

A Framework for Road and Bridge Asset Management Plans

This document provides a summary of the steps required to prepare an Asset Management Plan. Asset management plans are not a one size fits all document. A municipality because of its size, composition of assets, degree of urbanization, current and projected asset condition and performance will need to customize an asset management plan to fit their specific needs. This document and the guide document “A Guide for Road and Bridge Asset Management Plans” will assist you with the customization of your plan.

The main components of an asset management plan are:

- 1) A multi-year work plan (based on a recommended budget)
 - What work has to be done
 - When the work should be done
 - How much the work will cost
- 2) A listing of all funding needs (“unconstrained” needs)
 - If unlimited funding was available, a priority list of all projects for a 5, 10 or 25 year period
- 3) An analysis of different funding scenarios and the impact on achieving desired levels of service and performance targets
 - Supported be charts, graphs and tables
 - Yearly listing of funding needs over a 5, 10 or 25 year period

The key steps in developing an Asset Management Plan are described as follows:

A. Purpose

An asset management plan is a summary document that provides a comprehensive reference for council, managers and staff regarding the operation, maintenance, renewal and replacement of Roads and Bridges.

- A1. The plan should contain goals and objectives that:
- a. Provides clear direction to decision makers
 - b. Reflects desired system condition, level of service and safety provided to customers.
 - i. Goals and objectives will link user expectations for asset condition (smooth roads), performance (no traffic delays) and availability (no load restricted bridges) with system management and investment strategies. Council can set user expectations without additional public input. However, in a growing municipality with a diverse population council may choose to acquire input from the public as to their expectations.
 - c. Select performance measures and establish performance targets/levels of service

- i. Percentage of bridges in “Good” Condition i.e. BCI greater than 70
- ii. Percentage of pavements in “Good” Condition i.e. PCI greater than 65 to 75 (depending on the road’s function – arterial, collector, local)

B. Scope

- B1) Determine what assets to include in the plan
 - a. Roads – paved, unpaved and surface treated;
 - b. Guiderail, street lights, sidewalk, curb, catchbasins, storm sewers;
 - c. Structures – bridges & culverts $\geq 3\text{m}$ and $\leq 3\text{m}$, noise wall, retaining walls;
 - d. Signs – regulatory, warning, information, traffic signal systems;
 - e. Fleet, equipment, buildings.
 - f. Other asset types

- B2) Determine any other considerations to be included in the plan
 - a. Will the asset management plan include:
 - i. Integration with a municipality’s current capital and financial planning tools;
 - ii. The purchase and use of new technologies in work management software and Global Information Systems to assist in the management of assets, etc;
 - iii. Include an implementation date for any other considerations added to the plan.

C. Current Asset Performance

- C1) Develop Inventory of Assets:
 - a. Collect key inventory information including where assets are located (See “A Guide for Road and Bridge Asset Management Plans”- Appendix B);
 - b. Store data in and electronic database or as an alternate in a spreadsheet format.

- C2) Determine the value of all assets:
 - a. Knowing what an asset is worth is different than knowing the capital requirements. A municipality acquires or builds a tangible capital asset. Once the gross cost (gross book value) to acquire, construct or develop a tangible capital asset is known that cost is amortized over the assets useful life. This work is a requirement for Public Sector Accounting Board compliance, required for the preparation of financial statements and is undertaken by the municipality’s treasurer annually.

- C3) Determine the condition of assets:
 - a. Determine the current condition of roads and bridges using established methods:
 - i. Bridges – Ontario Structure Inspection Manual;
 - ii. Pavements - MTO **SP-024**. Manual for Condition Rating of Flexible Pavements - Distress Manifestations;

- iii. Establish a regular road inspection program to monitor the change in condition over time (Every 1 to 2 years). Bridges are required by regulation to be inspected every 2 years.

C4) Determine Road and Bridge Needs:

- a. Identify deficiencies;
- b. Identify treatments (e.g. crack sealing, resurfacing, cold in place recycling, etc) currently used to address deficiencies, including maintenance;
 - i. Determine cost of treatments, in real dollars.
- c. Develop “unconstrained” list of road and bridge needs:
 - i. Multi-year listing of projects assuming unlimited funding;
 - ii. Year-by-year listing of total costs and funding sources.

D. Planned Actions

D1) Identify any issues that may impact roads and bridges (safety, condition, usage) and how the issue will be dealt with:

- a. Include an action plan for dealing with the issue;
- b. Determine date for implementing the action plan;
- c. Include other considerations identified in B2;
- d. Calculate cost estimates and provide date for implementing the action.

D2) Identify all available strategies for asset maintenance, renewal and replacement

- a. Calculate cost estimates

D3) New Assets

- a. Provide a list of new assets that will be added to the inventory over the term of the plan to improve service potential (i.e. new bridge, new equipment) or new subdivisions to be added to the inventory. Include the date when the addition is projected to occur and show the increased annual costs, if any, due to the addition.

D4) Evaluate the technical, financial and delivery options:

- a. Determine lifecycle costs
- b. What funding is required to achieve performance targets;
- c. Select optimum strategy(s)/treatment(s) and identify when work should be done or improvements implemented;
- d. Show impact of various funding levels on ability to achieve desired level of service and performance targets;
- e. Develop prioritized list of projects using structured methodology which also considers risk:
 - i. Bridge Sufficiency Index (BSI) -Uses BCI and other factors;
 - ii. Pavement Rehabilitation Priority Number (PRPN) - Uses PCI and other factors.
- f. Perform trade-off analysis to determine which projects to put in plan.

D5) Develop “constrained” multi-year plan for recommended funding scenario.



E. Accountability and Feedback

- E1) Monitor the asset management plan
- E2) Report performance measures:
 - a. Bridge Condition Index (BCI);
 - b. Pavement Condition Index (PCI);
 - c. Any other relevant performance measure. A list on key indicators has been provided in the Guide for Road and Bridge Asset Management Plans document.
- E3) Update data on an annual basis
- E4) Recommend plan updates



Appendix A – Asset Management Plan Template

To assist municipalities in the development of an asset management plan an Asset Management Plan Template has been provided. An example was also developed using the template and included as Appendix B.

A Purpose

Provide a narrative describing the purpose of this summary document.

A1 Goals and Objectives

Provide a description of the goals and objectives for roads and bridges. These goals and objectives should be based on local requirements that meet local needs and customer expectations. Identify how customer expectations were acquired (council, focus group, questionnaire, etc).

Include a list of the performance targets that will be used to confirm achievement of the plans goals and objectives.

B Scope

B1 Provide a list of the asset types to be included in the plan and any other considerations that might impact the plan. If implementation of other asset types does not coincide with the start of the plan include an implementation date.

B2 Other Considerations

Provide a list of other considerations to be included in the asset management plan such as: integration with a municipality's current capital and financial planning tools; the purchase and use of new technologies such as work management software and Global Information Systems to assist in the management of assets; etc. Include the cost and date for implementation.

C Current Asset Performance

C1, C2, C3 & C4 Asset System Description

Provide a summary description of the roads, bridges and other asset types (tables below are provided as an example) to be included in the asset management plan. To develop this summary a complete list of deficiencies and unconstrained needs, replacement cost for the asset type can be included here as an alternative to the summary table. If the complete list is not included in this document, the list should be retained for reference purposes.

Road by Function and Surface Material	Total Length (in lane km's)	Average PCI	Useful life	Net Book Value (in millions)	NEEDS		
					NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
Arterial							
Collector Commercial Industrial							
Collector Residential							
Local Commercial Industrial							
Local Residential							
Boundary Roads – by function & material							
Total							

Number of Bridges & Culverts	Structure Type*	Total Deck Area (in m ²)	Average BCI	Useful Life	Net Book Value (in millions)	NEEDS		
						NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
Total								

*no need to list every bridge and culvert in the inventory, summarize bridges and culverts by structure type



Number	Other Asset Types*	Average Condition	Useful Life	Net Book Value (in millions)	NEEDS		
					NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
Total							

*summarize assets by asset type

Identify current maintenance and capital treatments used to address deficiencies and provide costs (where applicable).

D Planned Actions

D1 Provide a summary of the current issues for capacity, performance, condition and/or potential risks to the network (i.e. asset failure and the consequences of failure). Include costs (where applicable) and implementation date

Key Indicator	Issue	Potential Impact	Current Controls	Action Plan
Collisions				
Condition				
System usage				
Congestion Duration				
Temporary Load Restrictions (roads)				
Permanent Load Restrictions (roads)				
Load postings (bridges)				
Other				

D2 Available Strategies

Identify possible treatments to address deficiencies, including maintenance improvements. Estimate the cost of the identified treatment(s). If more than one



treatment is considered identify the optimum treatment and indicate when work should be done or improvements implemented.

D3 New Assets

Provide a list of new assets that will be added to the inventory over the term of the plan to improve service potential (i.e. new bridge, new equipment) or new subdivisions to be added to the inventory. Include the date when the addition is projected to occur and show the increased annual costs, if any, due to the addition.

D4 Costs, Funding Projections and Implementation

Identify current and projected funding sources and limits. Identify the funding gaps and describe how or if that gap will be eliminated and the impacts the various funding options will have on achieving plan goals and objectives.

Consider using charts and graphs to supplement the narrative.

Provide a list of the capital projects to be completed over the term of the plan. There may be unmet needs, shown on the unconstrained plan, a decision will be required as to whether or not a list of these unmet needs is included in the plan or kept separate for reference.

D5 Multi Year Plan

Asset ID	Asset Type	Asset Name	Condition Rating	Type of Work Required*	When	Cost

*repair, rehabilitation, replacement



Provide a description of how operations and maintenance services will change over the term of the plan.

Activity	Current Processes Used to Provide Service	Process Changes to be Made	Target Implementation Date	Benefit
Pavement Maintenance				
Unpaved Maintenance				
Roadside Maintenance				
Bridge and Culvert Maintenance				
Storm water Maintenance				
Traffic Maintenance				
Winter Maintenance				

E Accountability & Feedback

E2 Performance Measures

Provide a list of the performance measures to be used to confirm plan achievement. Describe how those measures will be reported publicly.

E4 Term of Plan

Identify the term of the plan and include a timeframe for plan updates.

Conclusion

Identify the benefits envisioned by implementing this plan.



Appendix B – An Example Asset Management Plan

NOTE: This example was developed for reference only. The example provides an illustration as to the possible content of an Asset Management Plan

Asset Management Plan – Township of Example

January 2011

A Purpose

The Township of Example's, Asset Management Plan (AMP) will guide the work of the Township's Public Works Department. The AMP is a summary document that provides a comprehensive reference for council, managers and staff. The AMP delivers a planned approach to the long-term management of assets, by providing a framework for optimising future expenditures that match the community's desired levels of service; this plan will enable the most cost efficient allocation of resources.

The plan will be reviewed regularly to provide assurance to council, staff, customers and other stakeholders that the roads and bridges the Township is responsible for are being managed efficiently and sustainably.

Goals and Objectives

The goal of the Township of Example's Asset Management Plan is to:

- Provide quality, cost effective services for the township's road network

With information provided in a Customer Satisfaction Survey (below) and through consultation with the township's customers and stakeholders (those people who live, work and play in our community) council, staff and the public have determined that the following objectives will be used to achieve the above stated goal by:

- Adopting preservation strategies for roads and bridges in good condition that repairs small problems before they become larger
- Selecting options that will provide the best long term solution for roads and bridges in poor condition

Customer Satisfaction Survey

AVERAGE SURVEY RESULTS		IMPORTANCE		
		VERY >4	QUITE 3 - 4	NOT AS <3
SATISFACTION	VERY >4	<ul style="list-style-type: none"> ▪ Garbage ▪ Fire 		<ul style="list-style-type: none"> ▪ Landfill hours
	SOME WHAT 3 – 4	<ul style="list-style-type: none"> ▪ Winter Mtce ▪ Water ▪ Sewer 	<ul style="list-style-type: none"> ▪ Landfill ▪ Cemetery ▪ Library 	<ul style="list-style-type: none"> ▪ Arena ▪ Parks ▪ Museum
	NOT <3	<ul style="list-style-type: none"> ▪ Paved Rds ▪ Sidewalks 	<ul style="list-style-type: none"> ▪ Gravel Rds ▪ Recycling 	

To confirm that the goals and objectives have been achieved, the following targets will be used:

- Maintain all arterial roads in good to very good condition or a minimum pavement condition index of 80
- Within 10 years, improve all high class bituminous pavement (paved) local residential streets to fair to good condition or a minimum pavement condition index of 65
- Within 20 years, improve all bridges and culverts ≥ 3 metre span so that the primary components of the bridge or culvert is in good to very good condition or a minimum bridge condition index of 70.

B Scope

This AMP will include all of the municipality's road network, all bridges and culverts ≥ 3 m span and all public works buildings. It is the Township's intention to add other public works asset types including fleet, sewers, watermains, sidewalks, curbs, street lights and so on to the AMP. A staged implementation of these other asset types will occur at the first major review of the plan and each subsequent review thereafter.

C Current Asset Performance

Inventory of Assets

The Township of Example maintains a network of roads and bridges with a total replacement value of \$235.5m. The road system is 376.5 lane kilometres of 2 lane road which requires 40 bridges and culverts ≥ 3 metre span to cross rivers and drainage systems within the municipality. Thirty kilometres of boundary road are also maintained by the township through agreement with abutting municipalities. Maintenance of these assets is completed from the township's operations centre which includes a 5 bay

garage, offices and a salt storage building. The replacement cost of the buildings is estimated at \$2.8m. The inventory included in this AMP can be summarized in the following tables:

Road by Function and Surface Material	Total Length (in lane km's)	Average PCI	Useful life	Net Book Value (in millions)	NEEDS		
					NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
Arterial (urban HCB)	1.5	92	35	1.1	0	0.5	0.5
Arterial (rural HCB)	25	91	35	18.7	0	1.0	0.5
Local Residential (urban HCB)	75	65	50	7.8	4.0	2.0	2.0
Local Residential (rural HCB)	40	55	50	3.4	5.0	2.5	2.0
Local Residential (rural LCB)	45	60	10	1.0	2.0	2.3	1.5
Local Residential (rural unpaved)	160	70	100	.01	2.0	2.0	1.0
Boundary Roads local unpaved	30	70	100	.01	2.0	0.5	0.5
Total				32.02	15.0	10.8	8.0

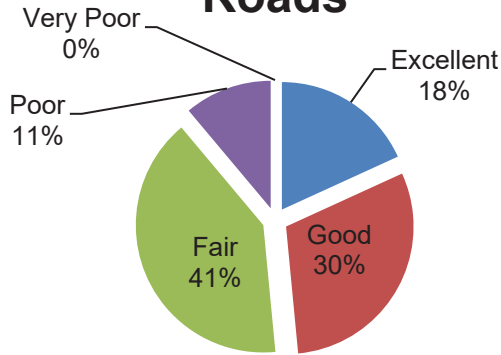
Number of Bridges & Culverts	Structure Type*	Total Deck Area (in m ²)	Average BCI	Useful Life	Net Book Value (in millions)	NEEDS		
						NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
10	I-Beam of girders	900	65	75	3.6	0.9	3.8	2.3
20	Box culvert open footing ≥3m span	1000	70	90	3.0	1.0	7.0	4.6
10	CSP Culvert arch ≥3m span	350	60	30	0.9	0.5	3.5	2.0
Total					7.5	2.4	14.3	8.9



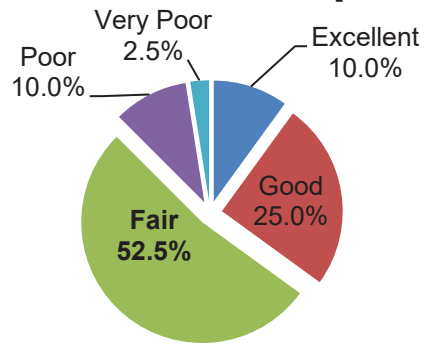
Number	Other Asset Types*	Condition	Useful Life	Net Book Value (in millions)	NEEDS		
					NOW (in millions)	1-5 year (in millions)	6-10 year (in millions)
1	Patrol Yard	Fair	75	0.8	0	0	2.5
1	Salt Storage Building	Poor	40	0.5	0.3	0	.05
Total				1.3	0.3	0	2.55

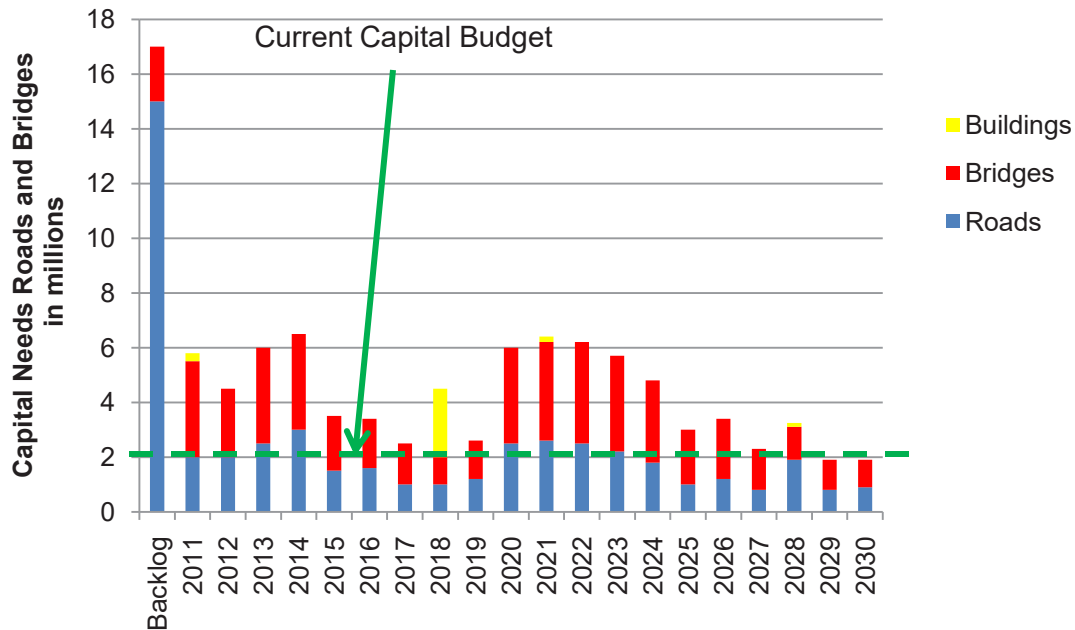
Current condition and costs are summarized in the charts as follows:

Condition HCB (Paved) Roads



Condition of Bridges and Culverts ≥3m span





Service Delivery

Maintenance and capital reinvestment in the township's roads and bridges has kept most of these assets in fair to good condition. Over the past few years the township was able to renew the entire arterial road system with assistance from various funding programs including the Building Canada Fund and the Stimulus program. The capital program has been developed based on a worst first scenario. The current strategies used and the cost of each strategy for road renewal and replacement are:

- For rural paved arterial roads
 - 50mm resurfacing at 20 years – \$48,000/lane km
 - Replace at 35 years - \$650,000/lane km
- For urban paved arterial roads
 - 50mm grind and overlay at 15 years - \$69,500/lane km
 - Replace at 35 years - \$1,000,000/lane km
- For paved local residential
 - 50mm resurfacing at 25 years - \$48,000/lane km
 - Replace at 50 years - \$650,000/lane km
- For surface treated roads
 - Pulverize, base improvements, double surface treat at 10 years – 367,000/km
- For unpaved roads
 - 75mm Granular resurfacing every 5th year – \$21,000/km
 - Spot ditching annually to 5% of system - \$11,500/km

Bridges and culverts are currently inspected every 2nd year by a consulting engineer and the engineer is requested, as part of the inspection program, to prepare a repair and renewal priority list. The following strategies were used for bridges and culverts:

- For bridges

- Bridge deck rehabilitation at 30 years – minor patching of concrete in deck, barrier and abutments, new waterproofing and paving - \$1500 / square metre of deck area.
- Bridge deck rehabilitation at 55 years – Significant repairs of concrete in deck (including concrete overlay), or deck replacement, patching of abutments, replace barriers, new waterproofing and paving - \$2500 / square metre of deck area.
- Replace bridge at 80 years - \$4500 / square metre of deck area.
- For culverts
 - Patch concrete culverts at 50 years of age - \$1200 / square metre
 - Replace concrete culvert at 90 years of age - \$2800 / square metre.
 - Repair or apply concrete liner to CSP culverts at 25 years of age - \$1200 / square metre
 - Replace CSP culvert at 35 years of age if not relined and 50 years of age if lined - \$2800 / square metre.

Maintenance activities for the township's road and bridges are undertaken by in-house staff using the township's own equipment. This includes: all routine maintenance for roads such as: pothole patching, shoulder grading, sign maintenance, winter maintenance, surface grading (unpaved), bridge washing and replacement of small diameter culverts on unpaved roads. The current annual \$1.0m maintenance budget meets the needs of the department.



D Planned Actions

The following issues have been identified and will be addressed over the term of the AMP:

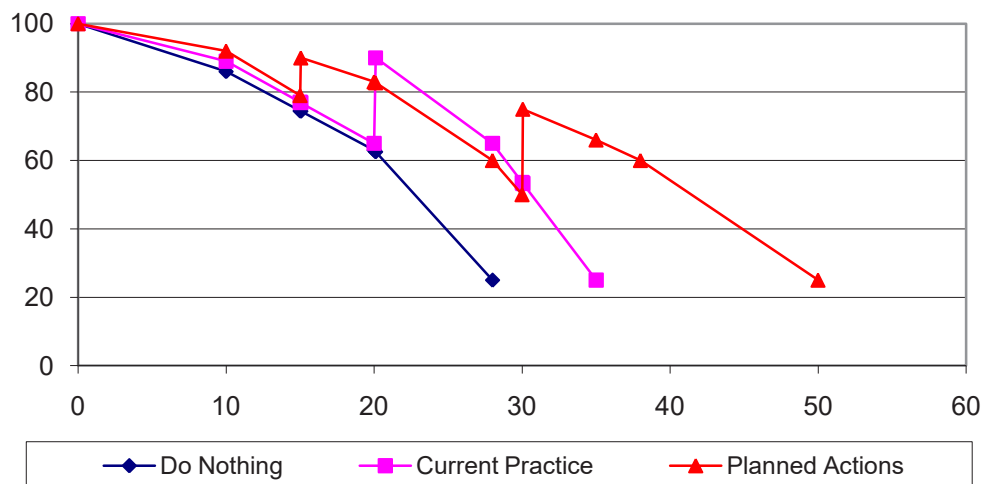
Key Indicator	Issue	Potential Impact	Current Controls	Action Plan
Condition	Condition of arterial roads	The 26.5 km of arterial roads were recently rehabilitated and are now in very good condition. Past practice has been worst first.	Pavement evaluations are completed on a 4 year cycle, which in turn updates the pavement condition index	Implement a preservation strategy for the arterial road network that will maintain these roads at a condition rating of 80 or greater
	Bridge 1 on Concession 1 requires replacement	Bridge closure will result in a 20 km detour. Minimum emergency response times will be unachievable	Bridge is load restricted and delineated for one lane of traffic	Replace bridge in 2011
	Unpaved Roads	In the 4 th year after an unpaved road is resurfaced, the timeframe between routine grading is shorter and the overall condition is poor	5 year – 75mm resurfacing program	Beginning in 2017, shorten the timeframe for the granular resurfacing program from a 5 year cycle to once every 3 years. A \$0.24m maintenance budget increase is required.
System Usage	Traffic volumes on Concession Roads 5 and 6 which are currently being used as an alternate route for commuter traffic.	Frequent grading is required otherwise washboards and potholes is making driving on these roads problematic, requiring vehicles to travel at less than posted speed and drivers to steer an irregular course to avoid defects in the road surface	Land use planning restrictions have been placed on future development in the area	Undertake base repairs/ improvements and double surface treat the roads in question at a total cost of \$3.7m. Work to be completed over a 4 year period beginning in 2012

Adopting a pavement preservation program means moving away from worst first and providing a program that addresses minor defects, extends the life of the road and keeps good roads in good condition. After examining the various options for pavement preservation program it was decided to reduce the timeframes between resurfacing treatments and add slurry seal treatment to the program on arterial road. The revised arterial road program will consist of:

- For rural paved arterial roads
 - Slurry seal at 5 years after reconstruction - \$10,000/lane km
 - 50mm resurfacing at 15 years – \$48,000/lane km
 - Slurry seal at year 20 - \$10,000/lane km
 - 50mm resurfacing and spot base repairs at 35 years - \$73,000/lane km
 - Slurry seal at year 40 - \$10,000/lane km

- Replace at 50 years - \$650,000/lane km
- For urban paved arterial roads
 - Slurry seal at 5 years after reconstruction - \$10,000/lane km
 - 50mm grind and overlay at 15 years - \$69,500/lane km
 - Slurry seal at year 20 - \$10,000/lane km
 - 50mm grind and overlay and spot base repairs at 35 years - \$94,500/lane km
 - Slurry seal at year 40 - \$10,000/lane km
 - Replace at 50 years - \$1,000,000/lane km

The benefits of adopting a pavement preservation program on the arterial road system can be demonstrated in the following chart:



In order to prioritize pavements a pavement priority number will be applied to each road section.

For the balance of the paved network where the condition of the road is >65 the following strategies will be implemented:

- For paved local residential
 - Crack seal at 5 years - \$5,000/lane km
 - 50mm resurfacing at 25 years - \$48,000/lane km
 - Crack seal at 30 years - \$5,000/lane km
 - 50mm resurfacing and spot base repairs at 40 years - \$73,000/lane km
 - Crack seal at 45 years - \$5,000/lane km
 - Replace at 60 years - \$650,000/lane km
- For surface treated roads
 - Single treatment every 5 years - \$35,000/km
 - Spot ditching annually to 5 % of system - \$11,500/km
 - Pulverize, base improvements, double surface treat at 40 years – 367,000/km

Paved roads at a PCI of <65 will continue on a worst first basis and be reconstructed when the reach a PCI of 40

For unpaved roads the timeframe for the current program will be reduced from 5 year cycle to a 3 year cycle.

- 75mm Granular resurfacing every 3rd year – \$21,000/km
- Spot ditching annually to 5% of system - \$11,500/km

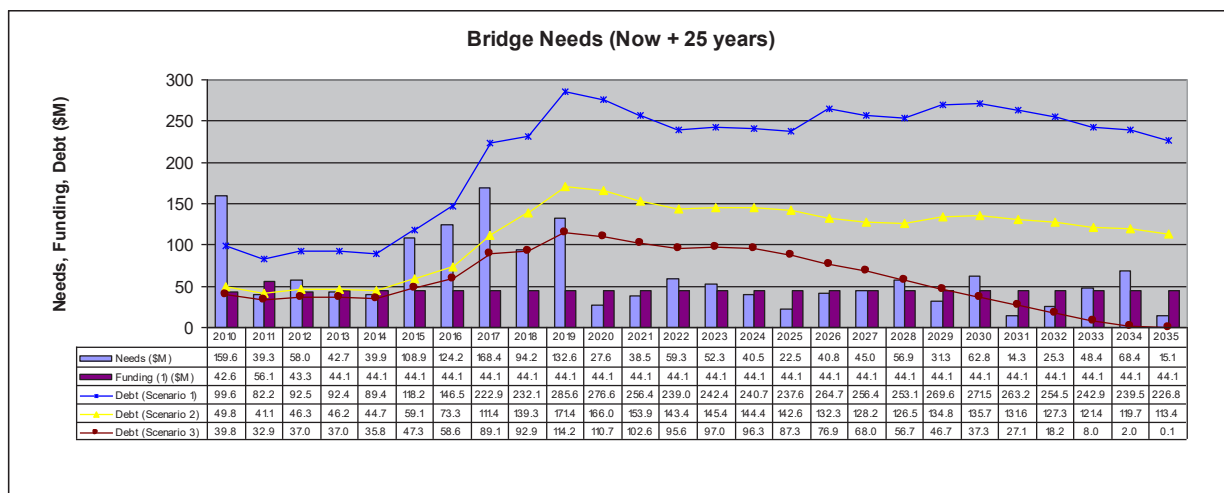
For bridges, some in Poor condition can have a small holding strategy repairs done to extend the life of the bridge by 6 to 10 years. This will defer the major expense of structure replacement, while still maintaining the bridge in a serviceable condition. Some other bridges that are still in Good condition can have work done ahead of other Poor condition bridges to help preserve the bridges before they required extensive repair.

Costs, Funding Projections and Implementation

As this is an example and because there is no actual data on individual assets the example, in this section, includes a representation of what this section should look like. Financial modelling will be required and financing policies developed (e.g. reserve contribution policies, debt management policies, etc) to ensure that the needs are fully funded and that the investment gap is being reduced.

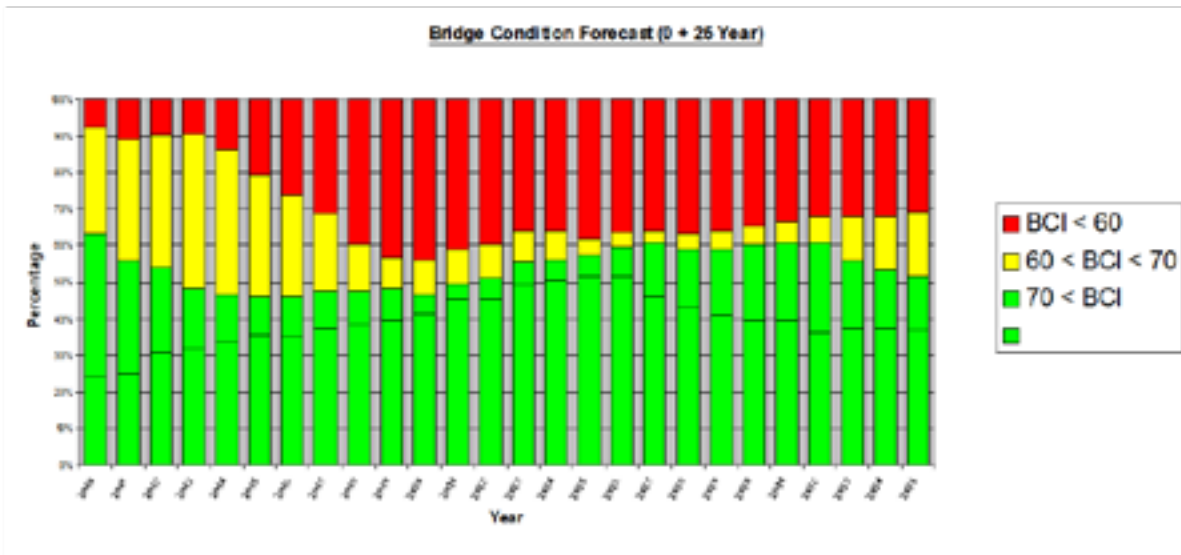
In this section of the plan you should indicate the current maintenance and capital funding levels and the sources for the budget i.e. local property tax, grants, subsidies, local improvements, development charges, etc. Provide a description as to whether or not the current funding levels will meet the above stated goals and objectives. If the current funding will not achieve the desired results provide alternate funding scenario's that can achieve the desired result.

Charts can be added similar to below to show funding debts and condition forecasts. NOTE: the charts below are samples that do not relate to the Township of Example.

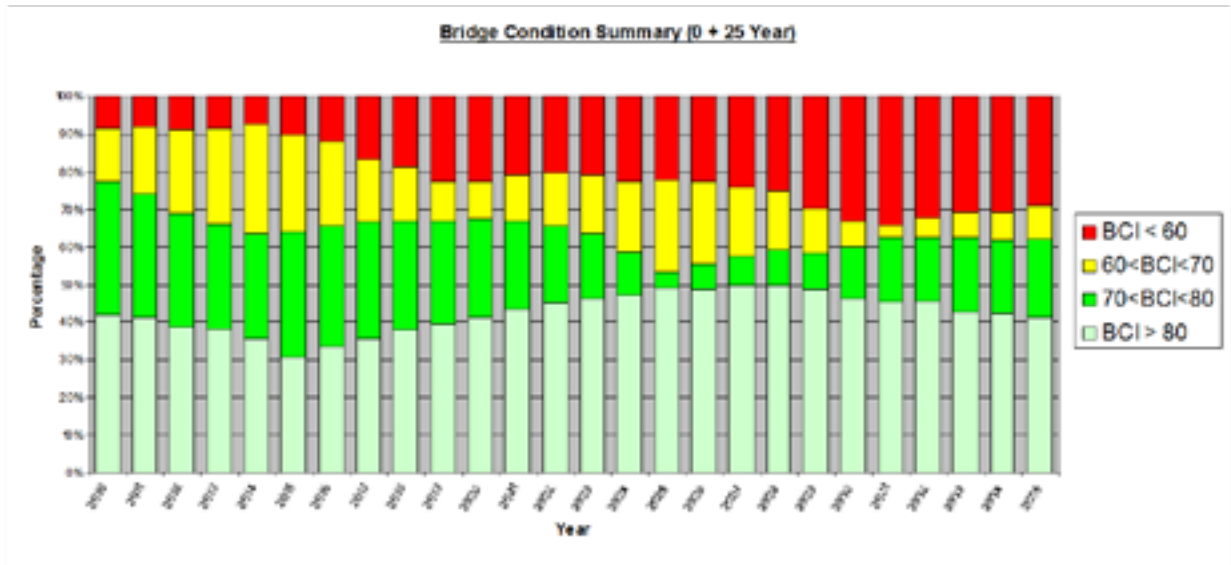


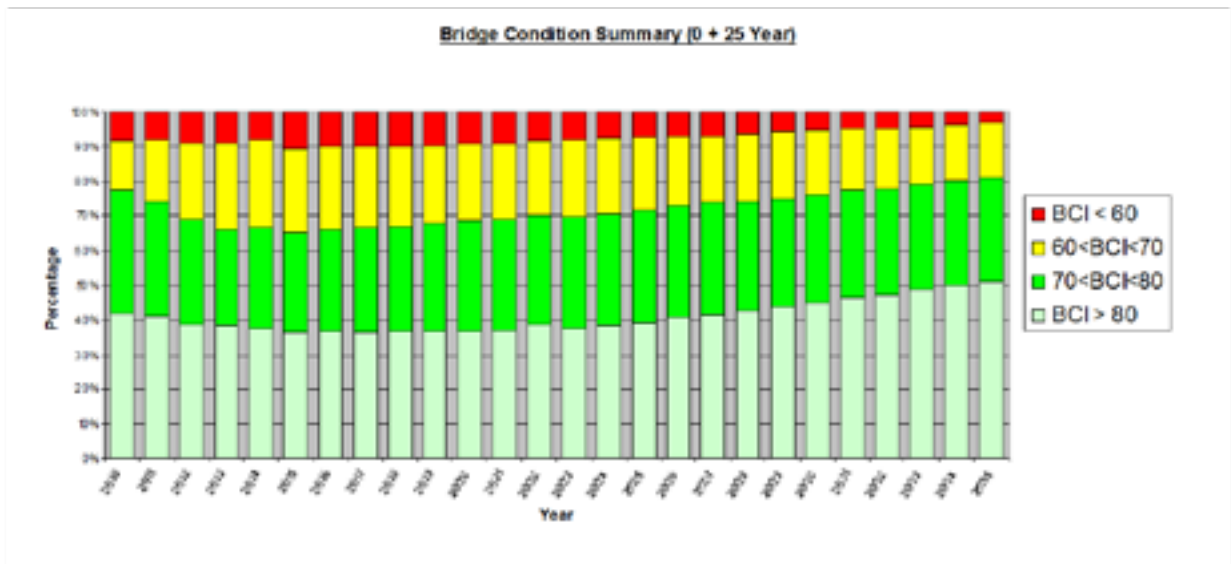


Funding Scenario 1

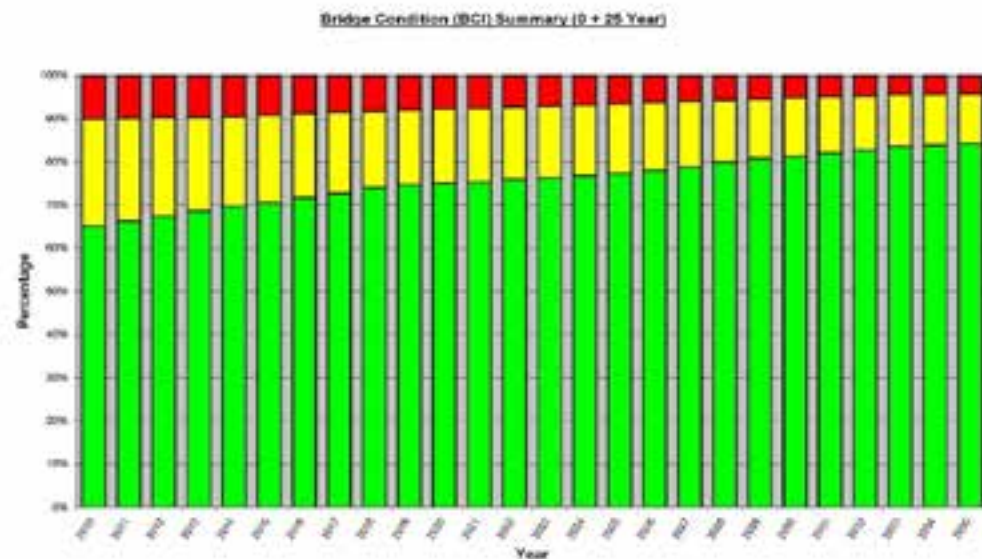


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Funding Scenario 2



Funding Scenario 2 will allow the township to achieve the desired goals and objectives. However with Funding Scenario 2 an increase in the capital budget is required (if the increase must be phased in, describe the impact that will create on the goals and objectives).

After selecting the preferred funding scenario describe the actions that will be taken over the term of the plan (an example table is provided):



Asset ID	Asset Type	Asset Name	Condition Rating	Type of Work Required	When	Cost
Road 1	arterial road	Main Street	85	Preservation – Slurry Seal	2011	125,000
Salt 1	Building	Salt Building	poor	replace	2011	300,000
Bridge 1	I Beam of Girders	Bridge 1	45	replace	2011	800,500
Road 2	local HCB	Maple Street	38	reconstruct	2011	900,000
Road 3	unpaved	Con 5	52	Base and surface	2012	925,000
(insert rows and complete the table for the balance of the plan years)						
Total						

All activities for the maintenance of the road surface, traffic control devices, storm water management, roadside mowing, weed control and winter control were reviewed in the development of this plan. The only issue identified during the review was with equipment as follows:

Activity	Current Processes Used to Provide Service	Process Changes to be Made	Target Implementation Date	Benefit
Winter Maintenance	Winter maintenance operations are provided by in-house staff and own equipment. 2 of the 5 combination trucks used to provide service are nearing the end of their useful life. These trucks are only used for winter maintenance and stored in the yard for the balance of the year.	These trucks are scheduled for replacement in 2012 and 2014 respectively. Instead of replacement the township will call a 10 year tender for the supply of 2 contract combination plow units	Tenders will be prepared and circulated in the summer of 2013 for the supply of 2 contract plows for a 10 year timeframe beginning the 2013/2014 winter season.	Elimination of \$500,000 in capital expenditure to purchase replacement plow trucks

E Accountability & Feedback

Performance Measures

In addition to the performance measures included in the Municipal Performance Measurement Program for Roads and Bridges, the Township of Example will supplement the list with the measures shown in the table below. These measures will be included in an annual report posted on the township’s website by March the following year.



Financial	Quality	Management
<i>% annual (\pm) change in the cost per person per day</i>	<i>% of arterial roads at a condition rating of 80 or better</i>	<i>% of capital rehabilitation projects completed on time and within budget</i>
<i>% annual (\pm) change in net book value of road & bridge assets</i>	<i>% of local residential roads at a condition rating of 65 or better</i>	
	<i>% of bridges & culverts $\geq 3m$ span at a condition rating of 70 or better</i>	

Term of the Plan

This plan will cover the period January 1, 2011 to December 31, 2030. At the beginning of every year the costs included in the plan will be updated. The plan will undergo a thorough review once every 4 years as soon as possible following the election of a new council. Therefore the 1st major review of this document will be January 2015.

Conclusion

The implementation of this Asset Management Plan will provide guidance for this and future councils and staff to meet the needs of our customers and improve our infrastructure over the timeframe in this plan. The key benefit in this plan is:

- Knowing the total lifecycle costs, will improve council and staff's ability to select options for operation, maintenance, renewal and replacement of roads and bridges that provide the lowest long-term cost.