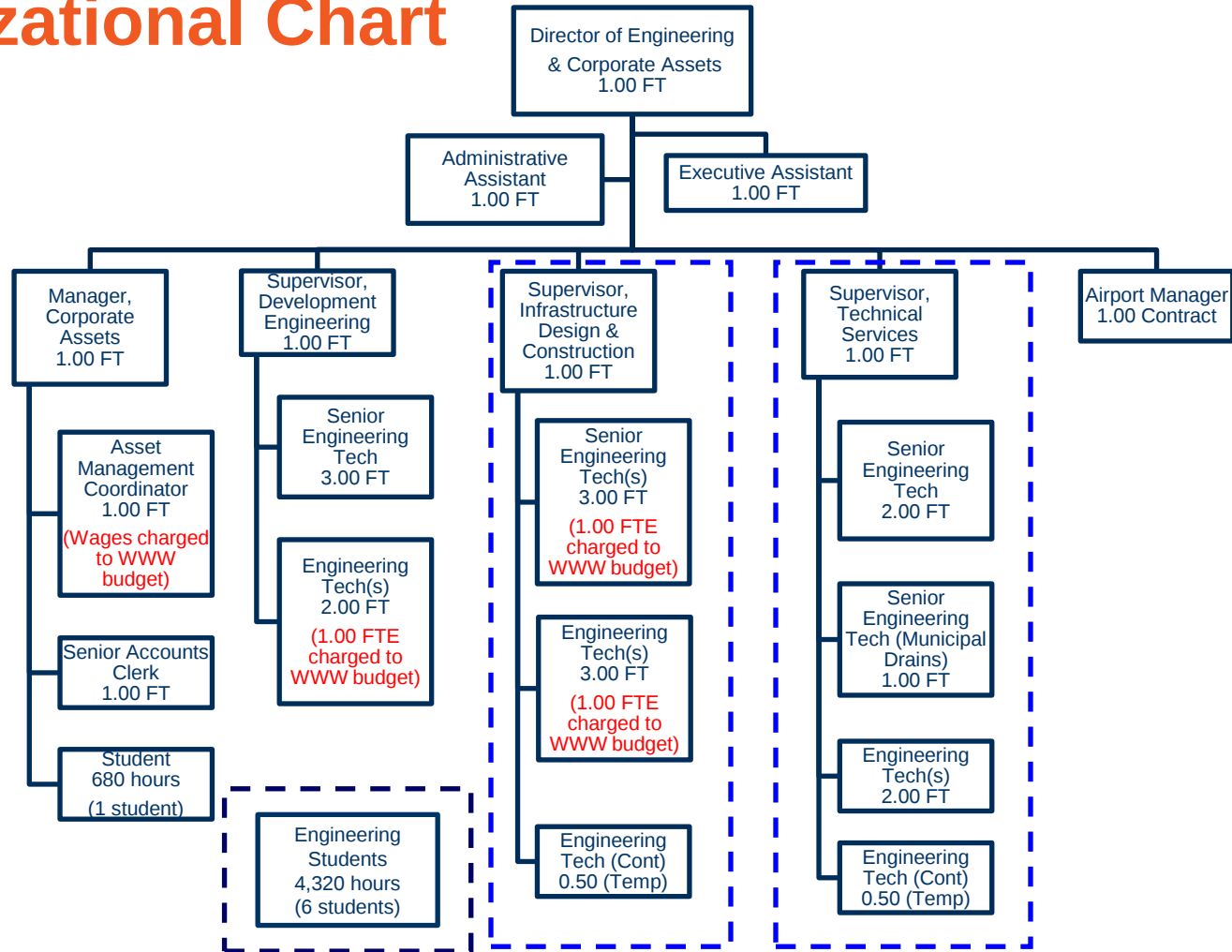




Engineering and Corporate Assets: Roads Capital

Organizational Chart



Who we are

Implementation of Roads Capital Programs are primarily managed in the following two divisions, which includes:

Infrastructure Design & Construction

- Supervisor (1)
- Senior Engineering Tech (3)
- Engineering Tech (3)
- Construction Tech (0.5) - seasonal 6 month period
- Students (2)

Technical Services

- Supervisor (1)
- Senior Engineering Tech (2)
- Engineering Tech (2)
- Municipal Drainage Superintendent (1)
- Construction Tech (0.5) - seasonal 6 month period
- Students (3)

Who we are

In addition, the following Divisions provide support:

Development Engineering

Oversees and manages the implementation of private development, which includes plans of subdivision and development of unopen road allowances. Conducts review of and provides approval for capital design on behalf of the Ministry of Environment, Conservation and Parks.

Corporate Assets

Provides asset management support for roads assets, determines sustainable long-term capital expenditure and funding levels, and develops long-term financial plans and annual capital budgets.

2019 Capital Roads Program

Infrastructure Design & Construction

▪ RD1901 – Bridges	\$ 1,539,000
▪ RD1903 – Urban/Rural Reconstruction	\$ 8,370,351
▪ RD1904 – Urban/Arterial Resurfacing	\$ 4,610,133
▪ RD1909 – Sidewalks	<u>\$ 342,586</u>
	\$14,862,070

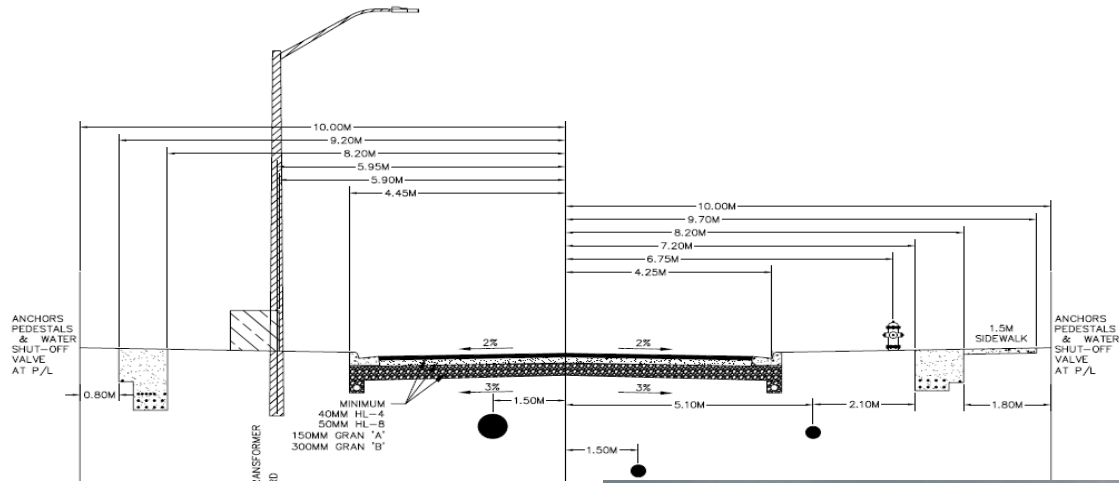
Technical Services

▪ RD1902 – Culverts	\$ 940,250
▪ RD1905 – Rural Resurfacing	\$ 3,674,550
▪ RD1906 – Gravel Resurfacing	\$ 1,403,689
▪ RD1907 – Lifecycle Management	\$ 1,219,800
▪ RD1914 – Gravel Rehabilitation**	<u>\$ 1,468,893</u>
	\$ 8,707,182

** temporary 3 year program

Total 2019 Capital Roads Program \$23,569,252

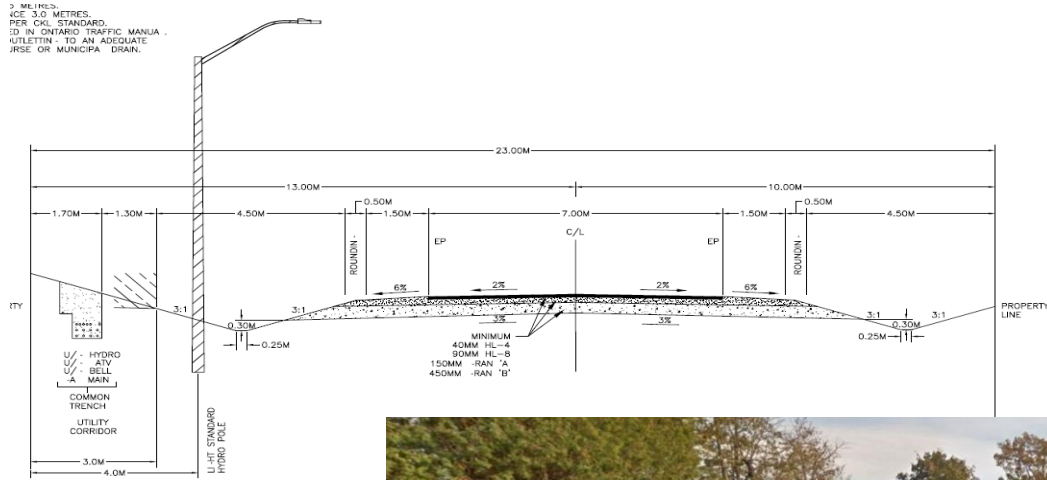
Road Types



Urban Road Standard



Road Types



Rural Road Standard

Asphalt
Surface



Road Types

Rural Road Standard

Hi-Float
Surface



Gravel
Surface



Roads Classifications

Under O.Reg. 239/02 (Minimum Maintenance Standards), highways fall into classes 1-6 based on speed and volume:

AADT means Annual Average Daily Traffic. It is derived from the total volume of vehicular traffic on the road divided by 365 days

AADT	Speed							
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
	Average Daily Traffic (number of motor vehicles)	91 - 100 km/h speed limit	81 - 90 km/h speed limit	71 - 80 km/h speed limit	61 - 70 km/h speed limit	51 - 60 km/h speed limit	41 - 50 km/h speed limit	1 - 40 km/h speed limit
	53,000 or more	1	1	1	1	1	1	1
	23,000 - 52,999	1	1	1	2	2	2	2
	15,000 - 22,999	1	1	2	2	2	3	3
	12,000 - 14,999	1	1	2	2	2	3	3
	10,000 - 11,999	1	1	2	2	3	3	3
	8,000 - 9,999	1	1	2	3	3	3	3
	6,000 - 7,999	1	2	2	3	3	4	4
	5,000 - 5,999	1	2	2	3	3	4	4
	4,000 - 4,999	1	2	3	3	3	4	4
	3,000 - 3,999	1	2	3	3	3	4	4
	2,000 - 2,999	1	2	3	3	4	5	5
	1,000 - 1,999	1	3	3	3	4	5	5
	500 - 999	1	3	4	4	4	5	5
	200 - 499	1	3	4	4	5	5	6
	50 - 199	1	3	4	5	5	6	6
	0 - 49	1	3	6	6	6	6	6

Roads Classifications

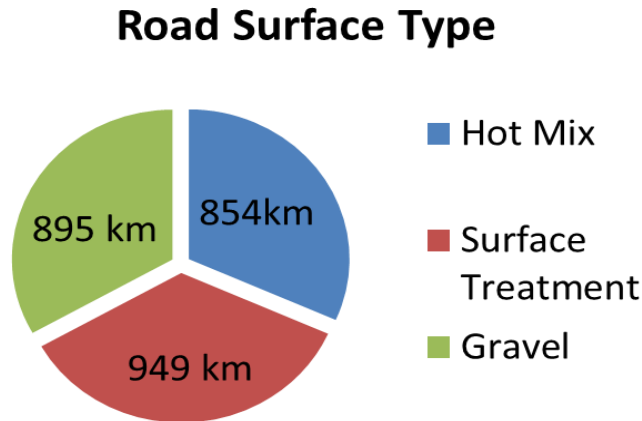
Based on the provincial and the City's classification systems, the City's road network is distributed as follows:

MMS Class of Roads	Roads Needs Classification	Kms	Example
1	Arterial	0	401
2		45	CKL 36
3	Collector	517	Kent St west
4		1394	Hartley road
5	Local	358	Avery point road
6		386	Woodcock line
Total		2700	

2016 Roads Needs Assessment

The purpose of a Road Needs Study is to provide an overview of the overall condition of the road system and to provide the municipality with a working tool when budgeting and determining which roads to improve and when.

The assessment of the City's road inventory is done every 5 years, where roads are prioritized based on condition rating, traffic volume and classification by local, collector and arterial status.



Asset Management Plan

- 2016 Roads Needs Assessment was incorporated into the 2017 Asset Management Plan.
- In the Asset Management Plan, useful life by road surface assumes lifecycle management interventions occur.

General Useful Lives for Road Surfaces		
Road Surface Type	Roads Needs Study: Without Lifecycle Management	Asset Management Plan: With Lifecycle Management
Gravel	10 Years	10 Years*
Hi-Float (LCB)	12 Years	15 Years
Asphalt (HCB)	20 Years	30 Years

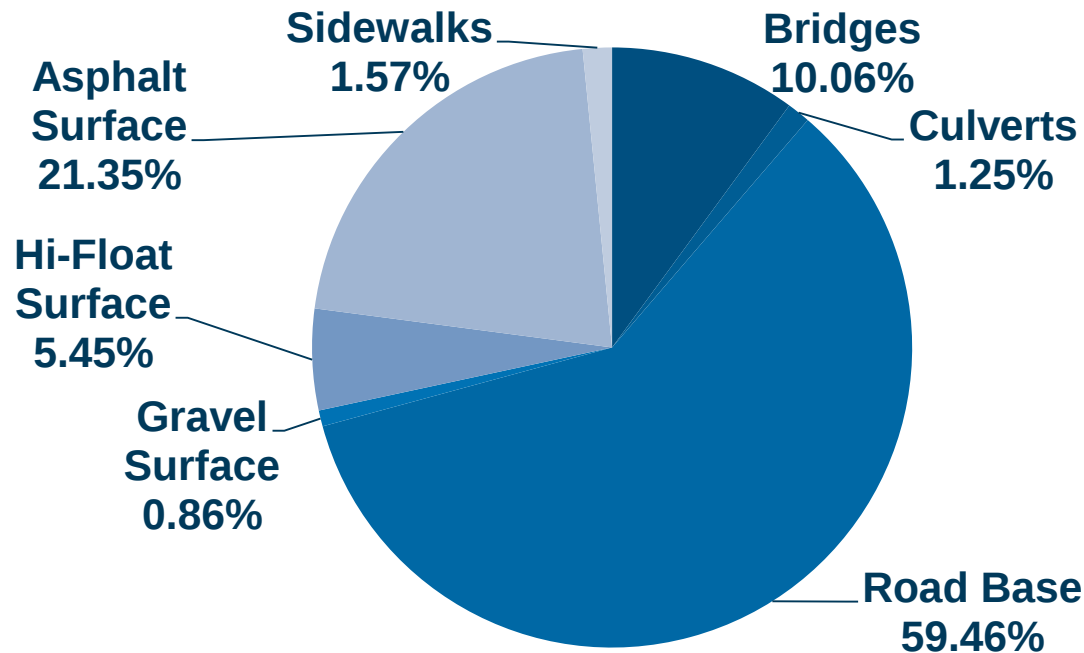
*High-volume gravel roads have a 5-to-7-year lifecycle.

Asset Management Plan

Estimated Replacement Cost of Major Road Assets (\$)*		
Asset Category	2016 Value	2019 Value
Bridges	166,195,385	176,367,872
Culverts	20,597,271	21,857,989
Road Base	982,072,000	1,042,182,663
Gravel Surface	14,258,020	15,130,724
Hi-Float Surface	90,039,035	95,550,144
Asphalt Surface	352,686,295	374,273,518
Sidewalks	25,896,578	27,481,656
Total	1,651,744,584	1,752,844,566
*Excludes lesser categories such as traffic signals, streetlights and parking lots.		

Asset Management Plan

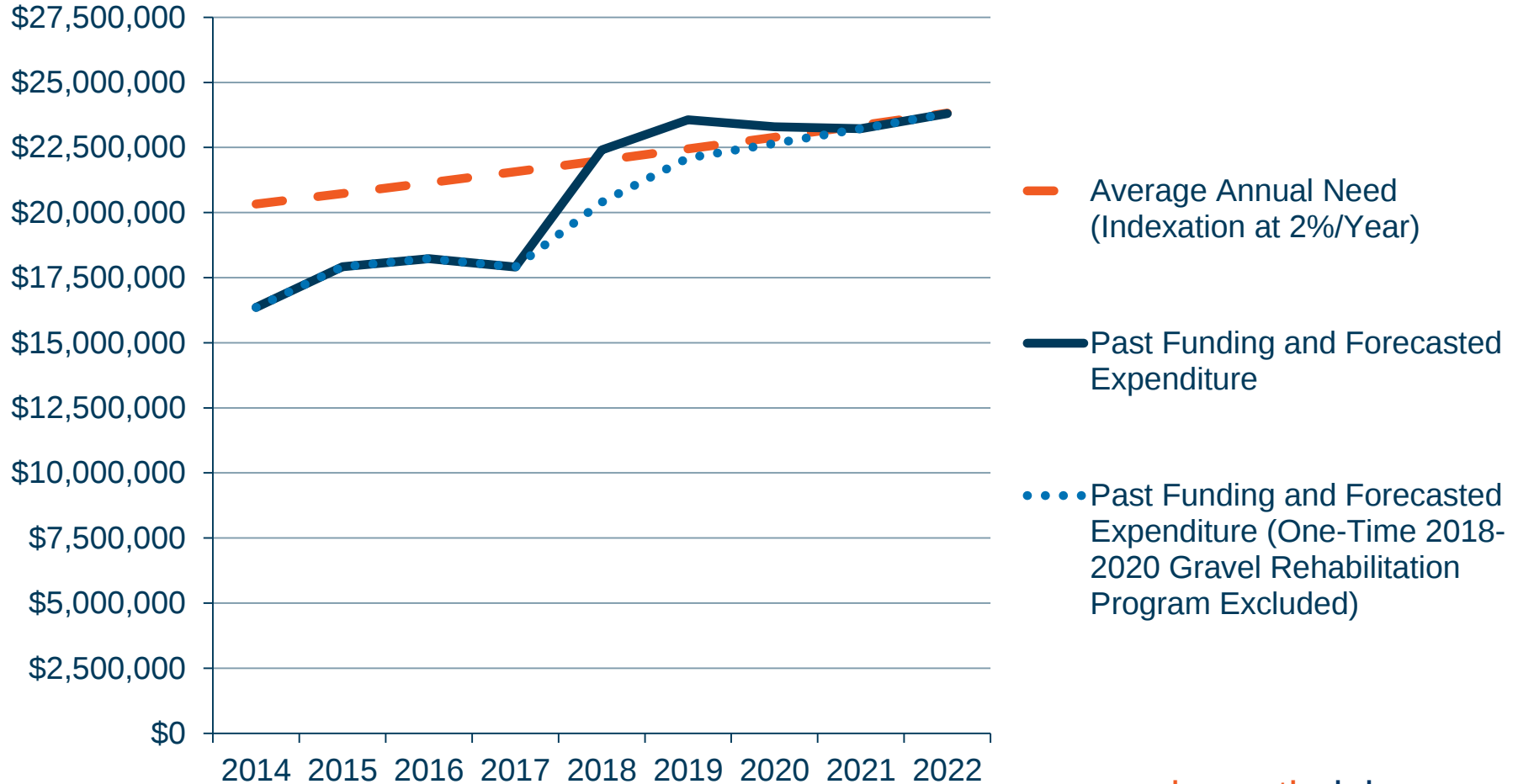
Distribution of \$1.75B Estimated 2019 Replacement Cost of Major Road Assets



Long-Term Financial Plan

- Asset Management Plan was incorporated into the Long-Term Financial Plan (2018-2027).
- Long-Term Financial Plan phases in overall sustainable capital replacement and renewal investment over 2018-2022.
- Long-Term Financial Plan to be updated in 2019; Asset Management Plan in 2021.

Average Annual Need, Past Funding and Forecasted Expenditure Respecting Major Roads Capital Programs



Lifecycle Management Program

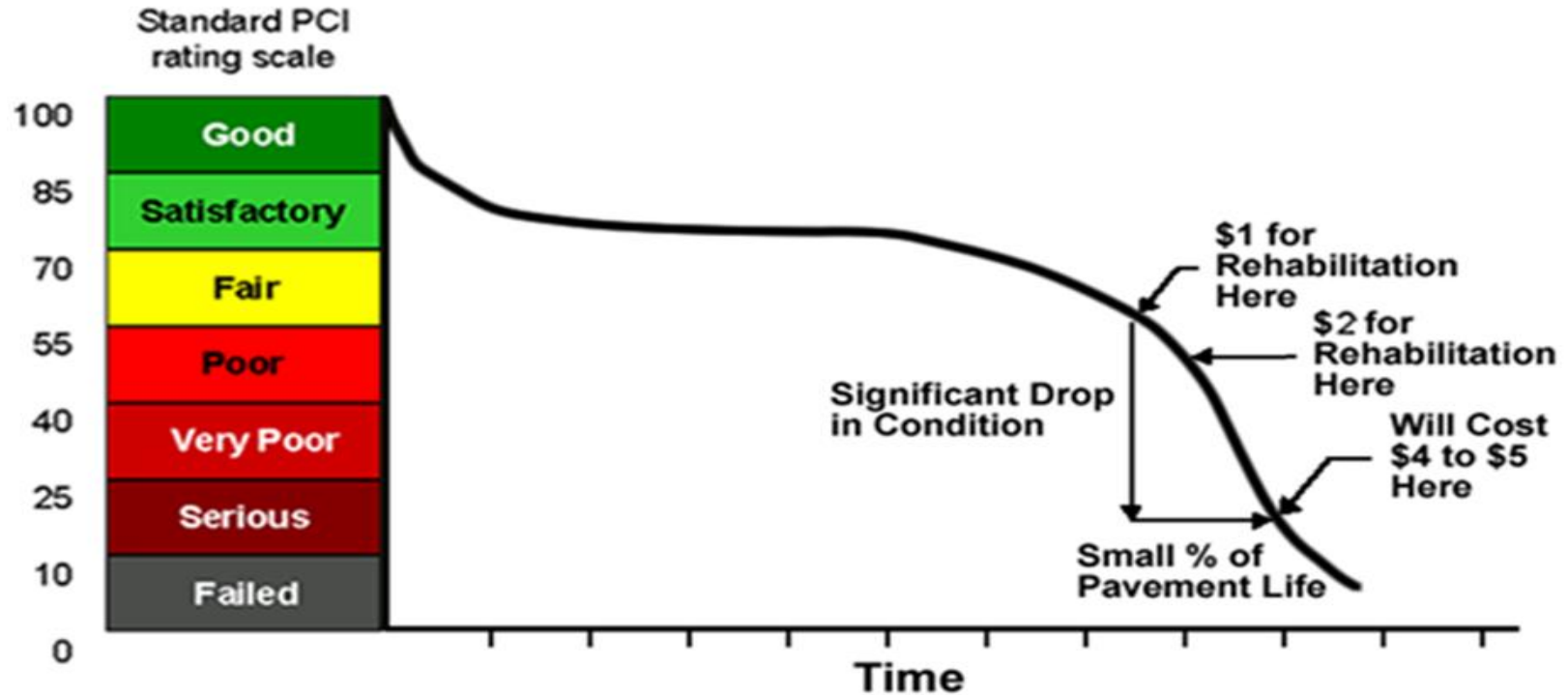
In order to **keep the good roads good** (and off the capital improvements list), they have to be resurfaced and treated regularly before they become significantly distressed.

The Lifecycle Management Program utilizes interventions such as:

- Crack sealing
- Single surface treatment
- Slurry sealing
- Micro resurfacing
- Asphalt overlays
- Drainage improvements



Lifecycle Management Program



“Keep the Good Roads Good”

Urban/Rural Reconstruction Program

Complete reconstruction of existing roadways to an urban standard, including all removals, trenching, new storm sewer, water main, sanitary sewer construction, followed by the placement of new base material and pavement along with curb and gutter and sidewalk installation.

The program also encompasses the cost for the design , utility relocates and property acquisition.



Urban/Arterial Resurfacing Program

The resurfacing of arterial roads and urban streets within towns, villages and hamlets with hot mix asphalt pavement to provide safe, assessable, maintainable and sustainable roads.

Projects are prioritized through the asset management plan with a focus on roads associates with high traffic volumes and/or those in a stage of their lifecycle where resurfacing will extend useful life.



Rural Resurfacing Program

The resurfacing of low-volume rural roads involving the pulverization of existing distressed surface treatment followed by the placement of granular material and the application of a double surface treatment, including base repair, ditching and culvert replacement as needed.



Gravel Resurfacing Program

Based on the 10-Year Gravel Resurfacing Plan incorporated into the Asset Management Plan.

Summary of 10-Year Gravel Resurfacing Plan (2018-2027)		
Year	Estimated Tonnes	Estimated Cost (2017\$)
2018	104,130	1,448,448
2019	104,170	1,449,005
2020	105,950	1,473,765
2021	104,610	1,455,125
2022	107,640	1,497,272
2023	105,070	1,461,524
2024	100,990	1,404,771
2025	99,790	1,388,079
2026	101,260	1,408,527
2027	101,370	1,410,057
Average	103,498	1,439,657

Distributed Lifecycle of Gravel Roads		
AADT Range	Quantity (Km)	Lifecycle (Years)
0-199	843.2	10.0
200-299	40.8	7.0
300-399	9.2	5.0
≥ 400	1.8	5.0
Total	895.0	9.8

Municipal Class EA Process

Environmental Assessment is a planning and decision making process used to promote environmentally responsible decisions.

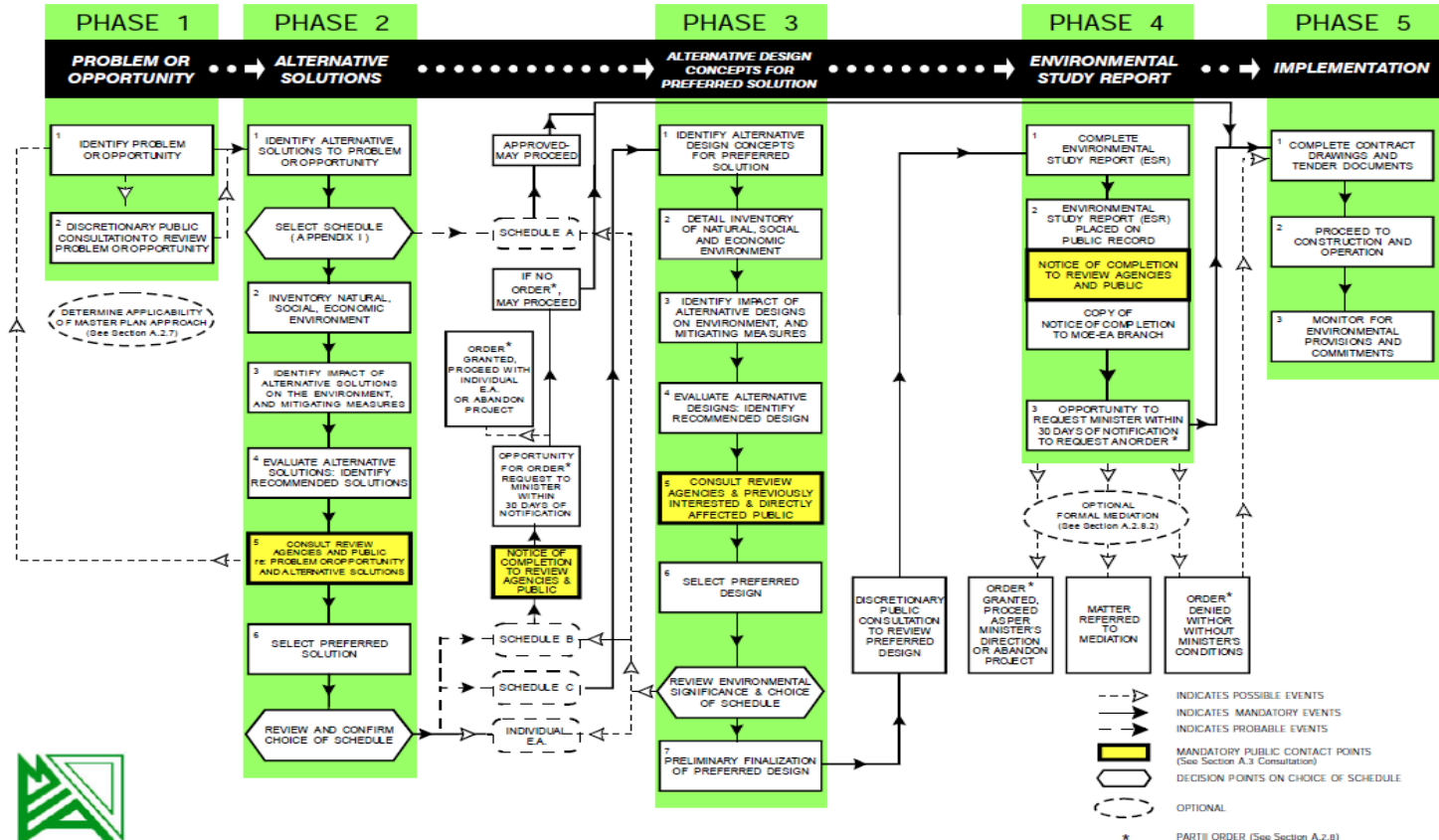
The Municipal Class Environmental Assessment process has been approved under the Environmental Assessment Act and it sets out the process that municipalities follow while planning most sewer, water, road, and transit projects.

EA Flow Chart

EXHIBIT A.2

MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the Municipal Class EA



Municipal Class Environmental Assessment

Project Types

Projects undertaken by municipalities can vary widely in their environmental impact. Consequently, projects are classified into one of four types:

- Schedule A
- Schedule A+
- Schedule B
- Schedule C

Municipal Class Environmental Assessment

Project Types



Schedule A

Schedule A projects are limited in scale, have minimal and predictable environmental effects, and usually follow established best practices. Projects include maintenance and normal operational and repair projects.

Schedule A projects are pre-approved and may proceed without further EA consideration.

Municipal Class Environmental Assessment

Project Types

Schedule A+

Schedule A+ projects are also pre-approved but have the potential for local impacts. These projects are generally rehabilitating existing facilities.

There is a requirement to notify those directly impacted by the project to encourage discussion of any issues between the proponent and those impacted.



Municipal Class Environmental Assessment

Project Types

Schedule B

Schedule B projects have the potential for some environmental effects and consultation with affected public and relevant review agencies is mandatory.

These projects are generally improvements or minor expansions to existing facilities. For Schedule B projects, the information gathered during the process is documented in a project file. Anyone can appeal the preferred solution if concerns remain unaddressed at the conclusion of the process.



Schedule B



Schedule B

Municipal Class Environmental Assessment

Project Types

Schedule C

Schedule C projects generally include the construction of new facilities or major expansions to existing facilities and have the potential for significant environmental effects. These projects require notice to the affected public and relevant review agencies and formal public meetings must be held.



Municipal Class Environmental Assessment

Project Types

Schedule C

For Schedule C projects, all of the information related to identifying the problem, the evaluation of the alternative solutions considered and the selection of the preferred solution is compiled in an Environmental Study Report. This report is then available for public review for 30 days. Anyone can appeal the preferred solution if concerns remain unaddressed at the conclusion of the process.



Municipal Class Environmental Assessment

Project Types

Municipal Class EA
Appendix 1 - Project Schedules

Description of the Project (Note: The Schedules shall be reviewed inclusively to ensure that the correct schedule is selected.)	Cost Limit for Project Approved Under Schedule			
	Pre-Approved		B	C
	A	A+		
CONSTRUCTION OR RECONSTRUCTION OF LINEAR PAVED FACILITIES AND RELATED FACILITIES				
11. Streetscaping (e.g. decorative lighting, benches, landscaping) not part of another project	-	<2.2 m	>2.2 m	-
12. a) Construction of localized operational improvements at specific locations (e.g. the addition of a ramp to an existing interchange; turning lanes at an intersection, but not a continuous centre left turning lane) b) Installation of guide rail	NL	<2.2 m	>2.2 m	-
13. Installation, construction or reconstruction of traffic control devices (e.g. signing, signalization)	<8.7 m	-	>8.7 m	-
14. Construction of new parking lots	<8.7 m	-	>8.7 m	-
15. Installation of safety projects (e.g. lighting including "high mast", grooving, glare screens, safety barriers, energy attenuators)	<2.2 m	-	>2.2 m	-
16. Establishment of a roadside park or picnic area	-	-	NL	-
17. Culvert repair and replacement where the capacity of the culvert is not increased beyond the minimum municipal standard or the capacity required to adequately drain the area, whichever is greater, and where there is no change in drainage area	NL	-	-	-
18. Construction of a new culvert or increase culvert size due to change in the drainage area	-	-	NL	-
19. Reconstruction where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will be for the same purpose, use, capacity and at the same location as the facility being reconstructed (e.g. no change in the number of lanes)	-	NL	-	-
20. Reconstruction or widening where the reconstructed road or other linear paved facilities (e.g. HOV lanes) will not be for the same purpose, use, capacity or at the same location as the facility being reconstructed (e.g. additional lanes, continuous centre turn lane)	-	-	<2.2 m	>2.2 m
21. Construction of new roads or other linear paved facilities (e.g. HOV lanes)	-	-	<2.2 m	>2.2 m
22. Redesignation of an existing General Purpose Lane (GPL) or High Occupancy Vehicle (HOV) lanes through signage or pavement marking modifications (i.e. not requiring physical construction): - new parking or turning lane markings on an existing roadway - conversion of one-way or two-way streets - redesignation of existing GPL to HOV; or HOV to GPL	NL - - NL	- NL NL -	- - - -	- - - -
23. Construction of local roads which are required as condition of approval on a site plan, consent, plan of subdivision or plan of condominium which will come into effect under the Planning Act prior to the construction of the road. [Note - Reference to "local" roads refers to roadway function not municipal jurisdiction. See definition in Glossary of Municipal Class EA.]	NL	-	-	-

October 2000, as amended 2007
Page 1-5

A detailed listing of the projects included in each type is included in Appendix 1 of the Municipal Class Environmental Assessment book.

Questions?

