	✓		
	-		_	Thickness	1.6mm		

Pipe Size							
Span		mm					
Rise		mm					
Diameter	600	mm					
Slope	-0.1	%					
Length	14.11	m					

Date:

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	Yes
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible

Comments		
Culvert in fair to poor condition.	Approach is paved.	Bent on the
end.		











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Culvert Improvement Cost Estimate

Saturday, February 15, 2020 Culvert: 2723 - E15

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 545.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	15	\$ 300.00	\$ 4,500.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$ 82.50	\$ 2,475.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$ 300.00	\$ -

Sub-Total \$ 8,470.00

10% Contingencies: \$ 847.00

8% Admin & Engineering: \$ 677.60

> TOTAL: \$ 10,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 28/29 Approach	S. Side	2724 - E04

	Shape (Select One)			Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓	✓		
·	Elliptical			Plastic	
	Box		1	Steel	✓
	-		_	Thickness	1.6mm

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	3.6	%			
Length	8.93	m			

Date:

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

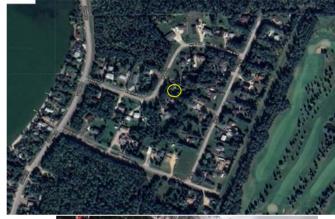
Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert in fair to poor condition. Approach is paved. Barely could see through. $\label{eq:condition}$

Inspected By:	D. Paulichuk, P. Eng.
	Namo







713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,100.00

Date: Saturday, February 15, 2020

Culvert: 2724 - E04

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		1		\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 6,820.00
						10% Contingencies:	\$ 682.00
					8% Ac	dmin & Engineering:	\$ 545.60

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c:

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 29/30 Approach	S. Side	2725 - E05

	Shape (Select One)			Material (Select One)		
	Arch			Aluminum		
Pipe Details:	Circular	✓	✓			
· ·	Elliptical			Plastic		
	Box			Steel	✓	
	-		_	Thickness	1.6mm	

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	1.1	%			
Length	11.19	m			

Overall Rating	
6	

Roadway Over Pipe	Response	
Pavement Cracks or Patches	No	
Sag in Roadway	No	
Recent signs of high water	No	
Amount of Cover (m)	0.20	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Blockage	Yes		-
Submerged in Water	No	1.00	
Inlet Damage	No	4 4	
Outlet damage	No	14 AL SH	I SA ASS
Corrosion / Abrasion	No		
Out of Round	No	STATISTICS OF THE PARTY OF THE	
Settlement	No	ENTER STATE OF THE	Dive seemen and to
Sag / Bow	No	The same of the sa	STATE STATES
Infiltration	No	The same of the same of	
Piping	No		100
Cracking	No		
	Rating		

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Pipe Barrel

Culvert in fair to poor condition. Approach is paved with headwall on east side. Could not see througth culvert. Heavily grassed on west outlet side. Ponding in ditch on the east side. Could re-grade ditch to eliminate ponding.

Inspected By: D. Paulichuk, P. Eng.



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: Saturday, February 15, 2020

Culvert: 2725 - E05

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 535.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	13	\$	300.00	\$ 3,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	1,000.00	\$ 1,000.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$	82.50	\$ 2,887.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 8,772.50
						10% Contingencies:	\$ 877.25
					8% Ac	dmin & Engineering:	\$ 701.80

TOTAL: \$ 10,400.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Rating

No

Date:

Friday, November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49A Avenue	Lot 3/4 Approach	N. Side	2725b

	Shape (Select One)	Ī	Material	(Select One)
	Arch			Aluminum	
Pipe Details:	Circular	✓		Concrete	
	Elliptical			Plastic	
	Box			Steel	✓
	_		•	Thickness	1.6mm

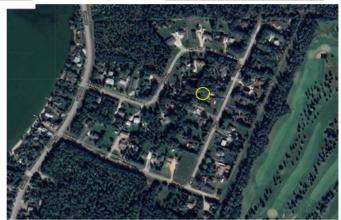
Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope		%			
Length	12?	m			

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.90

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None





'ana aitu		Doting
		•
Cracking		No
Piping		No
Infiltration		No
Sag / Bow		No
Settlement		No
Out of Round	t	Yes
Corrosion / A	brasion	No
Outlet dama	ge	No
Inlet Damage	<u>۽</u>	No
Submerged i	n Water	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Negligible



Pipe Barrel

Blockage

Culvert in good to fair condition. Approach is not paved. Culvert end on the east was recently extended by 4m. Still old original culvert in the ground from the west.





D. Paulichuk, P. Eng. Inspected By:

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

8,000.00

Saturday, February 15, 2020

Culvert: 2775b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 485.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	13	\$	300.00	\$ 3,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	35	\$	40.00	\$ 1,400.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 6,735.00
						10% Contingencies:	\$ 673.50
					8% A	dmin & Engineering:	\$ 538.80

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



Sunset Drive Culvert Inspection Reports

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	E. Backlane	N. Ditch	2201 - C02

Pipe Details:	Shape (Select One)		
	Arch		
	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	-0.20	%		
Length	4.43	m		

Overall Rating
8

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

Small culvert that should be replaced with an 800mm Dia. CSP at minimum since area to the east is undeveloped and this drainage path will likely be increasing in flow.

Inspected By:	D Paulichuk P Eng	

Name



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2201-C02

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 357.50
2		Channel Excavation	m3	2	\$ 150.00	\$ 300.00
3		Remove & Dispose 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	7	\$ 425.00	\$ 2,975.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum		\$ 1,000.00	\$ -
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
8		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
9		Cleaning out of Culvert	lump sum		\$ 1,500.00	\$ -
					Sub-Total	\$ 4,932.50
					10% Contingencies:	\$ 493.25
				8% Ad	min & Engineering:	\$ 394.60
					TOTAL:	\$ 5,900.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number Alignment		Culvert No./Name	
	S.V. of Sunset Point	Sunset Drive	E. Backlane	N. Ditch, Multi-Use Trail	2201a - C02	

	Shape (Select One)		
	Arch		
Pipe Details:	Circular		
	Elliptical		
	Вох		

Material (Select One)
Aluminum	
Concrete	
Plastic	
Steel	
Thickness	

Pipe Size				
Span		mm		
Rise		mm		
Diameter		mm		
Slope		%		
Length		m		



Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

2 small culverts that should be replaced with an 800mm Dia. CSP at minimum since area to the east is undeveloped and this drainage path will likely be increasing in flow.

Inspected By:	D. Paulichuk, P. Eng.	

Name

	And the state of	
	CO s April	40.35
	Ç	
		25.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2201a-C02

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1	l	Mobilization - 10%	lump sum			\$ 315.00
2		Channel Excavation	m3	2	\$ 150.00	\$ 300.00
3		Remove & Dispose 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	6	\$ 425.00	\$ 2,550.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum		\$ 1,000.00	\$ -
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
8		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2		\$ 40.00	\$ -
9		Cleaning out of Culvert	lump sum		\$ 1,500.00	\$ -

Sub-Total \$ 3,465.00

10% Contingencies: \$ 346.50

8% Admin & Engineering: \$ 277.20

TOTAL: \$ 4,100.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	48th Avenue	Centreline	2202 - C01

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	2.30	%		
Length	22.81	m		

Overall Rating
7

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None



Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No



Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	100-Year

Comments

This crossing is for a Major Flow Path for an undeveloped area. The existing 600mm Dia. culvert maybe too small for future flow upstream. Needs sloped ends with rip rap. Make longer 1m per end. Potentially included IN PROJECT #4. Could consider just adding 1 - 800mm Dia. CSP and leaving the existing 600mm Dia. CSP. Down drain open channel may require additional berm on the north side to ensure flow does not enter lot.





Inspected By:

D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA Phone: 780-594-5380 Fax: 780-594-4486

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2202 - C01

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost	\neg
	орсы по	2001.p.1011	55	Quantity	0	2031	
1		Mobilization - 10%	lump sum			\$ 1,43	110.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 60	500.00
3		Supply & Install 800mm C.S.P. Culvert	m	3	\$ 425.00	\$ 1,2	275.00
4		Supply & Install 800mm C.S.P. Culvert	m	25	\$ 425.00	\$ 10,62	525.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 60	500.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,00	00.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,96	960.00
					Sub-Total	\$ 19,4	170.00
					10% Contingencies:	\$ 1,94	947.00
				8% Ad	min & Engineering:	\$ 1,55	557.60
					TOTAL:	\$ 23.00	00.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
Location.	S.V. of Sunset Point	Sunset Drive	E. of Sunset Drive	Drainage Way between Lot 1 & Lot 1	2203 - B05

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	√
	Elliptical	
	Вох	

Material (Select One)	
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	500	mm	
Slope	0.70	%	
Length	52.76	m	

Overall Rating

Roadway Over Pipe	Response
Pavement cracks or Patches	Yes
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Personal Property	
	// / /



Comments

This culvert is very long with several issues. The inlet is within the road surface and presents a safety concern. Cannot verify if this culvert is plugged due to the length. There is significant siltation at the inlet end. The outlet end appears to be in good condition. Overall, it is appears that this culvert is not functioning as there is little evidence of flow from the outlet. Culvert should be unplugged immediately and lengthened on the inlet end. Needs rip rap. Recommend to replace with an 1 - 800mm Dia. CSP. or open channel. PROJECT #4.





Inspected By:

D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.seclesion.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2203-B05

Item	Spec. No.	Description	Unit	Quantity	U	nit Price	Cost
1		Mobilization - 10%	lump sum				\$ 2,767.50
2		Channel Excavation	m3	20	\$	150.00	\$ 3,000.00
3		Remove & Dispose 800mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	55	\$	425.00	\$ 23,375.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	10	\$	82.50	\$ 825.00
8		Cleaning out of Culvert	lump sum		\$	1,500.00	\$ -

Sub-Total \$ 31,267.50

10% Contingencies: \$ 3,126.75

8% Admin & Engineering: \$ 2,501.40

TOTAL: \$ 36,900.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
Location	S.V. of Sunset Point	Sunset Drive	46th Ave. E. Service Rd	E. Side	2204 - B04	

Pipe Details:	Shape (Select One)		
	Arch		
	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	400	mm			
Slope	0.50	%			
Length	10.43	m			

Overall Rating
8

Roadway Over Pipe	Response		
Pavement cracks or Patches	No		
Sag in Roadway	No		
Recent signs of high water	No		
Amount of Cover (m)	0.65		

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate



Culvert appears to be in fair to good condition but undersized.

Capacity is of concern now. When time to be replaced, replace with 800mm Dia. CSP with sloped ends with rip rap. PROJECT #4.











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2204 - B04

						1	
Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
1	l	Mobilization - 10%	lump sum	I		\$	590.00
2		Channel Excavation	m3	1	\$ 500.00	\$	500.00
3		Supply & Install 800mm C.S.P. Culvert	m	12	\$ 425.00	\$	5,100.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$	1,000.00
					Sub-Tota	\$	7,490.00
					10% Contingencies	\$	749.00
8% Admin & Engineering: \$				\$	599.20		
					TOTAL	\$	8,900.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	46th Avenue (Park)	Centreline	2205 - B03

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Вох			

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	2.60	%	
Length	16.56	m	

Overall Rating		
7		

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.25

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking, Separation	Yes

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

This culvert is in fair to good condition. The existing 600mm Dia. culvert maybe too small for future flow upstream. Needs sloped ends with rip rap. Make longer 1m per end. Replace when aged out with an 1 - 800mm Dia. CSP. PROJECT #4.











Culvert Improvement Cost Estimate

February 15, 2020 2205- B03 Date:

Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
item	Spec. No.	Description	Onit	quantity	Onterrice	cost
1	•	Mobilization - 10%	lump sum			\$ 925.00
2		Channel Excavation	m3	2	\$ 150.00	\$ 300.00
3		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.00
4		Supply & Install 800mm C.S.P. Culvert	m		\$ 425.00	\$ -
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$ 82.50	\$ 2,887.50
					Sub-Total	\$ 13,062.50
				:	10% Contingencies:	\$ 1,306.25
				8% Ad	min & Engineering:	\$ 1,045.00
					TOTAL:	\$ 15,500.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
200000000000000000000000000000000000000	S.V. of Sunset Point	Sunset Drive	46th Avenue (Park)	Centreline	2206 - B01

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Вох			

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	√	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.70	%		
Length	5.47	m		

Overall Rating
5

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion No	
Sideslopes too Steep No	
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Apron



Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No







Comments

This culvert is in good condition. The existing 400mm Dia. culvert maybe too small for future flow upstream. Needs sloped ends with rip rap. Replace when aged out with an 1 - 600mm Dia. CSP. PROJECT #4.



Name



713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 2206-B01

Culvert:

		5				1	
Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
1		Mobilization - 10%	lump sum			\$	425.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Supply & Install 600mm C.S.P. Culvert	m	8	\$ 350.00	\$	2,800.00
4		Supply & Install 600mm C.S.P. Culvert	m		\$ 425.00	\$	-
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$	1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$ 82.50	\$	2,887.50
8		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$	800.00
					Sub-Total	\$	8,362.50
				:	10% Contingencies:	\$	836.25
				8% Ad	min & Engineering:	\$	669.00
					TOTAL:	¢	9,900.00
					TOTAL	~	3,300.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	46th Avenue (Park)	Centreline	2207 - B02

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	√	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.90	%		
Length	5.38	m		

Overall Rating
5

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Apron



Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year





Comments

This culvert is in good condition. The existing 400mm Dia. culvert maybe too small for future flow upstream. Needs sloped ends with rip rap. Replace when aged out with an 1 - 600mm Dia. CSP. PROJECT #4.

Inspected By: D. Paulichuk, P. Eng.

Name



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2207-B02

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
	·	·		,			
1		Mobilization - 10%	lump sum				\$ 425.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	8	\$	350.00	\$ 2,800.00
4		Supply & Install 600mm C.S.P. Culvert	m		\$	425.00	\$ -
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	35	\$	82.50	\$ 2,887.50
8		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	20	\$	40.00	\$ 800.00
						Sub-Total	\$ 8,362.50
					10% (Contingencies:	\$ 836.25
				8% A	dmin 8	& Engineering:	\$ 669.00
						TOTAL:	\$ 9,900.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 2 Approach	E. Side	2208 - B13

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.40	%	
Length	6.33	m	

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Needs Aprons

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Culvert Improvement Cost Estimate

Date:

February 15, 2020 2208- B13 Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	quantity	Omerice	Cost
1		Mobilization - 10%	lump sum			\$ 320.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 4,520.00
				:	10% Contingencies:	\$ 452.00
8% Admin & Engineering: \$			\$ 361.60			
					TOTAL:	\$ 5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 10 Approach	W. Side	2209 - B06

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.00	%	
Length	10.58	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2209 - B06

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 440.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,840.00
					10% (Contingencies:	\$ 584.00
				8% A	Admin 8	& Engineering:	\$ 467.20
						TOTAL:	\$ 6,900.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 8/9 Approach	W. Side	2210 - B07

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size						
Span		mm				
Rise		mm				
Diameter	400	mm				
Slope	1.10	%				
Length	16.29	m				

Overall Rating
6

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year



Comments

Culvert appears to be in fair condition. Small culvert that should be larger just to maintain flow and availability for cleaning out. Recommend when comes time for replacement, replace with 500mm Dia. CSP with sloped ends and rip rap. Review slope of culvert as water is sitting within culvert. Also, the ditch could use some reshaping as there is very little backslope and this could allow flow to go into the lot.





Culvert Improvement Cost Estimate

713 LAKESHORE DRI COLD LAKE, ALBERTA Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2210 - B07

	C N-	Description	11-24	Q	Hait Bailes	Cont
Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 740.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	17	\$ 300.00	\$ 5,100.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 1,500.00	\$ 1,500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	40	\$ 40.00	\$ 1,600.00
					Sub-Total	\$ 9,740.00
					10% Contingencies:	\$ 974.00
				8% Ad	min & Engineering:	\$ 779.20
					TOTAL	\$ 11,500.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 3/4 Approach	E. Side	2211 - B14

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	3.60	%		
Length	6.19	m		

Overall Rating
3

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments











Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

February 15, 2020 2211- B14 Date:

Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	quantity	Omerice	Cost
1		Mobilization - 10%	lump sum			\$ 320.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 4,520.00
				:	10% Contingencies:	\$ 452.00
				8% Ad	min & Engineering:	\$ 361.60
					TOTAL:	\$ 5,400.00

Culvert Inspection Report

SE DESIGN AND CONSULTING INC.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 7 Approach	W. Side	2212 - B08

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.70	%		
Length	11.45	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating	
Channel scour at Inlet/Outlet No		
Embankment Erosion	No	
Sideslopes too Steep	No	
Drift - wood, debris around pipe	No	
Vegetation - trees, brush etc.	No	
Silt	Yes	
Rip Rap	Needs Aprons	

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments











COLD LAKE, ALBERTA

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2212 - B08

						Current	2222 500
Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 440.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$	82.50	\$ 2,062.50
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
						Sub-Total	\$ 6,902.50
					10% (Contingencies:	\$ 690.25
				8% A	Admin 8	& Engineering:	\$ 552.20
						TOTAL:	\$ 8,200.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 4/5 Approach	E. Side	2213 - B15

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.40	%		
Length	10.35	m		

Overall Rating
4

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating	
Flow Path Type	Minor	
Function of size, slope and condition	100-Year	

Comments











Culvert Improvement Cost Estimate

COLD LAKE, ALBERTA

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2213- B15

						Carrer		2213 513
Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
							Щ	
1		Mobilization - 10%	lump sum				\$	440.00
2		Channel Excavation	m3	1	\$	500.00	\$	500.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$	3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
						Sub-Total	\$	5,840.00
					10% (Contingencies:	\$	584.00
				8% A	dmin 8	& Engineering:	\$	467.20
						TOTAL:	\$	6,900.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 6 Approach	W. Side	2214 - B09

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.80	%	
Length	8.23	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2214 - B09

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 380.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$	82.50	\$ 2,062.50
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
						Sub-Total	\$ 6,242.50
					10% 0	Contingencies:	\$ 624.25
				8% /	Admin 8	& Engineering:	\$ 499.40
						TOTAL:	\$ 7,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 5 Approach	W. Side	2215 - B10

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.50	%		
Length	8.33	m		

Overall Rating
3

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Culvert Improvement Cost Estimate

TOTAL: \$

7,400.00

February 15, 2020 2215 - B10 Date:

Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
item	Spec. No.	Description	Onit	Quantity	Onit Price	Cost
1		Mobilization - 10%	lump sum			\$ 380.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$ 82.50	\$ 2,062.50
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$ 40.00	\$ -
					Sub-Tota	\$ 6,242.50
10% Contingencies: \$			\$ 624.25			
				8% Ad	min & Engineering	\$ 499.40

Culvert Inspection Report

SE DESIGN AND CONSULTING INC.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 6/7 Approach	E. Side	2216 - B16

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.10	%	
Length	10.36	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

6,900.00

February 15, 2020 2216- B16 Date:

Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	1	Cost
item	Spec. No.	Description	Onit	Quantity	Onit Price		Cost
1	•	Mobilization - 10%	lump sum		•	\$	440.00
2		Channel Excavation	m3	1	\$ 500.00	\$	500.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$ 300.00	\$	3,600.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$	1,000.00
					Sub-Tota	1 \$	5,840.00
					10% Contingencie	: \$	584.00
				8% Ad	min & Engineering	: \$	467.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	Sunset Drive	Lot 3/4 Approach	W. Side	2217 - B11	

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size							
Span		mm					
Rise		mm					
Diameter	400	mm					
Slope	0.70	%					
Length	8.24	m					

Overall Rating
3

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

9,800.00

February 15, 2020 2217 - B11 Date:

Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit F	Price	Cost
1	L	Mobilization - 10%	lump sum		I		\$ 380.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1	,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	50	\$	82.50	\$ 4,125.00
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
					S	ub-Total	\$ 8,305.00
					10% Contir	gencies:	\$ 830.50
				8% Ad	min & Engi	neering:	\$ 664.40

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 2/3 Approach	W. Side	2218 - B12

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.70	%		
Length	8.24	m		

Overall Rating	
3	

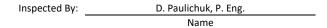
Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date:

February 15, 2020 2218- B12 Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	Qualitity	Oille Price	Cost
1		Mobilization - 10%	lump sum			\$ 380.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	30	\$ 40.00	\$ 1,200.00
					Sub-Total	\$ 5,380.00
					10% Contingencies:	\$ 538.00
				8% Ad	lmin & Engineering:	\$ 430.40
					TOTAL:	\$ 6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 8/9 Approach	E. Side	2219 - B17

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe	e Size	
Span		mm
Rise		mm
Diameter	400	mm
Slope	0.20	%
Length	12.35	m

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRI COLD LAKE, ALBERT Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2219- B17

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 500.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	14	\$	300.00	\$ 4,200.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						6.1.7.1	6.500.00
						Sub-Total	\$ 6,500.00
					10% (Contingencies:	\$ 650.00
				8% A	Admin 8	& Engineering:	\$ 520.00
						TOTAL:	\$ 7,700.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Backlane Approach	E. Side	2220 - B18

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.30	%		
Length	6.16	m		

Overall Rating
4

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.25

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs Aprons

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	10-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2220- B18

	1		1	1	1	1	
Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost	
1		Mobilization - 10%	lump sum			\$ 320.).00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.).00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400).00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.).00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000).00
					Sub-Total	\$ 4,520).00
					10% Contingencies:	\$ 452.	2.00
				8% Ad	min & Engineering:	\$ 361	60
					TOTAL:	\$ 5,400).00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 6A Approach	W. Side	2221 - A24

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.10	%	
Length	7.38	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Walt: www.sories.co.co.

Culvert Improvement Cost Estimate

TOTAL: \$

5,800.00

Date: February 15, 2020 Culvert: 2221 - A24

Item	Spec. No.	Description	Unit	Quantity	Unit Price	I	Cost
iteiii	Spec. No.	Description	Oilit	Qualitity	Ollit Frice		Cost
1		Mobilization - 10%	lump sum			\$	350.00
2		Channel Excavation	m3	1	\$ 500.00	\$	500.00
3		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$	2,700.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$	1,000.00
					Sub-Total	\$	4,850.00
					10% Contingencies:	\$	485.00
				8% Ad	min & Engineering:	\$	388.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot A Approach	E. Side	2222 - A26

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size		
Span		mm
Rise		mm
Diameter	400	mm
Slope	2.20	%
Length	6.01	m

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2222 - A26

Item	Spec. No.	Description	Unit	Quantity	ı	Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 320.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,520.00
					10% 0	Contingencies:	\$ 452.00
				8% A	dmin 8	& Engineering:	\$ 361.60
						TOTAL:	\$ 5,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	Sunset Drive	Lot 5 Approach	W. Side	2223 - A23	

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	2.30	%		
Length	10.37	m		

Overall Rating
3

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRI COLD LAKE, ALBERT Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2223 - A23

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 410.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$ 300.00	\$ 3,300.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 5,510.00
					10% Contingencies:	\$ 551.00
				8% Ad	lmin & Engineering:	\$ 440.80
					TOTAL:	\$ 6,600.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	Sunset Drive	Backlane Approach	E. Side	2224 - A25	

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	500	mm		
Slope	0.50	%		
Length	9.89	m		

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

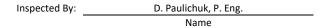
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Missing some

Pipe Barrel	Rating
Blockage	No
Submerged in	Water No
Inlet Damage	No
Outlet damage	No
Corrosion / Ab	rasion No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

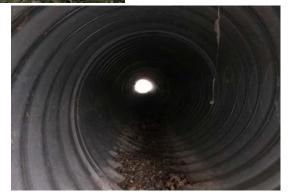
Comments

Culvert appears to be in very good condition. Culvert is too small for 25-Year target capacity and should be replaced with an 800mm Dia. CSP with sloped ends and rip rap. Since the watermark in the culvert reveals a very low level, the need for improvement is not high priority and should be reviewed if there is new development upstream. Better slope within the culvert should also be improved.









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date:

February 15, 2020 2224 - A25 Culvert:

Item	Spec. No.	Description	Unit	Quantity	Uni	t Price	Cost
1		Mobilization - 10%	lump sum				\$ 547.50
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 800mm C.S.P. Culvert	m	11	\$	425.00	\$ 4,675.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
						Sub-Total	\$ 8,497.50
				:	10% Cont	tingencies:	\$ 849.75
				8% Ad	min & En	ngineering:	\$ 679.80

TOTAL: \$ 10,100.00 713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 2/3 Approach	W. Side	2235 - A22

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	-0.80	%	
Length	6.26	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

TOTAL: \$

6,600.00

Date: February 15, 2020 Culvert: 2235 - A22

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oille	Qualitity	Ollit Filte	Cost
1		Mobilization - 10%	lump sum			\$ 410.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$ 300.00	\$ 3,300.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 5,510.00
					10% Contingencies:	\$ 551.00
				8% Ad	min & Engineering:	\$ 440.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 2 Approach	W. Side	2236 - A21

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe	Pipe Size			
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.80	%		
Length	9.91	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	No apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE Phone: 780-59
COLD LAKE, ALBERTA Fax: 780-594
T9M 0C4 Web: www.co.

Re-Gravel Approach - 10m x 10m x 150mm x 2.33

(\$40.00/tonne GBC)

Culvert Improvement Cost Estimate

> Date: February 15, 2020 Culvert: 2236 - A21

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 380.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -

m2

25

Sub-Total \$ 5,180.00

1,000.00

10% Contingencies: \$ 518.00

8% Admin & Engineering: \$ 414.40

40.00 \$

TOTAL: \$ 6,200.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 1 Approach	W. Side	2237 - A20

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.40	%	
Length	11.31	m	

Overall Rating

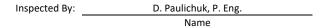
Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	No apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2237 - A20

14	C N	Description	1124	0	Halt Dalas	Cont
Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum	I	•	\$ 440.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$ 300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 5,840.00
					10% Contingencies:	\$ 584.00
	8% Admin & Engineering:				\$ 467.20	
					TOTAL:	\$ 6,900.00

Culvert Inspection Report

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Boundary Rd. (42nd St.)	Centreline	2238 - A11

Pipe Details:	Shape (Select One)				
	Arch				
	Circular	✓			
	Elliptical				
	Box				

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	1.90	%			
Length	15.06	m			



Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None



Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No





Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

This crossing is for a Minor Flow Path but collects 2 Minor Flow Paths including for an undeveloped area. The existing 600mm Dia. culvert maybe too small for future flow upstream. Recommend upgrading this crossing to an 800mm Dia. CSP to increase capacisty needed with sloped ends and rip rap. Down drain open channel may require review to ensure flow does not enter lot and ensure protection from erosion.





Inspected By:

D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2238 - A11

Item	Spec. No.	Description	Unit	Quantity	1	Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 882.50
2		Channel Excavation	m3	2	\$	150.00	\$ 300.00
3		Supply & Install 800mm C.S.P. Culvert	m	17	\$	425.00	\$ 7,225.00
4		Supply & Install 800mm C.S.P. Culvert	m		\$	425.00	\$ -
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$	82.50	\$ 3,960.00
						Sub-Total	\$ 13,667.50
					10% C	Contingencies:	\$ 1,366.75
				8% A	Admin 8	Engineering:	\$ 1,093.40
						TOTAL:	\$ 16,200.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	56 Avenue	Road E. Side	2602 - 106

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	√
	Elliptical	
	Box	

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thisluses	1 (

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	0.90	%		
Length	12.79	m		

Overall Rating
7
•

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating	
	Blockage	No
	Submerged in Water	Partial
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year



Culvert is in fair to good condition. Need to clean out heavy grass at inlet and outlet. Widen out ditch. Re-check elevations as there is too much water being held within pipe which lowers capacity. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Name







713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2602-106

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	690.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$	-
4		Supply & Install 800mm C.S.P. Culvert	m	14	\$	425.00	\$	5,950.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
6		Light Grading	lump sum	1	\$	500.00	\$	500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$	2,475.00
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$	-
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$	-
						Sub-Total	\$	10,065.00
						10% Contingencies:	\$	1,006.50
					8% Ad	min & Engineering:	\$	805.20
						TOTAL:	Ś	11,900.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	East Service Road	56th Ave. Approach	Under Service Rd.	2603 - I12

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	√		
	Elliptical			
	Вох			

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1 6mm				

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	2.20	%			
Length	16.39	m			

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

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Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year



Comments

Culvert is in fair to good condition. Need to clean out heavy grass and tree at inlet and outlet. Widen out ditch. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 600mm diameter culvert.

Inspected By:

D. Paulichuk, P. Eng.

Name

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 26103-112

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 725.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 600mm C.S.P. Culvert	m	18	\$	350.00	\$ 6,300.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 8,975.00
						10% Contingencies:	\$ 897.50
					8% Ad	min & Engineering:	\$ 718.00
						TOTAL:	\$ 10,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
Location	S.V. of Sunset Point	East Service Road	Between Lot 2 & 3	Under Service Rd.	2617 - 107

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1 6mm		

Pipe Size					
Span		mm			
Rise		mm			
Diameter	400	mm			
Slope	3.60	%			
Length	11.76	m			

Overall Rating		
-		

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.25

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	10-Year

Comments

Culvert is in fair to good condition. Need to clean out heavy grass at inlet and outlet. Widen out ditch. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 600mm diameter culvert.



Name







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2617 - I07

					Carrenti			
Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1	•	Mobilization - 10%	lump sum		•		\$	550.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$	-
4		Supply & Install 600mm C.S.P. Culvert	m	13	\$	350.00	\$	4,550.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
6		Light Grading	lump sum	1	\$	500.00	\$	500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$	-
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$	-
						Sub-Total	\$	7,050.00
10% Contingencies:					\$	705.00		
8% Admin & Engineering:					\$	564.00		
						TOTAL:	\$	8,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Service Rd./Backlane	Approach, E. Side	2619 - I11

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	300	mm	
Slope	1.00	%	
Length	10.25	m	

Overall Rating	
7	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate





Comments

Culvert is in fair to good condition. but too small. Telephone cable is running inside culvert to pedestal. Need to clean out heavy grass at inlet and outlet. Widen out ditch. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 600mm diameter culvert.





Inspected By: __

D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

TOTAL: \$

9,700.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2619 - I11

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 515.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 600mm C.S.P. Culvert	m	12	\$	350.00	\$ 4,200.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 8,140.00
						10% Contingencies:	\$ 814.00
					8% Ad	lmin & Engineering:	\$ 651.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Service Rd. Approach	E. Side	2634 - H19

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete	√	
Plastic		
Steel		
Thicknoss		

Pipe Size		
Span		mm
Rise		mm
Diameter	400	mm
Slope	5.1	%
Length	8.32	m

Overall Rating
4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears in fair to good condition. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap.









Inspected By: D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

TOTAL: \$

6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2634 - H19

Item	Spec. No.	Description	Unit	Quantity	ı	Unit Price	Cost
item	Spec. No.	Description	Onit	Quantity		Onit Price	Cost
1		Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 5,345.00
					1	.0% Contingencies:	\$ 534.50
					8% Adı	min & Engineering:	\$ 427.60

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
2000	S.V. of Sunset Point	Sunset Drive	54th Avenue	Centreline	2635 - H18

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	0.20	%	
Length	15.18	m	

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	No
	Corrosion / Abrasion	Some
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year







Comments

THe high water mark can clearly be seen in ths culvert which appears to be at 1/3 of the culvert capacity. Culvert is fair to good condition. Some rusting on the bottom. Should be upgraded to at least an 800mm Dia. CSP when time for this culvert to be replaced. If more development to occur upstream, this crossing should be reviewed in order to determine if this crossing is sufficient. Culvert should be longer with sloped ends and sideslopes should be flattened.





Inspected By:

D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2635- H18

		2			1	
Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1	•	Mobilization - 10%	lump sum			\$ 942.50
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	17	\$ 425.00	\$ 7,225.00
4		Supply & Install 800mm C.S.P. Culvert	m		\$ 425.00	\$ -
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 14,327.50
					10% Contingencies:	\$ 1,432.75
				8% Ac	dmin & Engineering:	\$ 1,146.20
					TOTAL:	\$ 17,000.00

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Approach	W. Side	2644 - H17

	Shape (Shape (Select One)			
	Arch				
Pipe Details:	Circular	√			
	Elliptical				
	Вох				

Material (Select One)					
Aluminum					
Concrete	✓				
Plastic					
Steel					
Thickness					

Pip		
Span		mm
Rise		mm
Diameter	400	mm
Slope	1.9	%
Length	28.51	m

10

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.35

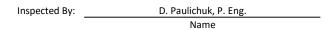
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	Could not see
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	????
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears in poor to fair condition. North end is buried and S. end is 3/4 full of water. Culvert too small. This is a very long culvert that could be plugged. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap.











Culvert Improvement Cost Estimate

TOTAL: \$

14,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2644 - H17

Item	Spec. No.	Description	Unit	Quantity	1	Unit Price		Cost
item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	995.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Supply & Install 500mm C.S.P. Culvert	m	30	\$	300.00	\$	9,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	1	\$	500.00	\$	500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$	-
						Sub-Total	\$	11,945.00
					1	10% Contingencies:	\$	1,194.50
					8% Ad	min & Engineering:	\$	955.60

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Approach	W. Side	2645 - H16

Pipe Details:	Shape (Select One)		
	Arch		
	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete	✓	
Plastic		
Steel		
Thickness		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.0	%		
Length	10.48	m		

Overall Rating
5

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears in poor to fair condition. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Ditch should be widened out; excess vegetation removed.











Culvert Improvement Cost Estimate

TOTAL: \$

7,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2645 - H16

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 6,005.00
					1	0% Contingencies:	\$ 600.50
					8% Adn	nin & Engineering:	\$ 480.40

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD Road Name/No. Station Nur	Station Number	Alignment	Culvert No./Name	
Locution.	S.V. of Sunset Point	Sunset Drive	Christian Camp North	Centreline	2646 - H26

	Shape (Select One)		
Pipe Details:	Arch		
	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.80	%	
Length	15.54	m	

Overall Rating	
7	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.5 - 2.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Some
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year



THe high water mark can clearly be seen in ths culvert which is concerning and indicates that this culvert should be upgraded to at least an 800mm Dia. CSP when time for this culvert to be replaced. If more development to occur upstream, this crossing should be reviewed in order to determine if this crossing is sufficient. Culvert should be longer with sloped ends and sideslopes should be flattened. Ideally, 2 - 800mm Dia. CSPs should be installed.













Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2646- H26

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	Quantity	Ontrice	Cost
1		Mobilization - 10%	lump sum			\$ 1,665.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	17	\$ 425.00	\$ 7,225.00
4		Supply & Install 800mm C.S.P. Culvert	m	17	\$ 425.00	\$ 7,225.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 22,275.00
					10% Contingencies:	\$ 2,227.50
				8% Ac	lmin & Engineering:	\$ 1,782.00
					TOTAL:	\$ 26,300.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Approach	W. Side	2647 - H15

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete	✓	
Plastic		
Steel		
Thickness		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.3	%		
Length	8.16	m		

Overall Rating	
10	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

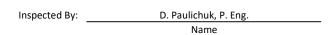
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	Yes
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	Partial
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

Culvert appears in poor to fair condition. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Ditch should be widened out; excess vegetation removed.











Culvert Improvement Cost Estimate

TOTAL: \$

6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2647 - H15

Item	Spec. No.	Description	Unit	Quantity	ı	Unit Price	Cost
item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 5,345.00
						10% Contingencies:	\$ 534.50
					8% Ad	min & Engineering:	\$ 427.60

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Approach	W. Side	2648 - H14

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material	(Select One)
Aluminum	
Concrete	✓
Plastic	
Steel	
Thickness	

Pipe Size		
Span		mm
Rise		mm
Diameter	400	mm
Slope	1.6	%
Length	11.07	m

Overall Rating

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.30

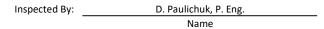
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	Unknown
Submerged in Water	Partial
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

Appears to be concrete, therefore rusting not an issue. Condition is good but inside it is half full of water which reduces capacity further. Approach is not paved. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Ditch should be widened out; excess vegetation removed.









Culvert Improvement Cost Estimate

TOTAL: \$

7,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2648 - H14

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 455.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	12	\$	300.00	\$ 3,600.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 6,005.00
					1	.0% Contingencies:	\$ 600.50
					8% Ad	min & Engineering:	\$ 480.40

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Approach	W. Side	2649 - H13

Pipe Details:	Shape (Select One)		
	Arch		
	Circular	✓	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete	✓		
Plastic			
Steel			
Thickness			

Pipe Size						
Span		mm				
Rise		mm				
Diameter	400	mm				
Slope	1.2	%				
Length	8.35	m				

Overall Rating	
10	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

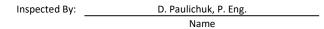
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate

Comments

Appears to be concrete, therefore rusting not an issue. Condition is good but inside there appears to be separation. Approach is not paved. Partially silted. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Flatten out sideslopes to at least 5:1. Ditch should be widened out; excess vegetation removed.









Culvert Improvement Cost Estimate

TOTAL: \$

6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2649 - H13

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	•	Mobilization - 10%	lump sum				\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 5,345.00
					1	10% Contingencies:	\$ 534.50
					8% Adı	min & Engineering:	\$ 427.60

Culvert Inspection Report

SE DESIGN AND CONSULTING INC.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Main Access	E. Side	2701 - H33

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Вох			

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.7	%	
Length	11.25	m	

Overall Rating
7

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.65

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year



Culvert in fair to poor condition. Approach is paved. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Flatten out sideslopes to at least 5:1. Excess vegetation removed.



Name









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2701 - H33

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 485.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	13	\$	300.00	\$ 3,900.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$	82.50	\$ 2,475.00
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 7,810.00
					10	% Contingencies:	\$ 781.00
				:	3% Adm	in & Engineering:	\$ 624.80

TOTAL: \$ 9,300.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Main Access	W. Side	2702 - H12

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.7	%		
Length	13.16	m		

8	Overall Rating	
	8	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	Yes
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year



Comments

Culvert in poor condition. Approach is paved. Partially silted.
Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Flatten out sideslopes to at least 5:1.
Ditch should be widened out; excess vegetation removed.



Inspected By:	D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2702 - H12

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1	1	Mobilization - 10%	lump sum			\$ 545.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	15	\$ 300.00	\$ 4,500.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	30	\$ 82.50	\$ 2,475.00
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
8		Supply & Install 200mm Plastic Liner	m	0	\$ 300.00	\$ -
					Sub-Total	\$ 8,470.00
					10% Contingencies:	\$ 847.00

TOTAL: \$ 10,000.00

677.60

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp South Access	E. Side	2703 - H32

	Shape (Shape (Select One)		
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Вох			

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	0.7	%	
Length	6.46	m	

Overall Rating
7

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep No	
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate







Comments

Culvert in fair to good condition. Approach is not paved. Culvert too small. Should be replaced with a 500mm CSP minimum with sloped ends and rip rap. Flatten out sideslopes to at least 5:1. Excess vegetation removed.





Inspected By: D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

TOTAL: \$

5,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2703 - H32

Item	Suca No.	Description	Unit	Quantity	I	Unit Price	Cost
item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 335.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	1	\$	500.00	\$ 500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	30	\$	40.00	\$ 1,200.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$ -
						Sub-Total	\$ 4,885.00
					1	10% Contingencies:	\$ 488.50
					8% Ad	min & Engineering:	\$ 390.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp South Access	W. Side	2704 - H11

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	500	mm		
Slope	-0.8	%		
Length	10.42	m		

Overall Rating
7

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.85

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Culvert in fair to good condition. Approach is not paved. When comes time to be replace, replace with a 600mm CSP minimum with sloped ends and rip rap. Flatten out sideslopes to at least 5:1. Excess vegetation removed.









Inspected By:

D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

TOTAL: \$

7,900.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2704 - H11

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum				\$	515.00
2		Channel Excavation	m3	1	\$	150.00	\$	150.00
3		Supply & Install 600mm C.S.P. Culvert	m	12	\$	350.00	\$	4,200.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	1	\$	500.00	\$	500.00
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
8		Supply & Install 200mm Plastic Liner	m	0	\$	300.00	\$	-
						Sub-Total	¢	6,665.00
						Sub-Total	Ş	0,003.00
					1	.0% Contingencies:	\$	666.50
				;	8% Ad	min & Engineering:	\$	533.20

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp Mid South	Centreline	2705 - H01

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	0.10	%	
Length	17.55	m	

11

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.5 - 2.5

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	Some
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	Inadequate



This crossing is for a Major Flow Path from the Christian Camp. The existing 600mm Dia. culvert is near capacity for a 25-Year Storm and it is recommended that it be upgraded to at least an 800mm Dia. CSP when time for this culvert to be replaced. If more development to occur upstream, this crossing should be reviewed in order to determine if this crossing is sufficient. Culvert should be longer with sloped ends and sideslopes should be flattened. Ideally, 2 - 800mm Dia. CSPs should be installed. Alignment should also be reviewed at the culvert alignment does not seem to align with drainage path on west side.







Inspected By:

D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2705- H01

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
iteiii	Spec. No.	Description	Oilit	Quantity	Oillt Frice	Cost
1	•	Mobilization - 10%	lump sum		•	\$ 1,835.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	19	\$ 425.00	\$ 8,075.00
4		Supply & Install 800mm C.S.P. Culvert	m	19	\$ 425.00	\$ 8,075.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 24,145.00
					10% Contingencies:	\$ 2,414.50
8% Admin & Engineering: \$					\$ 1,931.60	
					TOTAL:	\$ 28,500.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	E. of Sunset Dr.	Multi-Use Trail	2707- H02

Pipe Details:	Shape (Select One)			
	Arch			
	Circular	✓		
	Elliptical			
	Box			

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	2.0	%		
Length	7.9	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	10-Year

This culvert wil need to be replaced in conjunction with Culvert 2705, the centerline culvert under Sunset Drive. To match the centreline culvert, this culvert should be replaced with 2-800mm diameter CSPs.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2707 - H02

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1	1	Mobilization - 10%	lump sum			\$ 805.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	8	\$ 425.00	\$ 3,400.00
4		Supply & Install 800mm C.S.P. Culvert	m	8	\$ 425.00	\$ 3,400.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
8		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
9		Supply & Install 200mm Plastic Liner	m	0	\$ 300.00	\$ -
					Sub-Total	\$ 8,855.00
					10% Contingencies:	\$ 885.50

TOTAL: \$ 10,500.00

708.40

8% Admin & Engineering: \$

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lift Station Approach	E. Side	2708 - H03

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	5.50	%		
Length	6.34	m		

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	Yes
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

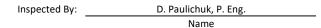






Comments

Small culvert that should be larger just to maintain flow and availability for cleaning out. Culvert appears damaged and deformed, not meeting full capacity. Water ponds to the south, along with ruts caused by Quads. Culverts should be longer with sloped ends and rip rap. Review cover over culverts and recommend more fill on approach. Recommend 600mm Dia. CSP since flow along Sunset Drive.





Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2708 - H03

Item	m Spec. No. Description Unit Quantity Unit Price				Cost	
item	Spec. No.	Description	Oilit	Quantity	Oillt Filte	Cost
1	,	Mobilization - 10%	lump sum		,	\$ 385.00
2		Channel Excavation	m3	1	\$ 300.00	\$ 750.00
3		Supply & Install 600mm C.S.P. Culvert	m	8	\$ 350.00	\$ 2,800.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	30	\$ 40.00	\$ 1,200.00
					Sub-Total	\$ 4,235.00
					10% Contingencies:	\$ 423.50
				8% Ac	dmin & Engineering:	\$ 338.80
					TOTAL:	\$ 5,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Christian Camp S. End	Centreline	2708a - G01

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	1.60	%		
Length	16.32	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Some
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor/Major
Function of size, slope and condition	100-Year

Comments

This crossing is for a Minor Flow Path from the Christian Camp. The existing 600mm Dia. culvert is near capacity for a 25-Year Storm and it is recommended that it be upgraded to at least an 800mm Dia. CSP when time for this culvert to be replaced. If more development to occur upstream, this crossing should be reviewed in order to determine if this crossing is sufficient. Culvert should be longer with sloped ends and sideslopes should be flattened. Ideally, 2 - 800mm Dia. CSPs should be installed.











Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2708a- G01

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
item	Spec. No.	Description	Oilit	Quantity	Oliit Frice	Cost
1		Mobilization - 10%	lump sum			\$ 1,750.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.00
4		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 23,210.00
					10% Contingencies:	\$ 2,321.00
				8% Ad	lmin & Engineering:	\$ 1,856.80
					TOTAL:	\$ 27,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	E. of Sunset Dr.	Multi-Use Trail	2708b- G02

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	3.2	%	
Length	2.48	m	

Overall Rating
8

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.00

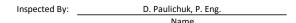
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor/Major
Function of size, slope and condition	100-Year

Comments

This culvert wil need to be replaced in conjunction with Culvert 2708a, the centerline culvert under Sunset Drive. To match the centreline culvert, this culvert should be replaced with 2-800mm diameter CSPs.







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2708b - G02

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 550.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	5	\$ 425.00	\$ 2,125.00
4		Supply & Install 800mm C.S.P. Culvert	m	5	\$ 425.00	\$ 2,125.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
8		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
9		Supply & Install 200mm Plastic Liner	m	0	\$ 300.00	\$ -
					Sub-Total	\$ 6,050.00
					10% Contingencies:	\$ 605.00

TOTAL: \$ 7,200.00

484.00

8% Admin & Engineering: \$

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	E. of Sunset Dr.	Multi-Use Trail	2712 - F02

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.2	%	
Length	3.45	m	

Overall Rating
8

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	10-Year

Comments

This culvert wil need to be replaced in conjunction with Culvert 2713, the centerline culvert under Sunset Drive. To match the centreline culvert, this culvert should be replaced with 2 800mm diameter CSPs.









Culvert Improvement Cost Estimate

8% Admin & Engineering: \$

TOTAL: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2712 - F02

558.80

8,300.00

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 635.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 800mm C.S.P. Culvert	m	6	\$ 425.00	\$ 2,550.00
4		Supply & Install 800mm C.S.P. Culvert	m	6	\$ 425.00	\$ 2,550.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
8		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
9		Supply & Install 200mm Plastic Liner	m	0	\$ 300.00	\$ -
					Sub-Total	\$ 6,985.00
					10% Contingencies:	\$ 698.50

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	N. of 49A Avenue	Centreline	2713 - F01

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	3.40	%	
Length	15.26	m	

Overall Rating	
8	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Some
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	100-Year

Comments

This crossing is for a Major Flow Path for the subdivision in the 49A Avenue and 48th Street area. The existing 600mm Dia. culvert is too small and needs to be lowered by 0.8m at the inlet and 0.4m at the outlet in order to improvement flow upstream. Recommend 2 - 800mm Dia. CSPs since more flow may be directed this way in future. Needs sloped ends with rip rap. Make longer 1m per end. Replacement is part of PROJECT #1 as a larger improvement project. Sideslopes should be flattened.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2713 - F01

		2		1 2		
Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum		ļ	\$ 1,750.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.00
4		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 23,210.00
					10% Contingencies:	\$ 2,321.00
				8% Ac	lmin & Engineering:	\$ 1,856.80
					TOTAL:	\$ 27,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
2002110111	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2714 - F32

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	√	
Thickness	1.6mm	

Pipe Size		
Span		mm
Rise		mm
Diameter	600	mm
Slope	0.80	%
Length	7.35	m

2	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.25

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be functioning adequately. No immediate need to replace.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2714- F32

Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
1		Mobilization - 10%	lump sum			\$	360.00
2		Channel Excavation	m3	1	\$ 150.0	\$	150.00
3		Supply & Install 600mm C.S.P. Culvert	m	9	\$ 350.0	\$	3,150.00
4		Supply & Install Rip Rap	unit	2	\$ 150.0	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.0	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.5) \$	-
					Cub Tak	-1 6	2 000 00
	Sub-Tota				aı ş	3,960.00	
	10% Contingencies				s: \$	396.00	
	8% Admin & Engineering			g: \$	316.80		
					тота	L: \$	4,700.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2715 - E14

	Select One)	
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	0.80	%	
Length	18.46	m	

Overall Rating	
2	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.25

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be functioning adequately except for direction of flow which is very flat. No immediate need to replace.

2	
Inspected By:	D. Paulichuk, P. Eng.
	Name









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2715- E14

Item	Spec. No.	Description	Unit	Quantity	Unit Price	:	Cost	
1		Mobilization - 10%	lump sum	<u> </u>			\$ 745.	.00
2		Channel Excavation	m3	1	\$ 150	0.00	\$ 150.	.00
3		Supply & Install 600mm C.S.P. Culvert	m	20	\$ 350	0.00	\$ 7,000.	.00
4		Supply & Install Rip Rap	unit	2	\$ 150	0.00	\$ 300.	.00
5		Light Grading	lump sum	0	\$ 1,000	0.00	\$ -	
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	36	\$ 82	2.50	\$ 2,970.	.00
					Sub-	Гotal	\$ 11,165.	.00
10% Contingencies:				cies:	\$ 1,116.	.50		
8% Admin & Engineering:			\$ 893.	.20				
					то	TAL:	\$ 13,200.	.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach - Dry	W. Side	2715a - E14a

	Shape (Select One)		
	Arch		
Pipe Details:	Circular		
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel		
Thickness		

Pipe Size				
Span		mm		
Rise		mm		
Diameter		mm		
Slope		%		
Length		m		

5	

Roadway Over Pipe	Response
Pavement cracks or Patches	
Sag in Roadway	
Recent signs of high water	
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	
Embankment Erosion	
Sideslopes too Steep	
Drift - wood, debris around pipe	
Vegetation - trees, brush etc.	
Silt	
Rip Rap	

Pipe Barrel		Rating
	Blockage	
	Submerged in Water	
	Inlet Damage	
	Outlet damage	
	Corrosion / Abrasion	
	Out of Round	
	Settlement	
	Sag / Bow	
	Infiltration	
	Piping	
	Cracking	

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	

Comments

There is no existing culvert for this approach. It appears that flow goes through the lots into the lake. Since there are no signs of ponding, flooding or complaints in the past of drainage, and there is no noticeable slope here, it is recommended that no approach culvert is needed at this location.







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2715a- E14a

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ -
2		Channel Excavation	m3	0	\$ 150.00	\$ -
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$ 350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$ 150.00	\$ -
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
					Sub-Tota	\$ -
					10% Contingencies	\$ -
				8% Ad	dmin & Engineering:	\$ -
					TOTAL	\$ -

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2716 - E13

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	0.50	%			
Length	10.9	m			

Overall Rating		
5		

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

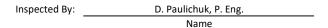
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs apron

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Small culvert that should be larger just to maintain flow and availability for cleaning out. Since this drainage path is along the lake, recommend replacing with 600mm. Culvert is too long and could be shorten since approach has power pole in the middle. This is the 2nd approach to the same lot. Shorten to 6m total length. Also consider removing culvert and approach completely after coordinating with landowner.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2716 - E13

Item	Spec. No.	Description	Unit	Quantity	Unit Prid	e	Cost
					!		
1		Mobilization - 10%	lump sum				\$ 315.00
2		Channel Excavation	m3	1	\$ 30	00.00	\$ 750.00
3		Supply & Install 600mm C.S.P. Culvert	m	6	\$ 35	0.00	\$ 2,100.00
4		Supply & Install Rip Rap	unit	2	\$ 15	0.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,00	00.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 8	2.50	\$ -
					Suh	-Total	\$ 3,465.00
10% Contingencies: \$				\$ 346.50			
8% Admin & Engineering: \$			\$ 277.20				
					T	OTAL:	\$ 4,100.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
2000000	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2717 - E12

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size					
Span		mm			
Rise		mm			
Diameter	600	mm			
Slope	1.00	%			
Length	8.34	m			

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

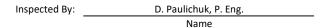
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Needs apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Small culvert that should be larger just to maintain flow and availability for cleaning out. Only other concern is the narrow V-Ditch which is a common problem along this drainage path. Since this drainage path is along the lake, recommend replacing with 600mm.











713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020
Culvert: 2717 - E12

					cuivere		2/1/ 112
Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
1		Mobilization - 10%	lump sum			\$	455.00
2		Channel Excavation	m3	1	\$ 300.00	\$	750.00
3		Supply & Install 600mm C.S.P. Culvert	m	10	\$ 350.00	\$	3,500.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$	-
					Sub-Total	. \$	5,005.00
					10% Contingencies:	\$	500.50
				8% Ad	lmin & Engineering:	\$	400.40
					TOTAL:	\$	6,000.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2718 - E11

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	2.20	%	
Length	8.36	m	

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

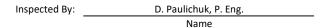
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

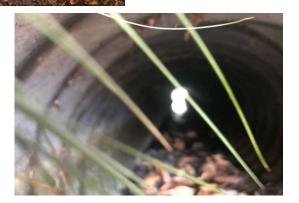
Small culvert that should be larger just to maintain flow and availability for cleaning out. Only other concern is the narrow V-Ditch which is a common problem along this drainage path. Since this drainage path is along the lake, recommend replacing with 600mm.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2718 - E11

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Т	Cost
							
1		Mobilization - 10%	lump sum			\$	455.00
2		Channel Excavation	m3	1	\$ 300.00	\$	750.00
3		Supply & Install 600mm C.S.P. Culvert	m	10	\$ 350.00	\$	3,500.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$	-
					Sub-Tota	I \$	5,005.00
				500.50			
10% Contingencies: \$. э	500.50			
				8% Ad	lmin & Engineering	: \$	400.40
					TOTAL	: \$	6,000.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2719 - E10

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material	(Calact Ona)
iviateriai	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size		
Span		mm
Rise		mm
Diameter	400	mm
Slope	5.20	%
Length	2.88	m

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

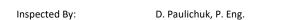
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

This culvert is redundant and does not appear to be used or needed as it it chain linked fenced through for which the lot has an access already to the north. Recommend removal of culvert upon coordination with the landowner.

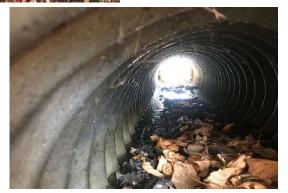


Name









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2719 - E10

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 75.00
2		Channel Excavation	m3	1	\$ 300.00	\$ 750.00
3		Supply & Install 600mm C.S.P. Culvert	m	0	\$ 350.00	\$ -
4		Supply & Install Rip Rap	unit	0	\$ 150.00	\$ -
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
					Sub-Total	\$ 825.00
10% Contingencies:				\$ 82.50		
8% Admin & Engineering:				\$ 66.00		
TOTAL:				\$ 1,000.00		

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot Approach	W. Side	2726 - E09

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
·	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.10	%		
Length	8.26	m		

Overall Rating
5

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

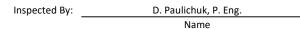
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

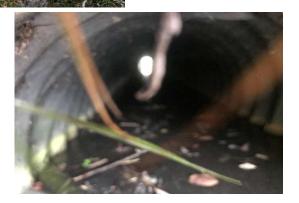
Small culvert that should be larger just to maintain flow and availability for cleaning out. Only other concern is the narrow V-Ditch which is a common problem along this drainage path. Since this drainage path is along the lake, recommend replacing with 600mm.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2726 - E09

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 395.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	10	\$ 350.00	\$ 3,500.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
					Sub-Total	\$ 4,345.00
					10% Contingencies:	\$ 434.50
				8% Ad	lmin & Engineering:	\$ 347.60
					TOTAL:	\$ 5,200.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Drainage Way/Lake Access	W. Side	2727 - E08

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	√	
	Elliptical		
	Box		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.10	%		
Length	8.36	m		

Overall Rating	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

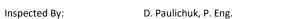
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate

Comments

Small culvert that should be larger just to maintain flow and availability for cleaning out. Only other concern is the narrow V-Ditch which is a common problem along this drainage path. Since this drainage path is along the lake, recommend replacing with 600mm.













Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2727 - E08

Item	Spec. No.	Description	Unit	Quantity	Ur	nit Price	Cost
1	<u> </u>	Mobilization - 10%	lump sum		1		\$ 395.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Supply & Install 600mm C.S.P. Culvert	m	10	\$	350.00	\$ 3,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
						Sub-Total	\$ 4,345.00
					10% Co	ntingencies:	\$ 434.50
				8% Ac	dmin & I	Engineering:	\$ 347.60
						TOTAL:	\$ 5,200.00

Culvert Inspection Report

SE DESIGN AND CONSULTING INC.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	W. of Sunset Drive	Drainage Path to Lake	2728 - E01

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size					
Span		mm			
Rise		mm			
Diameter	500	mm			
Slope	1.10	%			
Length	22.14	m			

5	Overall Rating
	5

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

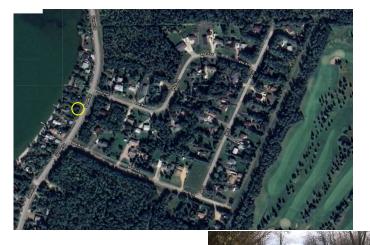
Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

This culvert could possibly be eliminated as long as it does not cause any flooding to adjacent properties. Could be replaced with a well dimensioned open ditch. Otherwise if being replaced, should at least replace with 800mm diameter since road centerline culver is 600mm now and will be upgraded to an 800mm diameter CSP. Needs sloped ends with rip rap.

Inspected By: D. Paulichuk, P. Eng.

Name







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date: February 15, 2020 Culvert: 2728 - E01

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost	\neg
1		Mobilization - 10%	lump sum			\$ 895.	.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.	.00
3		Supply & Install 800mm C.S.P. Culvert	m	20	\$ 425.00	\$ 8,500.	.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.	.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -	-
6		Re-Pave Excavation Area - 2m x length (\$165/m)	m2	0	\$ 82.50	\$ -	-
		(\$82.50/m2 with 100mm ACP & 300mm GBC)		\			
					Sub-Total	\$ 9,845.	.00
					10% Contingencies:	\$ 984.	.50
				8% Ad	lmin & Engineering:	\$ 787.	.60
					TOTAL:	\$ 11,700.	.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	S. of 49A Avenue	Centreline	2729 - E02

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	1.00	%		
Length	15.49	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year



Needs sloped ends with rip rap. Make longer 1m per end. No signs of capacity issues such as flowing over road. No ponding evident. When replacing, should be done in conjunction with Culvert 2728 E01, as the sideslope should be flattened with sloped ends. Need wider ditch as this is near a V-Ditch.











Inspected By:

D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2729 - E02

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
Item	эрсс. но.	Description	O.I.I.C	Quantity	Omerrice	Cost
1		Mobilization - 10%	lump sum			\$ 810.0
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.0
3		Supply & Install 800mm C.S.P. Culvert	m	18	\$ 425.00	\$ 7,650.0
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.0
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	36	\$ 82.50	\$ 2,970.0
		(302.30/112 WILL 10011111 ACF & 30011111 GBC)		\		
					Sub-Total	\$ 11,880.0
					10% Contingencies:	\$ 1,188.0
				8% Ad	lmin & Engineering:	\$ 950.4
					TOTAL:	\$ 14,100.0

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 4A & 5 Approach	W. Side	2738 - D19

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	2.40	%	
Length	9.74	m	

Overall Rating	
12	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

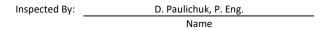
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be blocked or covered on one end. Small culvert that should be larger just to maintain flow and availability for cleaning out. Since this drainage path is along the lake, recommend replacing with 600mm.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2738 - D19

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 500.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 600mm C.S.P. Culvert	m	12	\$	350.00	\$ 4,200.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
Sub-Total \$				\$ 5,500.00			
10% Contingencies: \$			\$ 550.00				
8% Admin & Engineering: \$			\$ 440.00				
						TOTAL:	\$ 6,500.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 2A Approach	W. Side	2739 - D18

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	300	mm	
Slope	0.50	%	
Length	3.96	m	

Overall Rating
6

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.40

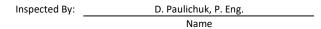
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be in fair to good condition. Small culvert that should be larger just to maintain flow and availability for cleaning out. Since this drainage path is along the lake, recommend replacing with 600mm.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2739 - D18

Item	Spec. No.	Description	Unit	Quantity	U	Init Price	Cost
1		Mobilization - 10%	lump sum				\$ 290.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 600mm C.S.P. Culvert	m	6	\$	350.00	\$ 2,100.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,190.00
					10% Co	ontingencies:	\$ 419.00
				8% A	dmin &	Engineering:	\$ 335.20
						TOTAL:	\$ 5,000.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 1A Approach	W. Side	2739 a

	Shape (Select One)		
	Arch		
Pipe Details:	Circular		
	Elliptical		
	Вох		

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	
Thickness	

Pipe Size		
Span		mm
Rise		mm
Diameter		mm
Slope		%
Length		m

Overall Rating
9

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	

Comments

There is no culvert at this location but appears to need one to avoid drainage flowing over driveway or going into the Lot. Recommend install new 600mm Diameter CSP.





Inspected By:	D. Paulichuk, P. Eng.
•	Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2739a

Item	Spec. No.	Description	Unit	Quantity	Unit P	rico	1	Cost
item	Spec. No.	Description	Onit	Quantity	Unit P	rice		Cost
1		Mobilization - 10%	lump sum		!		\$	430.00
2		Channel Excavation	m3	1	\$	500.00	\$	500.00
3		Supply & Install 600mm C.S.P. Culvert	m	10	\$	350.00	\$	3,500.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1	,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$	-
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
					S	ub-Total	\$	5,730.00
					10% Contin	gencies:	\$	573.00
				8% Ac	dmin & Engi	neering:	\$	458.40
						TOTAL:	\$	6,800.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lift Station Approach	E. Side	2740 - D02

	Shape (Select One)			
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Вох				

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size						
Span		mm				
Rise		mm				
Diameter	600	mm				
Slope	0.60	%				
Length	10.2	m				

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.60

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	5-Year

Comments

Culvert appears to be in good condition but undersized for redirected flow and future development. Small culvert that should be larger just to maintain flow and availability for cleaning out. Part of PROJECT #1 improvements. Recommend to install new 800mm Dia. CSP in parallel.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2740 - D02

Item	Spec. No.	Description	Unit	Quantity	Unit Pric	e	l .	Cost
iteiii	эрсс. но.	Description	Oille	Quantity	O.I.I.C.T.T.C			cost
1		Mobilization - 10%	lump sum				\$	547.50
2		Channel Excavation	m3	1	\$ 50	00.00	\$	500.00
3		Supply & Install 800mm C.S.P. Culvert	m	11	\$ 42	25.00	\$	4,675.00
4		Supply & Install Rip Rap	unit	2	\$ 15	0.00	\$	300.00
5		Light Grading	lump sum	0	\$ 1,00	00.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 8	32.50	\$	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 4	0.00	\$	1,000.00
					Sub	-Total	\$	7,022.50
					10% Continge	ncies:	\$	702.25
				8% Ac	dmin & Engine	ering:	\$	561.80
					TO	OTAL:	\$	8,300.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

September 27, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	48th Avenue	Centreline	2741 - D01

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
·	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.30	%	
Length	23.54	m	

Overall Rating
8

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating	
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Major
Function of size, slope and condition	10-Year



This crossing is for a Major Flow Path for the subdivision in the 48th Street area. The existing 600mm Dia. culvert maybe too small and needs to be lowered by 0.7m at the inlet and 0.5m at the outlet in order to improvement flow upstream. Recommend 2 - 800mm Dia. CSPs since more flow may be directed this way in future. Needs sloped ends with rip rap. Make longer 1m per end. INCLUDED IN PROJECT #1. Replacement is part of PROJECT #1 as a larger improvement project. Sideslopes should be flattened.







Inspected By:

D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2741 - D01

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 2,345.00
2		Channel Excavation	m3	4	\$ 150.00	\$ 600.00
3		Supply & Install 800mm C.S.P. Culvert	m	25	\$ 425.00	\$ 10,625.00
4		Supply & Install 800mm C.S.P. Culvert	m	25	\$ 425.00	\$ 10,625.00
5		Supply & Install Rip Rap	unit	4	\$ 150.00	\$ 600.00
6		Light Grading	lump sum	1	\$ 1,000.00	\$ 1,000.00
7		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	48	\$ 82.50	\$ 3,960.00
					Sub-Total	\$ 29,755.00
					10% Contingencies:	\$ 2,975.50
				8% Ad	min & Engineering:	\$ 2,380.40
					TOTAL:	\$ 35,200.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lot 7 & 8	E. Side	2742 - D20

	Shape (Select One)	
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Вох	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	3.10	%		
Length	8.07	m		

Overall Rating	
6	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	
Recent signs of high water No	
Amount of Cover (m)	1.00

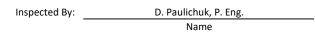
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion No	
Sideslopes too Steep Yes	
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be in fair to good condition but undersized. When time to be replaced, replace with 500mm Dia. CSP with sloped ends with rip rap.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2742 - D20

Item	Spec. No.	Description	Unit	Quantity	Ur	nit Price	Cost
1		Mobilization - 10%	lump sum				\$ 410.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$	300.00	\$ 3,300.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,510.00
					10% Coi	ntingencies:	\$ 551.00
				8% Ac	dmin & E	Engineering:	\$ 440.80
						TOTAL:	\$ 6,600.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lots 2 & 3	E. Side	2743 - C04

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	3.10	%		
Length	8.07	m		

Overall Rating
6

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

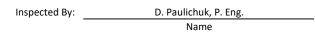
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	Yes
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be in fair to good condition but undersized. When time to be replaced, replace with 500mm Dia. CSP with sloped ends with rip rap.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2743 - C04

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 410.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	11	\$ 300.00	\$ 3,300.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 5,510.00
					10% Contingencies:	\$ 551.00
				8% A	dmin & Engineering:	\$ 440.80
					TOTAL	\$ 6,600.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 1, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Sunset Drive	Lots 1 & 2	E. Side	2744 - C03

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material	(Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	2.00	%	
Length	8.41	m	

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

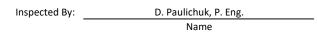
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert appears to be in fair to good condition but undersized. When time to be replaced, replace with 500mm Dia. CSP with sloped ends with rip rap.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2744 - C03

Item	Spec. No.	Description	Unit	Quantity	Τ.	Jnit Price	Price Cost	
	· · · · · · · · · · · · · · · · · · ·			,				
1		Mobilization - 10%	lump sum				\$	380.00
2		Channel Excavation	m3	1	\$	500.00	\$	500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$	3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
						Sub-Total	\$	5,180.00
					10% C	ontingencies:	\$	518.00
8% Admin & Engineering:							\$	414.40
						TOTAL:	\$	6,200.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



54th Avenue and 49th Street Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Response

No No

No

0.30

None

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

Roadway Over Pipe

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD S.V. of Sunset Point		Road Nam	e/No.	Station Number	Station Number		ent	(Culvert No./Name		
Locationi			49th Street Cul-de-Sac		Lot 21		Approach, N. Side			2620 - H25		
	Shape (Select One)		Shape (Select One) Material (Select One)						Pipe Size		1 1	Overall Rating
	Arch		Aluminum			Span		mm	1 1			
Pipe Details:	Circular	√	Concrete			Rise		mm	1 1			
	Elliptical		Plastic			Diameter	400	mm	1 1			
	Вох		Steel	✓		Slope	0.1	%	1 1)		
			Thickness	1.6mm		Length	7.49	m				

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Some

Pavement Cracks or Patches

Sag in Roadway Recent signs of high water

Rip Rap

Amount of Cover (m)

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments

Culvert is in good condition. Culvert needs sloped ends.
Recommend once this culvert has aged and reached its design life,
replace with one 500mm diameter culvert. Ensure more slope in
culvert.

Inspected By: D. Paulichuk, P. Eng.

Name

Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2620 - H25

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 315.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	0	\$ 500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$ 800.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$ -
					Sub-Total	\$ 4,265.00

10% Contingencies: \$ 426.50

8% Admin & Engineering: \$ 341.20

TOTAL: \$ 5,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

No No

No

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD S.V. of Sunset Point				Station Number Lot 20		Alignm	ent	Culvert No./Name	
Location							Approach, I	NW. Side		2621 - H24
Shape (Select One)		Material (Select One)			Pipe Size		i 1	Overall Rating	
	Arch		Aluminum			Span		mm		
Pipe Details:	Circular	√	Concrete			Rise		mm		Λ
	Elliptical		Plastic			Diameter	400	mm		4
	Вох		Steel	✓		Slope	-0.5	%		•
			Thickness	1.6mm		Length	7.42	m	_	
Postdway Over Dine					and Const	9.00				

Amount of Cover (m)	0.30
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No

Pavement Cracks or Patches

Sag in Roadway Recent signs of high water

Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year





Culvert is in good condition. Culvert needs sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

D. Paulichuk, P. Eng. Inspected By:

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020

Culvert: 2621 - H24

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 315.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	0	\$ 500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$ 800.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$ -
					Sub-Total	\$ 4,265.00

.

244.20

8% Admin & Engineering: \$ 341.20

10% Contingencies: \$

TOTAL: \$ 5,100.00

426.50

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD		Road Nam	e/No.	Station Number		Alignment		9	Culvert No./Name
Locationi	S.V. of S	unset Point	49th Street Co	ul-de-Sac	Lot 19		Approach, V	V. Side		2622 - H20
	Shape (Select One)	Material (Select One)			Pipe Size		1 1	Overall Rating
	Arch		Aluminum			Span		mm	1 1	
Pipe Details:	Circular	√	Concrete			Rise		mm	1 1	1
	Elliptical		Plastic			Diameter	400	mm		
	Вох		Steel	✓		Slope	1.8	%		
			Thickness	1.6mm		Length	7.93	m		

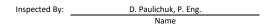
Noadway Over Fipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
Blockage		No
Submerge	d in Water	No
Inlet Dama	ge	No
Outlet dan	nage	No
Corrosion	/ Abrasion	No
Out of Rou	nd	No
Settlemen	t	No
Sag / Bow		No
Infiltration		No
Piping		No
Cracking		No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Culvert is in good condition. Culvert needs sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert. Culvert slope should be checked to ensure drainage flows to drainage path.







Culvert Improvement Cost Estimate

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2622 - H20

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 315.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	0	\$	500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	20	\$	40.00	\$ 800.00
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 4,265.00
						10% Contingencies:	\$ 426.50
					8% Ac	min & Engineering:	\$ 341.20
						TOTAL:	\$ 5,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 18	Approach, SW. Side	2623 - H21
-					

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	√		
	Elliptical			
	Box			

Material (Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size					
Span mm					
Rise		mm			
Diameter	400	mm			
Slope	2.7	%			
Length	12.29	m			

Overall Rating	
3	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
Blockage		No
Submerg	ed in Water	No
Inlet Dam	nage	No
Outlet da	ımage	No
Corrosion	n / Abrasion	No
Out of Ro	ound	No
Settleme	nt	No
Sag / Bov	v	No
Infiltratio	n	No
Piping		No
Cracking		No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in good condition. Homemade opening between culverts should be replaced with proper catchbasin or drop inlet. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2623 - H21

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 420.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	13	\$ 300.00	\$ 3,900.00
5		Supply & Install Rip Rap	unit	1	\$ 150.00	\$ 150.00
6		Light Grading	lump sum	0	\$ 500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$ 800.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$ -
					Sub-Total	\$ 5,420.00

8% Admin & Engineering: \$ 433.60

10% Contingencies: \$

TOTAL: \$ 6,400.00

542.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 17	Approach, S. Side	2624 - H22

	Shape (S	Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	3.2	%	
Length	7.57	m	

Overall Rating
5

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

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Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert is in good condition. Inlet is near blocked and needs maintenance. Homemade opening between culverts should be replaced with proper catchbasin or drop inlet. Culvert needs sloped end on inlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Name



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2624 - H22

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 320.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
5		Supply & Install Rip Rap	unit	1	\$ 150.00	\$ 150.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
10		Small Catchbasin/Drop Inlet	lump sum	1	\$ 2,500.00	\$ 2,500.00
					Sub-Total	\$ 7,020.00
					10% Contingencies:	\$ 702.00

TOTAL: \$ 8,300.00

561.60

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Thickness

Phone: 780-594-5380 Fax: 780-594-4486

1.6mm

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/Co	City/County/MD Road Name/No. Station Number		Alignment			ulvert No./Name			
2000.0	S.V. of Sunset Point		49th St	reet	Lot 16 & 17		Approach,	S. Side		2625 - H23
	Shape (Select One)	Material	(Select One)	1		Pipe Size			Overall Rating
	Arch		Aluminum		1	Span		mm		
Pipe Details:	Circular	√	Concrete			Rise		mm		7
	Elliptical		Plastic			Diameter	300	mm		/ /
				/	I				1 1	•

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

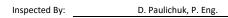
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in good condition. Inlet and outlet are near blocked and needs maintenance. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2625 - H23

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		•		\$ 335.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,685.00

10% Contingencies: \$ 468.50

8% Admin & Engineering: \$ 374.80

TOTAL: \$ 5,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Thickness

Phone: 780-594-5380 Fax: 780-594-4486

1.6mm

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD		Road Nam	ne/No.	Station Number		Alignment			Culvert No./Name
	S.V. of Sunset Point		49th St	reet	Lot 16		Approach, S. Side			2626 - H30
	Shape (Select One)	Material	(Select One)			Pipe Size		Ī	Overall Rating
	Arch		Aluminum			Span		mm		
Pipe Details:	Circular	√	Concrete			Rise		mm		7
	Elliptical		Plastic			Diameter	400	mm		/ /
	Вох		Steel	✓		Slope	0.4	%		•

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	Yes
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in good condition. Inlet is near blocked and needs maintenance. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2626 - H30

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum	I		\$ 395.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 5,345.00

10% Contingencies: \$ 534.50

8% Admin & Engineering: \$ 427.60

TOTAL: \$ 6,400.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/Co	ounty/MD	Road Nam	e/No.	Station Number		Alignment			Culvert No./Name
S.V. of Sunset Point		49th Street Co	49th Street Cul-de-Sac		Lot 22		Approach, N. Side		2627 - 124	
	Shape (Select One)	Material ((Select One)			Pipe Size		1 [Overall Rating
	Arch		Aluminum			Span		mm	1 1	
Pipe Details	: Circular	✓	Concrete			Rise		mm	1 1	
	Elliptical		Plastic			Diameter	400	mm	1 1	. .
	Вох		Steel	✓		Slope	2.00	%	1 1	
			Thickness	1.6mm		Length	7.4	m	•	

Rodding Over Tipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50
Inlet / Outlet Protection	Pating

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Some
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	Partial
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert is in good condition. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.









Culvert Improvement
Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2627 - I24

Item	Spec. No.	Description	Unit	Quantity	Unit Price		Cost
		<u> </u>					
1		Mobilization - 10%	lump sum			\$	315.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$	-
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$	2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
6		Light Grading	lump sum	0	\$ 500.00	\$	-
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$	-
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$	800.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$	-
					Sub-Total	\$	4,265.00
					10% Contingencies:	\$	426.50

TOTAL: \$ 5,100.00

341.20

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Plastic

No

0.00

1.6mm

Date:

November 8, 2019

PROJECT NAME:

Elliptical

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

	Location:	City/Co	//County/MD		ad Name/No.	Station Number Alignmen		gnment	C	Culvert No./Name	
l	2000.0	S.V. of S	unset Point	49th St	treet Cul-de-Sac	Multi-Use Trai	Multi-Use Trail		Approach, N. Side		2628 - 124
ſ		Shape (Select One)		Shape (Select One) Material (Select One)			Pipe Size		ze		Overall Rating
ı		Arch		Alumi	inum		Span		mm	ľ	
ı	Pipe Details:	Circular	√	Concr	rete		Rise		mm		2

2011	otee.
	Thickness
Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No

Recent signs of high water

Amount of Cover (m)

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Culvert is in good condition. Culvert needs sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.



Rise Diameter mm Slope 4.90









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2628 - I20

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 195.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	5	\$ 300.00	\$ 1,500.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	0	\$ 500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	0	\$ 40.00	\$ -
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$ -
					Sub-Total	\$ 2,145.00

Sub-Total \$ 2,145.00

10% Contingencies: \$ 214.50

8% Admin & Engineering: \$ 171.60

TOTAL: \$ 2,600.00

Date:

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location: City/County/MD S.V. of Sunset Point		Road Name	e/No.	Station Number		Alignment Approach, NE. Side			Culvert No./Name	
		49th Street Cu	ıl-de-Sac	Lot 23	Д				2629 - I21	
	Shape	(Select One)	Material (Select One)	ı <u> </u>	Р	ipe Size		1	Overall Rating
	Arch		Aluminum		Span			mm	1	
Pipe Details:	Circular	√	Concrete		Rise			mm	1	
	Elliptical		Plastic		Diame	eter	400	mm		
	Вох		Steel	✓	Slope		2.00	%		
			Thickness	1.6mm	Length	า	7.4	m		
Roadway Ove	er Pipe		Response		200	1	- 李			
	Pavement Cr	acks or Patches	No		4	100				
Sag in Roadway		No								
Recent signs of high water			No							
	Amount of C	over (m)	0.35							

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

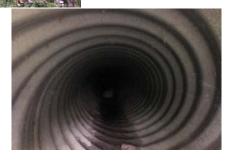
Pipe Barrel	Rating
Blockage	???
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Cannot see through. Maybe be blocked. Culvert is in good condition. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.







Culvert Improvement Cost Estimate

713 LAKESHORE DRIV COLD LAKE, ALBERTA Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2629 - I21

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 315.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	0	\$	500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	0	\$	40.00	\$ -
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 3,465.00
						10% Contingencies:	\$ 346.50
					8% Ac	lmin & Engineering:	\$ 277.20
						TOTAL:	\$ 4,100.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4

Thickness

Phone: 780-594-5380 Fax: 780-594-4486

1.6mm

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

	Location:	City/County/MD		Road Name/No.		Station Number		Alignment		(Culvert No./Name
		S.V. of S	unset Point	49th Street C	ul-de-Sac	Lot 24		Approach,	E. Side		2630 - I22
ı		Shape (Select One)	Material	(Select One)			Pipe Size		Ī	Overall Rating
		Arch		Aluminum			Span		mm		
	Pipe Details:	Circular	✓	Concrete			Rise		mm		2
		Elliptical		Plastic			Diameter	400	mm		5
		Box		Steel	✓		Slope	2.30	%		

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

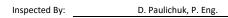
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert is in fair condition. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2630 - I22

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum		1		\$ 315.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	0	\$	500.00	\$ -
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 4,465.00

10% Contingencies: \$ 446.50

8% Admin & Engineering: \$ 357.20

TOTAL: \$ 5,300.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD		Road Nam	e/No.	Station Number		Alignment			Culvert No./Name	
2000010111	S.V. of S	unset Point	49th Street Co	ul-de-Sac	Lot 25		Approach,	E. Side		2631 - I23	
	Shape (S	Select One)	Material (Select One)			Pipe Size			Overall Rating	
	Arch		Aluminum			Span		mm			
Pipe Details:	Circular	✓	Concrete			Rise		mm		1	
	Elliptical		Plastic			Diameter	400	mm		4	
	Box		Steel	✓		Slope	1.40	%		•	
			Thickness	1.6mm		Length	7.39	m	-		

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.40

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	Partial
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert is in fair condition. Inlet and Outlet areas need to be cleared out so water flows better and does not sit inside culvert. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.







Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2631 - I23

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cos	st
1		Mobilization - 10%	lump sum			\$	315.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$	-
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$	2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
6		Light Grading	lump sum	0	\$ 500.00	\$	-
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$	-
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$	1,000.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$	-
					Sub-Total	\$	4,465.00
					10% Contingencies:	\$	446.50

TOTAL: \$ 5,300.00

357.20

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Plastic

Steel

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

1.6mm

Date:

mm

0.30

November 8, 2019

PROJECT NAME:

Elliptical

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	49 Street	Lot 27	Approach, E. Side	2632 - H31	
Shape (Select One)		Material (Select One)		Pipe Size	Overall Rating	
	Arch	Aluminum	Span	mm		
Pipe Details:	Circular 🗸	Concrete	Rise	mm		

	Thickness
Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.00

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

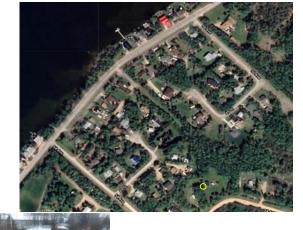
Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments

Culvert is in fair to good condition. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.





Diameter

Slope





Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2619 - I11

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 365.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
10		Small Catchbasin/Drop Inlet	lump sum		\$ 2,500.00	\$ -
					Sub-Total	\$ 5,015.00
					10% Contingencies:	\$ 501.50

TOTAL: \$ 6,000.00

401.20

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Thickness

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.c

1.6mm

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD		Road Name/No.		Station Number		Alignment			Culvert No./Name		
2000	S.V. of S	unset Point	49	h Street		Lot 15		Арр	roach, I	N. Side		2633 - H29
	Shape (Select One)		lect One) Material (Select One)			Pipe Size				Overall Rating		
	Arch		Alumini	m			Span			mm		
Pipe Details:	Circular	√	Concret	e			Rise			mm		Λ
	Elliptical		Plastic				Diameter		400	mm		4 1
	Box		Steel	✓			Slope		2.3	%		•

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Name



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2633 - H29

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 335.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 4,685.00

TOTAL: \$ 5,600.00

468.50

374.80

10% Contingencies: \$

8% Admin & Engineering: \$

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Plastic

Steel

Thickness

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

1.6mm

Date:

1.4

November 8, 2019

PROJECT NAME:

Elliptical

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Diameter

Slope

Length

	Location:	City/County/MD		Road Name/No.		Station Number	Alignment			Culvert No./Name	
		S.V. of S	unset Point	54th Aver	nue	Lots 12 & 13		Approach	, N. Side		2636 - H27
I		Shape (Select One)	Material (S	elect One)			Pipe Size			Overall Rating
		Arch		Aluminum			Span		mm		
	Pine Details:	Circular	✓	Concrete			Rise		mm		a

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Yes

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year





Comments

Culvert is in good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Er

Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2636 - H27

Item	Spec. No.	Description	Unit	Quantity	Unit Price	C	ost
1	1	Mobilization - 10%	lump sum			\$	335.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$	-
4		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$	2,400.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
6		Light Grading	lump sum	1	\$ 500.00	\$	500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$	-
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$	1,000.00

Sub-Total \$ 4,685.00

10% Contingencies: \$ 468.50

8% Admin & Engineering: \$ 374.80

TOTAL: \$ 5,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	54th Avenue	Back Lane	Approach, N. Side	2636a - H27a

	Shape (Select One)		
	Arch		
Pipe Details:	Circular		
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel		
Thickness		

Pipe Size		
Span	mm	
Rise	mm	
Diameter	mm	
Slope	%	
Length	m	

Overall Rating	
10	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

There is no culvert at this location which is downhill of two lot approaches that have culverts. Recommend to install a 500mm Dia. CSP at this location.





Inspected By:	D. Paulichuk, P. Eng
	Name

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 2637 - H28 Culvert:

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 395.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	10	\$ 300.00	\$ 3,000.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	20	\$ 40.00	\$ 800.00
					Sub-Total	\$ 5,145.00

10% Contingencies: \$ 514.50

8% Admin & Engineering: \$ 411.60

> TOTAL: \$ 6,100.00

713 LAKESHORE DRIV COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

	Location:	City/County/MD				e/No.	Station Number	Alignment			Culvert No./Name	
	Locationi	S.V. of S	unset Point	54th Ave	enue	Lot 14		Approach,	N. Side		2637 - H28	
I		Shape (Select One)			(Select One)			Pipe Size			Overall Rating	
		Arch		Aluminum			Span		mm			
	Pipe Details:	Circular	√	Concrete			Rise		mm			
		Elliptical		Plastic			Diameter	400	mm			
		Box		Steel	✓		Slope	3.9	%			
			_	Thickness	1.6mm		Length	7.47	m			

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

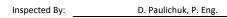
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating			
Flow Path Type	Minor			
Function of size, slope and condition	100 Year			

Comments

Culvert is in good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2637 - H28

Item	Spec. No.	Description	Unit Quantity Unit Price		Cost		
1		Mobilization - 10%	lump sum			\$	365.00
2		Channel Excavation	m3	1	\$ 150.00	\$	150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$	-
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$	2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$	300.00
6		Light Grading	lump sum	1	\$ 500.00	\$	500.00
7		Re-Grade Ditch	lump sum	0	\$ 2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	25	\$ 82.50	\$	2,062.50
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$ 40.00	\$	-
					Sub-Total	\$	6,077.50

10% Contingencies: \$ 607.75

8% Admin & Engineering: \$ 486.20

TOTAL: \$ 7,200.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



56th Avenue and 49th Street Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Parallel to 56th Ave.	N. Side Ditch	2604 - 102

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	√			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	1.00	%		
Length	109.81	m		

Overall Rating
9

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	No
	Corrosion / Abrasion	Yes
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	5-Year





Commonto

Culvert is in fair condition but small in size. INCLUDED IN PROJECT #3. Project # 3 indicates replacing this culvert with an 800mm Dia. CSP with sloped ends.

Inspected By:

D. Paulichuk, P. Eng.



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2605- 103

	Constant	Dinki	11-24	0	I	Hait Daine	C
Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 550.00
2		Channel Excavation	m3		\$	2,000.00	\$ -
3		Remove & Salvage 400mm C.S.P. Culvert	m	110	\$	50.00	\$ 5,500.00
4		Supply & Install 800mm C.S.P. Culvert	m		\$	425.00	\$ -
5		Supply & Install Rip Rap	unit		\$	150.00	\$ -
6		Light Grading	lump sum		\$	500.00	\$ -
7		Re-Grade Ditch	lump sum		\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 6,050.00
					:	10% Contingencies:	\$ 605.00
					8% Ad	min & Engineering:	\$ 484.00

TOTAL: \$ 7,200.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Parallel to 56th Ave.	N. Side Ditch	2605 - 103

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.80	%		
Length	105.08	m		

Overall Rating	
9	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	5-Year





Culvert is in fair condition but small in size. INCLUDED IN PROJECT #3. Proiect # 3 indicates replacing this culvert with an 800mm Dia. CSP with sloped ends.

Inspected By: D. Paulichuk, P. Eng.



Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2605- 103

Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1	1	Mobilization - 10%	lump sum		'		\$	5,485.00
2		Channel Excavation	m3	1	\$	2,000.00	\$	2,000.00
3		Remove & Salvage 400mm C.S.P. Culvert	m	106	\$	50.00	\$	5,300.00
4		Supply & Install 800mm C.S.P. Culvert	m	110	\$	425.00	\$	46,750.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
6		Light Grading	lump sum	1	\$	500.00	\$	500.00
7		Re-Grade Ditch	lump sum	1	\$	2,000.00	\$	2,000.00
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$	-
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2		\$	40.00	\$	-
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$	-
						Sub-Total	\$	62,335.00
						10% Contingencies:	\$	6,233.50
					8% Ad	lmin & Engineering:	\$	4,986.80
						TOTAL:	ė	73,600.00
						IOTAL	ş	75,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	N. of Lot 21	Centerline	2606 - 104

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	600	mm		
Slope	2.60	%		
Length	14.18	m		

8	Overall Rating
	8

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

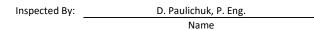
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	Yes
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	100-Year

Comments

Culvert is in good condition. Water marks inside culvert indicates that flow is very low and not a large concern. Need to review sizing if development occurs upstream. Culvert needs sloped end on outlet side. Recommend once this culvert has aged and reached its design life, replace with one 800mm diameter culvert. INCLUDED IN PROJECT #3. Project #3 indicates leaving this culvert in place, just add sloped ends. New culvert to be placed in parallel.











Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2606- 104

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Item	Spec. No.	Description	Unit	Quantity		Unit Price		Cost
1		Mobilization - 10%	lump sum		-		\$	220.00
2		Channel Excavation	m3		\$	150.00	\$	-
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$	-
4		Supply & Install 600mm C.S.P. Culvert	m	4	\$	350.00	\$	1,400.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
6		Light Grading	lump sum	1	\$	500.00	\$	500.00
7		Re-Grade Ditch	lump sum		\$	2,000.00	\$	-
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$	-
9		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2		\$	40.00	\$	-
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$	-
						Sub-Total	\$	2,420.00
						10% Contingencies:	\$	242.00
					8% Ad	min & Engineering:	\$	193.60
						TOTAL:	¢	2,900.00
						IOTAL:	Ģ	2,900.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Backlane	Approach, S. Side	2607 - I13

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	3.3	%		
Length	7.01	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Yes

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 600mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.







Culvert Improvement Cost Estimate

TOTAL: \$

6,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2607 - H13

	I						
Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum		-1		\$ 410.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 600mm C.S.P. Culvert	m	9	\$	350.00	\$ 3,150.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,510.00
					:	10% Contingencies:	\$ 551.00
					8% Ad	min & Engineering:	\$ 440.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Lot 7	Approach, S. Side	2608 - I14

	Shape (Select One)	
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material	Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thistoness	1 (

Pipe Size			
Span		mm	
Rise		mm	
Diameter	600	mm	
Slope	1.2	%	
Length	7.67	m	

Overall Rating
3

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.75

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Yes

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 600mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.







Culvert Improvement Cost Estimate

TOTAL: \$

6,600.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2608 - I14

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 410.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 600mm C.S.P. Culvert	m	9	\$	350.00	\$ 3,150.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,510.00
					:	10% Contingencies:	\$ 551.00
					8% Ad	min & Engineering:	\$ 440.80

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Lot 8	Approach, S. Side	2609 - I15

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material	Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.6	%	
Length	7.57	m	

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.55

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Yes

4	
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) a
	St.

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2609 - I15

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum	l			\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ac	dmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	Lot 9	Approach, S. Side	2610 - I16

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)						
Aluminum						
Concrete						
Plastic						
Steel	✓					
Thickness	1.6mm					

Pipe Size					
Span		mm			
Rise		mm			
Diameter	400	mm			
Slope	0.5	%			
Length	7.59	m			

Overall Rating
4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.70

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	Yes

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Comments

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2610 - I16

				1			
Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ac	lmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	56th Avenue	N. of Lot 21	S. Ditch of Turnaround	2611 - 105

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1 6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	500	mm	
Slope	1.20	%	
Length	8.3	m	

Overall Rating	
8	_

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

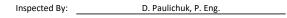
Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	Yes
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	MAJOR
Function of size, slope and condition	5-Year

Comments

Culvert is in fair to good condition. Water marks inside culvert indicates that flow goes only 1/3 up, so capacity not a large concern. Need to review sizing if development occurs upstream. Culvert needs sloped end on outlet side. INCLUDED IN PROJECT #3. Proiect # 3 indicates replacing this culvert. Consideration should be to leave in place, just add sloped ends. New culvert to be placed in parallel.







713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2611- 105

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 265.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 800mm C.S.P. Culvert	m	4	\$	425.00	\$ 1,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	1	\$	2,000.00	\$ 2,000.00
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2		\$	40.00	\$ -
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 4,915.00
						10% Contingencies:	\$ 491.50
				:	8% Ac	min & Engineering:	\$ 393.20
						TOTAL:	\$ 5,800.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street	Lot 21	Approach, SE. Side	2612 - I18

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	1.9	%		
Length	7.49	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet No	
Embankment Erosion	No
Sideslopes too Steep No	
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Yes

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.







Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2612 - I18

			T .	1			
Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ac	lmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street	Lot 20	Approach, SE. Side	2612b

	Shape (Select One)	
	Arch	
Pipe Details:	Circular	
	Elliptical	
	Box	

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel		
Thickness		

Pip	Pipe Size				
Span	mm				
Rise	mm				
Diameter	mm				
Slope	%				
Length	m				

Overall Rating
7
/

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	No

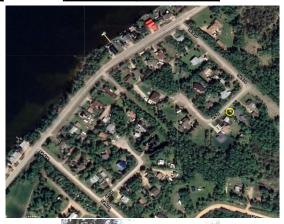
Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

No culvert at this approach to the lot. Drainage appears to flow through and over driveway and head toward buildings. Recommend that a 500mm Dia. CSP with sloped ends be installed under the approach to ensure drainage head down along the ditch to the north.

Inspected By: D. Paulichuk, P. Eng.





Culvert Improvement Cost Estimate

TOTAL: \$

7,100.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2612b

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	!	Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	1	\$	1,000.00	\$ 1,000.00
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 6,015.00
						10% Contingencies:	\$ 601.50
					8% Ad	min & Engineering:	\$ 481.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street	Lot 10	Approach, W. Side	2613 - I17

	Shape (Select One)
	Arch	
Pipe Details:	Circular	✓
	Elliptical	
	Box	

Material	Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	1.9	%	
Length	7.25	m	

Overall Rating
5

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.30

Inlet / Outlet Protection	Rating	
Channel scour at Inlet/Outlet	No	
Embankment Erosion	No	
Sideslopes too Steep	No	
Drift - wood, debris around pipe	No	
Vegetation - trees, brush etc.	No	
Silt	Yes	
Rip Rap	Yes	

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year

Comments

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.





Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2613 - I17

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum		1		\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
				;	8% Ac	dmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
2000010111	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 16	Approach, S. Side	2614 - I19

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size			
Span		mm	
Rise		mm	
Diameter	400	mm	
Slope	2.9	%	
Length	7.00	m	

Overall Rating
4

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Yes

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year





Comment

Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

nspected By:	D. Paulichuk,	P. En	g.

Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2614 - I19

Item	Spec. No.	Description	Unit	Quantity	1	Unit Price	Cost
		·		,			
1		Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6	Light Grading		lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ad	lmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 15/16	Approach, S. Side	2614b

Pipe Details:	Shape (Select One)		
	Arch		
	Circular		
	Elliptical		
	Вох		

(Select One)

Pipe Size				
Span	mm			
Rise	mm			
Diameter	mm			
Slope	%			
Length	m			

Overall Rating
7

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	No

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Commonto

No culvert at this approach to the lot. Drainage appears to not flow past this point. Recommend that a 500mm Dia. CSP with sloped ends be installed under the approach to ensure drainage head down along the ditch to the west.

Inspected By:	D. Paulichuk, P. Eng.

Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2614b

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
1		Mobilization - 10%	lump sum			\$ 365.00
2		Channel Excavation	m3	1	\$ 150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$ 100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$ 300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
6		Light Grading	lump sum	1	\$ 500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	1	\$ 1,000.00	\$ 1,000.00
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$ 82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	
					Sub-Total	\$ 5,015.00

10% Contingencies: \$ 501.50

8% Admin & Engineering: \$ 401.20

> TOTAL: \$ 6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 15	Approach, S. Side	2615 - I10

	Shape (Select One)				
	Arch				
Pipe Details:	Circular	✓			
	Elliptical				
	Box				

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size						
Span		mm				
Rise		mm				
Diameter	200	mm				
Slope	5.5	%				
Length	6.14	m				

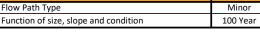
Overall Rating						
7						
/						

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	Yes

Pipe Barrel		Rating
	Blockage	Partial
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Can't see fully through culvert. Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.

Inspected By: D. Paulichuk, P. Eng.





Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2615 - I10

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	1	Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ac	lmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	49th Street Cul-de-Sac	Lot 14	Approach, SW. Side	2616 - 109

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	7.1	%		
Length	7.58	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.50

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	Yes
Silt	No
Rip Rap	Yes

Pipe Barrel		Rating
	Blockage	Partial
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100 Year



Can't see fully through culvert. Culvert is in fair to good condition. Culverts need sloped ends. Recommend once this culvert has aged and reached its design life, replace with one 500mm diameter culvert.







Culvert Improvement Cost Estimate

TOTAL: \$

6,000.00

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2616 - 109

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 365.00
2		Channel Excavation	m3	1	\$	150.00	\$ 150.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum	0	\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2	0	\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 5,015.00
						10% Contingencies:	\$ 501.50
					8% Ac	lmin & Engineering:	\$ 401.20

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 8, 2019

PROJECT NAME:

2020 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Back Lane	Between Service Rd. & Cul-de-Sac	Centerline	2618 - I08

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	400	mm		
Slope	0.50	%		
Length	7.73	m		

Roadway Over Pipe	Response
Pavement Cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	1.20

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	Yes
Vegetation - trees, brush etc.	Yes
Silt	Yes
Rip Rap	None

Pipe Barrel		Rating
	Blockage	Yes
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	Yes
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	Inadequate





Culvert is in poor condition, is too small and appears to be partially blocked. Need to clean out trees and heavy grass at inlet and outlet. Culvert needs sloped end on outlet side. Recommend to replace with 600mm diameter culvert.





Inspected By: D. Paulichuk, P. Eng.

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Culvert Improvement Cost Estimate

Date: February 15, 2020 Culvert: 2618 - 108

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1		Mobilization - 10%	lump sum				\$ 545.00
2		Channel Excavation	m3	1	\$	1,500.00	\$ 1,500.00
3		Remove & Salvage 500mm C.S.P. Culvert	m		\$	100.00	\$ -
4		Supply & Install 600mm C.S.P. Culvert	m	9	\$	350.00	\$ 3,150.00
5		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
6		Light Grading	lump sum	1	\$	500.00	\$ 500.00
7		Re-Grade Ditch	lump sum		\$	2,000.00	\$ -
8		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
9		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	30	\$	40.00	\$ 1,200.00
10		Small Catchbasin/Drop Inlet	lump sum		\$	2,500.00	\$ -
						Sub-Total	\$ 7,195.00
					:	10% Contingencies:	\$ 719.50
					8% Ad	min & Engineering:	\$ 575.60
						TOTAL:	\$ 8,500.00

EXISTING INFRASTRUCTURE REVIEW SUMMER VILLAGE OF SUNSET POINT FEBRUARY 2020



Boundary Road Culvert Inspection Reports

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No. Station Number	Alignment	Culvert No./Name	
	S.V. of Sunset Point	Boundary Road	Backlane	N. Side	2226 - A19

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.50	%		
Length	10.1	m		

Overall Rating
9

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.20

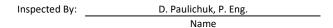
Inlet / Outlet Protection	Rating		
Channel scour at Inlet/Outlet	No		
Embankment Erosion	No		
Sideslopes too Steep	No		
Drift - wood, debris around pipe	No		
Vegetation - trees, brush etc.	No		
Silt	Yes		
Rip Rap	None		

Pipe Barrel	Rating
Blockage	????
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	Yes
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating		
Flow Path Type	Minor		
Function of size, slope and condition	5-Year		

Comments

Culvert appears to be in fair to good condition. Small culvert that should be larger just to maintain flow and availability for cleaning out. Recommend when comes time for replacement, replace with 500mm Dia. CSP with sloped ends and rip rap. Check slope in culvert.









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2226 - A19

Item	Spec. No.	Description	Unit	Quantity		Unit Price	Cost
1	I	Mobilization - 10%	lump sum				\$ 380.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	10	\$	300.00	\$ 3,000.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
Sub-Tota			\$ 5,180.00				
	10% Contingencies:			\$ 518.00			
	8% Admin & Engineering					& Engineering:	\$ 414.40
TOTAL					TOTAL:	\$ 6,200.00	

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 8 Approach	N. Side	2227 - A18

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)				
Aluminum				
Concrete				
Plastic				
Steel	✓			
Thickness	1.6mm			

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.80	%		
Length	6.03	m		

Overall Rating
5

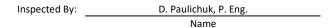
Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.40

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	Yes
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	10-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2227 - A18

Item	Spec. No.	Description	Unit	Quantity	Т.	Unit Price		Cost
	open no.	2001.p.10.1	J	Quarterly				
1		Mobilization - 10%	lump sum		•		\$	320.00
2		Channel Excavation	m3	1	\$	500.00	\$	500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$	2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$	300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$	-
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$	-
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$	1,000.00
						Sub-Total	\$	4,520.00
					10% (Contingencies:	\$	452.00
				8% <i>F</i>	Admin 8	& Engineering:	\$	361.60
						TOTAL:	Ś	5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 7 Approach	N. Side	2228 - A17

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Box		

Material (Select One)		
Aluminum		
Concrete		
Plastic		
Steel	✓	
Thickness	1.6mm	

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	6.10	%		
Length	7.94	m		

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.40

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2228 - A17

Item	Spec. No.	Description	Unit	Quantity	U	nit Price	Cost
1		Mobilization - 10%	lump sum				\$ 350.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	9	\$	300.00	\$ 2,700.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,850.00
					10% Co	ontingencies:	\$ 485.00
				8% A	dmin &	Engineering:	\$ 388.00
						TOTAL:	\$ 5,800.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 6 Approach	N. Side	2232 - A16

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	1.60	%		
Length	6.31	m		

Overall Rating	
7	

Roadway Over Pipe	Response	
Pavement cracks or Patches	No	
Sag in Roadway	No	
Recent signs of high water	No	
Amount of Cover (m)	0.35	

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	Yes
	Outlet damage	Yes
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	5-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2232 - A16

lta.m.	Spec. No.	Description	Unit	Oversity	T	nit Price	Cost
Item	Spec. No.	Description	Unit	Quantity	"	nit Price	Cost
1		Mobilization - 10%	lump sum		_		\$ 320.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,520.00
					10% Co	ontingencies:	\$ 452.00
8% Admin & Engineering:					\$ 361.60		
						TOTAL:	\$ 5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 5 Approach	N. Side	2233 - A15

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	2.10	%		
Length	6.22	m		

Overall Rating	
5	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	Yes
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	10-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2233 - A15

Item	Spec. No.	Description	Unit	Quantity		nit Price	Cost
item	Spec. No.	Description	Oilit	Qualitity	"	ilit Frice	COST
1		Mobilization - 10%	lump sum		!		\$ 320.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,520.00
					10% Cc	ontingencies:	\$ 452.00
				8% Ac	dmin &	Engineering:	\$ 361.60
						TOTAL:	\$ 5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 4 Approach	N. Side	2234 - A14

	Shape (Select One)		
	Arch		
Pipe Details:	Circular	✓	
	Elliptical		
	Вох		

Material (Select One)			
Aluminum			
Concrete			
Plastic			
Steel	✓		
Thickness	1.6mm		

Pipe Size			
Span		mm	
Rise		mm	
Diameter	300	mm	
Slope	1.90	%	
Length	6.3	m	

Overall Rating	
4	

Roadway Over Pipe	Response
Pavement cracks or Patches	No
Sag in Roadway	No
Recent signs of high water	No
Amount of Cover (m)	0.35

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	10-Year

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2234 - A14

Itom	Spec. No.	Description	Unit	Quantity	Unit Price	 Cost
Item	Spec. No.	Description	Unit	Quantity	Unit Price	COST
1	Į.	Mobilization - 10%	lump sum		!	\$ 320.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 4,520.00
					10% Contingencies:	\$ 452.00
8% Admin & Engineering:			\$ 361.60			
					TOTAL	\$ 5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 1A Approach	N. Side	2239 - A12

	Shape (Select One)		
Pipe Details:	Arch		
	Circular	✓	
	Elliptical		
	Box		

Material	Select One)
Aluminum	
Concrete	
Plastic	
Steel	✓
Thickness	1.6mm

Pipe Size				
Span		mm		
Rise		mm		
Diameter	300	mm		
Slope	1.60	%		
Length	6.43	m		

Overall Rating	
3	

Roadway Over Pipe	Response		
Pavement cracks or Patches	No		
Sag in Roadway	No		
Recent signs of high water	No		
Amount of Cover (m)	0.35		

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	No apron

Pipe Barrel	Rating
Blockage	No
Submerged in Water	No
Inlet Damage	No
Outlet damage	No
Corrosion / Abrasion	No
Out of Round	No
Settlement	No
Sag / Bow	No
Infiltration	No
Piping	No
Cracking	No

Capacity	Rating
Flow Path Type	Minor
Function of size, slope and condition	100-Year

Comments







Culvert Improvement Cost Estimate

> Date: Culvert:

February 15, 2020

2239 - A12

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Item	Spec. No.	Description	Unit	Quantity	Unit Price	Cost
Item	Spec. No.	Description	Oilit	Quantity	Ontrice	COST
1		Mobilization - 10%	lump sum			\$ 320.00
2		Channel Excavation	m3	1	\$ 500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$ 300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$ 150.00	\$ 300.00
5		Light Grading	lump sum	0	\$ 1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$ 82.50	\$ -
7		Re-Gravel Approach - $10m \times 10m \times 150mm \times 2.33$ (\$40.00/tonne GBC)	m2	25	\$ 40.00	\$ 1,000.00
					Sub-Total	\$ 4,520.00
					10% Contingencies:	\$ 452.00
8% Admin & Engineering:				\$ 361.60		
					TOTAL	\$ 5,400.00

Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date:

November 4, 2019

PROJECT NAME:

2019 S.V. of Sunset Point Storm Water Management Plan & Rehabilitation Plan

Location:	City/County/MD	Road Name/No.	Station Number	Alignment	Culvert No./Name
	S.V. of Sunset Point	Boundary Road	Lot 3 Approach	N. Side	2240 - A13

	Shape (Select One)			
	Arch			
Pipe Details:	Circular	✓		
	Elliptical			
	Вох			

Material (Select One)					
Aluminum					
Concrete					
Plastic					
Steel	✓				
Thickness	1.6mm				

Pipe Size					
Span		mm			
Rise		mm			
Diameter	300	mm			
Slope	1.70	%			
Length	6.41	m			

Overall Rating
4

Roadway Over Pipe	Response		
Pavement cracks or Patches	No		
Sag in Roadway	No		
Recent signs of high water	No		
Amount of Cover (m)	0.35		

Inlet / Outlet Protection	Rating
Channel scour at Inlet/Outlet	No
Embankment Erosion	No
Sideslopes too Steep	No
Drift - wood, debris around pipe	No
Vegetation - trees, brush etc.	No
Silt	No
Rip Rap	None

Pipe Barrel		Rating
	Blockage	No
	Submerged in Water	No
	Inlet Damage	No
	Outlet damage	No
	Corrosion / Abrasion	No
	Out of Round	No
	Settlement	No
	Sag / Bow	No
	Infiltration	No
	Piping	No
	Cracking	No

Capacity	Rating		
Flow Path Type	Minor		
Function of size, slope and condition	10-Year		

Comments









Culvert Improvement Cost Estimate

713 LAKESHORE DRIVE COLD LAKE, ALBERTA T9M 0C4 Phone: 780-594-5380 Fax: 780-594-4486 Web: www.sedesign.ca

Date: February 15, 2020 Culvert: 2240 - A13

Item	Spec. No.	Description	Unit	Quantity	1110	nit Price	Cost
item	Spec. No.	Description	Oilit	Qualitity	"	iit Frice	COST
1		Mobilization - 10%	lump sum		!		\$ 320.00
2		Channel Excavation	m3	1	\$	500.00	\$ 500.00
3		Supply & Install 500mm C.S.P. Culvert	m	8	\$	300.00	\$ 2,400.00
4		Supply & Install Rip Rap	unit	2	\$	150.00	\$ 300.00
5		Light Grading	lump sum	0	\$	1,000.00	\$ -
6		Re-Pave Excavation Area - 2m x length (\$165/m) (\$82.50/m2 with 100mm ACP & 300mm GBC)	m2		\$	82.50	\$ -
7		Re-Gravel Approach - 10m x 10m x 150mm x 2.33 (\$40.00/tonne GBC)	m2	25	\$	40.00	\$ 1,000.00
						Sub-Total	\$ 4,520.00
					10% Co	ntingencies:	\$ 452.00
	8% Admin & Engineering:			\$ 361.60			
						TOTAL:	\$ 5,400.00