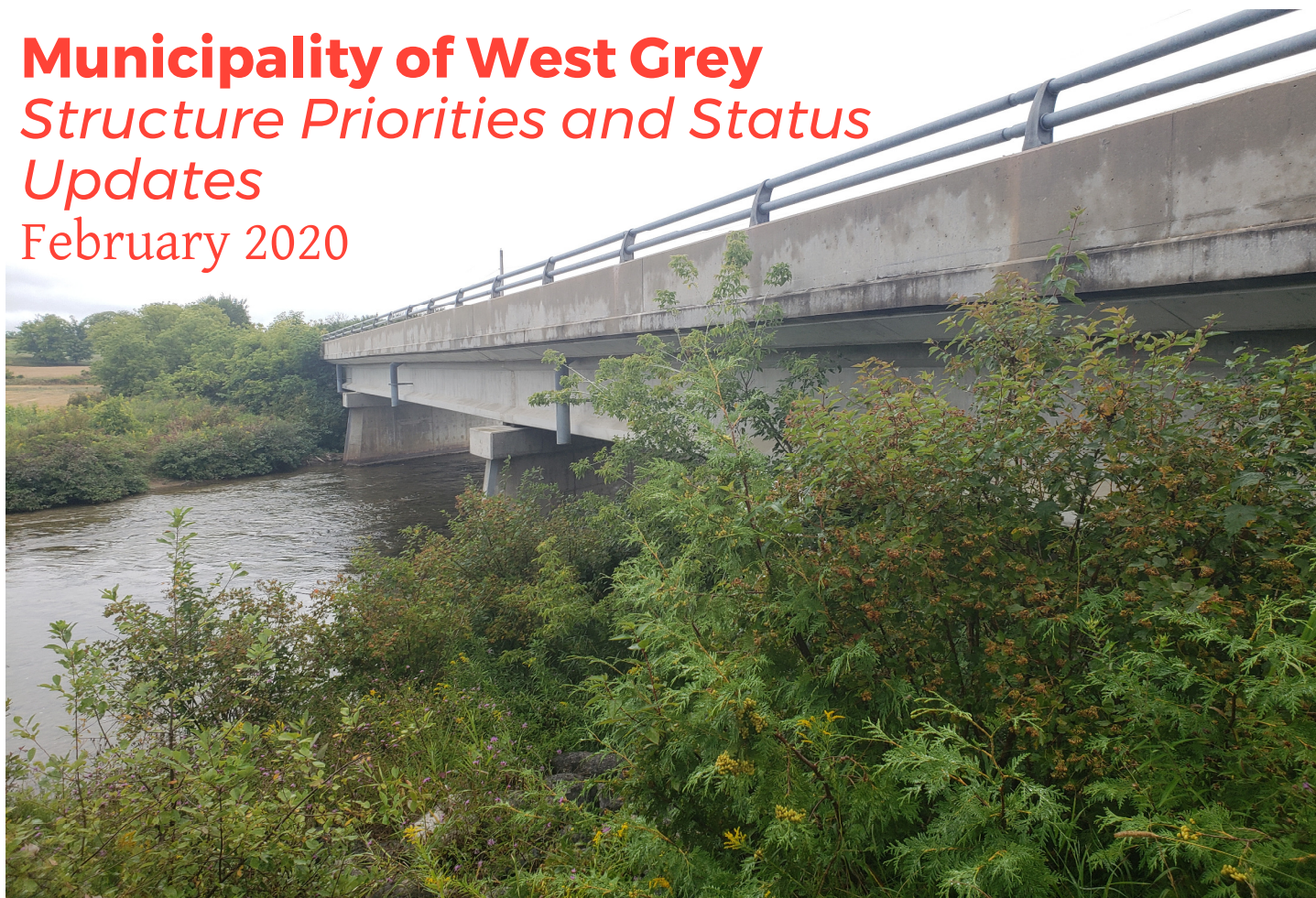


**Municipality of West Grey**  
*Structure Priorities and Status*  
*Updates*  
February 2020







**Five-Year  
Capital  
Works  
Forecast**

wsp



Structure	Work Description	0 to 5 Years	6 to 10 Years	Structure	Work Description	0 to 5 Years	6 to 10 Years	Structure	Work Description	0 to 5 Years	6 to 10 Years	Structure	Work Description	0 to 5 Years	6 to 10 Years
B-001	Rehabilitation	\$173,250	\$58,500	B-028	Rehabilitation	\$318,500	-	N-061	Rehabilitation	\$270,000	\$41,250	G-148	Rehabilitation	\$40,500	\$37,500
B-003	Rehabilitation	\$335,000	\$120,000	G-030	Rehabilitation	\$15,750	-	N-062	Rehabilitation	\$49,500	\$9,750	G-154	Rehabilitation	\$40,500	-
B-004	Rehabilitation	-	\$84,000	G-031	Rehabilitation	\$34,500	\$28,500	N-063	Rehabilitation	\$77,250	-	N-163	Rehabilitation	\$40,500	-
B-005	Rehabilitation	\$25,500	\$57,000	G-032	Rehabilitation	\$39,750	\$39,000	N-064	Rehabilitation	\$3,750	-	N-165	Rehabilitation	\$48,000	-
B-006	Rehabilitation	\$111,750	-	G-033	Replacement	\$2,733,500	-	N-065	Rehabilitation	\$23,250	\$12,000	N-171	Rehabilitation	\$5,250	-
B-007	Rehabilitation	\$124,500	\$69,000	G-035	Rehabilitation	\$36,000	-	N-067	Rehabilitation	\$221,000	-	N-172	Rehabilitation	\$41,250	-
B-008	Rehabilitation	\$219,750	\$8,250	G-037	Rehabilitation	\$390,000	-	N-068	Rehabilitation	\$33,000	\$14,250	N-178	Rehabilitation	\$6,750	-
B-009	Rehabilitation	\$249,750	\$4,500	G-038	Replacement	\$1,330,000	-	N-069	Rehabilitation	\$49,500	\$12,000	N-179	Rehabilitation	\$42,000	-
B-010	Rehabilitation	\$30,000	\$43,500	G-039	Rehabilitation	\$35,250	\$28,500	N-070	Rehabilitation	\$66,750	\$135,000	N-183	Rehabilitation	\$52,500	-
B-011	Rehabilitation	\$161,250	\$12,000	G-040	Rehabilitation	\$206,250	\$217,800	N-071	Rehabilitation	\$9,000	-	N-184	Rehabilitation	\$273,000	-
B-012	Rehabilitation	\$45,000	\$97,500	G-041	Rehabilitation	\$48,000	-	N-072	Rehabilitation	\$52,500	-	N-185	Rehabilitation	\$65,250	\$6,750
B-013	Rehabilitation	\$25,500	\$20,250	G-043	Rehabilitation	\$35,250	\$28,500	B-104	Rehabilitation	\$28,500	\$9,750	N-187	Rehabilitation	\$40,500	-
B-014	Rehabilitation	\$90,000	-	G-044	Replacement	\$1,330,000	-	B-105	Rehabilitation	\$21,000	-	N-188	Rehabilitation	\$385,000	-
B-015	Rehabilitation	\$15,750	\$171,750	G-046	Rehabilitation	\$494,000	-	B-107	Rehabilitation	\$95,250	\$2,250	N-189	Rehabilitation	\$357,500	-
B-016	Rehabilitation	\$19,500	\$63,000	G-048	Rehabilitation	\$48,000	\$15,750	B-112	Rehabilitation	\$98,250	\$3,750	N-190	Rehabilitation	\$70,500	-
B-017	Rehabilitation	\$22,500	\$355,500	N-050	Rehabilitation	-	\$60,000	B-113	Rehabilitation	\$36,000	-	B-195	Rehabilitation	\$49,500	-
B-018	Rehabilitation	\$31,875	\$96,000	N-051	Replacement	\$1,365,000	-	B-114	Rehabilitation	\$63,750	\$27,750	B-196	Rehabilitation	\$208,000	-
B-019	Rehabilitation	\$21,000	\$30,000	N-052	Rehabilitation	\$59,250	\$13,500	B-115	Rehabilitation	\$40,500	\$42,000	G-197	Rehabilitation	\$56,250	\$270,000
B-020	Replacement	\$1,400,000	-	N-054	Rehabilitation	\$66,000	\$46,500	B-118	Rehabilitation	\$47,250	-	B-198	Rehabilitation	\$48,000	-
B-021	Rehabilitation	\$211,500	-	N-055	Rehabilitation	\$102,000	\$116,250	B-119	Rehabilitation	\$80,250	\$30,750	N-199	Rehabilitation	\$40,500	-
B-022	Rehabilitation	\$66,000	-	N-056	Rehabilitation	\$141,750	\$41,250	B-120	Rehabilitation	\$81,000	-	D-001	Rehabilitation	\$433,500	\$30,000
B-023	Rehabilitation	\$43,500	\$9,000	N-057	Rehabilitation	\$23,250	-	B-121	Rehabilitation	\$50,250	-	D-101	Rehabilitation	\$159,500	\$22,500
B-025	Rehabilitation	\$269,750	\$107,250	N-058	Rehabilitation	\$219,000	\$72,000	G-126	Rehabilitation	\$12,750	\$120,000	P-101	Rehabilitation	\$22,500	\$8,250
B-026	Rehabilitation	\$57,000	\$11,250	N-059	Rehabilitation	\$222,750	\$72,000	G-132	Rehabilitation	\$40,500	-	P-102	Rehabilitation	\$27,000	-
B-027	Rehabilitation	\$12,000	\$60,750	N-060	Rehabilitation	\$78,000	\$60,750	G-133	Rehabilitation	\$38,500	\$41,250				

**TOTAL 1-5 YEAR**

Rehabilitation = **\$9,291,875**

Replacement = **\$8,158,500**

**TOTAL 6-10 YEAR**

Rehabilitation = **\$3,382,800**



\*Estimated costs are high-level and based on most recent inspections and current market place

\*Factors are applied to account for costs associated with contractor mobilization, design & engineering, preliminary investigations, materials testing, supervision during construction, approvals, contingency, etc.



## Priority Structure Rehabilitation and Replacement

- Prioritization of the required capital work is critical for maximizing economy
- With a large volume and anticipated expenditure for works identified in the legislated biennial Ontario Structure Inspection Manual (OSIM) inspections, further prioritization is necessary to establish an attainable schedule
- Two priority lists have been established for:
  - *Major Rehabilitation and Replacement*
  - *Minor Rehabilitation*



**2019 Structure Priority List  
Major Rehabilitation or Replacement  
The Municipality of West Grey**

Structure	Priority	Bridge or Culvert	Age (2020)	BCI Value	Estimated Cost of Rehabilitation	Estimated Cost of Replacement	Estimated Asset Replacement Cost
G-038	1	Bridge	100	17.29		\$ 1,330,000.00	\$ 1,330,000.00
G-044	2	Bridge	100	14.47		\$ 1,330,000.00	\$ 1,330,000.00
N-051	3	Bridge	90	25.52		\$ 1,365,000.00	\$ 1,365,000.00
B-003	4	Bridge	80	33.36	\$ 455,000.00		\$ 1,050,000.00
B-028	5	Bridge	99	13.33	\$ 318,500.00		\$ 1,428,000.00
G-046	6	Bridge	27	58.63	\$ 494,000.00		\$ 1,400,000.00
B-025	7	Bridge	107	37.77	\$ 377,000.00		\$ 1,750,000.00
G-037	8	Bridge	66	9.98	\$ 390,000.00		\$ 1,050,000.00
B-020	9	Bridge	100	28.65		\$ 1,400,000.00	\$ 1,400,000.00
G-033	10	Bridge	90	39.70	\$ 1,625,000.00		\$ 2,500,000.00
					\$ 3,659,500.00	\$ 5,425,000.00	\$ 14,603,000.00

 No Potential for Rehabilitation  
 Potential risk/reward of rehabilitation



\*Estimated costs are high-level and based on most recent inspections and current market place

\*Factors are applied to account for costs associated with contractor mobilization, design & engineering, preliminary investigations, materials testing, supervision during construction, approvals, contingency, etc.



**2019 Structure Priority List  
Minor Rehabilitation or Replacement  
The Municipality of West Grey**

Structure	Priority	Bridge or Culvert	Age (2020)	BCI Value	Estimated Cost of Rehabilitation	Estimated Cost of In-House Replacement	Estimated Cost of Replacement	Estimated Asset Replacement Cost
N-184	1	Culvert	70	28.69	\$ 273,000.00			\$ 560,000.00
N-067	2	Bridge	7	29.84	\$ 221,000.00			\$ 945,000.00
G-040	3	Bridge	90	34.08	\$ 242,000.00			\$ 1,400,000.00
D-101	4	Culvert	60	35.31	\$ 182,000.00			\$ 840,000.00
B-196	5	Culvert	60	69.34	\$ 208,000.00			\$ 735,000.00
N-188	6	Culvert	75	25.27	\$ 385,000.00			\$ 630,000.00
N-189	7	Culvert	75	24.09	\$ 357,500.00			\$ 630,000.00
G-197*	8	Culvert	40	57.87		\$ 96,000.00	\$ 375,000.00	\$ 525,000.00
B-112*	9	Culvert	26	61.65		\$ 96,000.00	\$ 350,000.00	\$ 490,000.00
G-126*	10	Culvert	40	32.82		\$ 90,000.00	\$ 275,000.00	\$ 385,000.00
					\$ 1,868,500.00	\$ 282,000.00		\$ 7,140,000.00

	No Potential for Rehabilitation
	Potential risk/reward of rehabilitation
	* Potential for reduced replacement cost with work by municipal forces



\*Estimated costs are high-level and based on most recent inspections and current market place

\*Factors are applied to account for costs associated with contractor mobilization, design & engineering, preliminary investigations, materials testing, supervision during construction, approvals, contingency, etc.



## Potential 2020 Structure Rehabilitations

- B-003 – \$455,000
- Scope of work includes:
  - *Concrete deck, curb, wingwall, abutment wall, and soffit repairs*
  - *Bridge deck waterproofing*
  - *Wearing surface rehabilitation*
  - *Removal and installation of structure and approach barrier protection to meet current code*
  - *Replace deck drains*





## Potential 2020 Structure Rehabilitations

- G-040 – \$242,000
- Scope of work includes:
  - *Cleaning and painting of structural steel elements*
  - *Replace bearings*
  - *Concrete deck, curb, wingwall, abutment wall, and soffit repairs*
  - *Wearing surface rehabilitation*
  - *Removal and installation approach protection to meet current code*





## Potential 2020 Structure Rehabilitations

- N-067 – \$221,000
- Scope of work includes:
  - *Embankment restoration and slope stabilization and protection*
  - *Approach rebuilding*
  - *Wearing surface rehabilitation*
  - *Removal and installation of barrier and approach protection to meet current code*



## Potential 2020 Structure Rehabilitations

- N-184 – \$273,000
- Scope of work includes:
  - *Foundation repairs*
  - *Concrete soffit, top deck, wingwall, and wall repairs*
  - *Deck waterproofing and wearing surface*
  - *Scour protection to foundation*





# The Kennedy Bridge



## The Kennedy Bridge

- *The Kennedy Bridge (Structure B-020) is a single lane steel pony truss spanning 24m*
- *Located on Concession 2 in the former Bentinck Township area*
- *Constructed in approximately 1920, the structure has reached the end of it's lifecycle*
- *Closed due to safety and structural stability concerns in 2015*
- *Main structural concerns include diminished capacity of the foundations and truss bearing areas to support the superstructure*
- *Estimated 2020 cost of replacement \$1,413,000*



# The Kennedy Bridge

## Kennedy Bridge Replacement Cost Estimate



Task	Task Type	Itemized Cost (\$)			
		Estimated Cost (2020)	Contingency/Unanticipated Mark Up (10%)	Total Estimated Cost (2020)	Total Forecasted Cost (2025)
Preliminary Engineering (Completion of Municipal Class environmental Assessment, Geotechnical Investigation and Reporting, Environmental, Archeological, and Historical Assessments and Site Survey and Preliminary Design as required)	Engineering	\$60,000.00	\$6,000.00	\$66,000.00	\$69,135.00
Engineering Design of New Structure	Engineering	\$65,000.00	\$6,500.00	\$71,500.00	\$74,896.25
Contract Preparation, Approvals (and associated application fees), Advanced Consultation and Tendering	Engineering	\$25,000.00	\$2,500.00	\$27,500.00	\$28,806.25
Decommissioning and Removal of Existing Structure	Construction	\$75,000.00	\$7,500.00	\$82,500.00	\$86,418.75
Construction of New Structure (assume concrete or concrete steel composite)	Construction	\$900,000.00	\$90,000.00	\$990,000.00	\$1,037,025.00
Mobilization and Demobilization	Construction	\$30,000.00	\$3,000.00	\$33,000.00	\$34,567.50
Traffic Management, Site Control, and Signage	Construction	\$45,000.00	\$4,500.00	\$49,500.00	\$51,851.25
Insurance and Bonding	Construction	\$25,000.00	\$2,500.00	\$27,500.00	\$28,806.25
Contract Administration and Inspection	Engineering	\$60,000.00	\$6,000.00	\$66,000.00	\$69,135.00
<b>Total Cost</b>				<b>\$1,413,500.00</b>	<b>\$1,480,641.25</b>



\*Estimated costs are high-level and based on most recent inspections and current market place

\*Factors are applied to account for costs associated with contractor mobilization, design & engineering, preliminary investigations, materials testing, supervision during construction, approvals, contingency, etc.

# The Traverston Bridge





## The Traverston Bridge

- *The Traverston Bridge (Structure G-033) is a two lane steel pony truss spanning approximately 35m*
- *Located on Traverston Road in the former Glenelg Township area*
- *Constructed in approximately 1930, the structure has reached the end of it's lifecycle*
- *Closed due to safety and structural stability concerns in 2018*
- *Main structural concerns include a failed truss bearing and subsequent warping of the truss bottom chord*
- *Estimated 2020 cost of replacement \$2,734,000*

# The Traverston Bridge

## Traverston Bridge Replacement Cost Estimate



Task	Task Type	Itemized Cost (\$)			
		Estimated Cost (2020)	Contingency/Unanticipated Mark Up (10%)	Total Estimated Cost (2020)	Total Forecasted Cost (2025)
Preliminary Engineering (Completion of Municipal Class environmental Assessment, Geotechnical Investigation and Reporting, Environmental, Archeological, and Historical Assessments and Site Survey and Preliminary Design as required)	Engineering	\$70,000.00	\$7,000.00	\$77,000.00	\$80,657.50
Engineering Design of New Structure	Engineering	\$90,000.00	\$9,000.00	\$99,000.00	\$103,702.50
Contract Preparation, Approvals (and associated application fees), Advanced Consultation and Tendering	Engineering	\$20,000.00	\$2,000.00	\$22,000.00	\$23,045.00
Decommissioning and Removal of Existing Structure	Construction	\$300,000.00	\$30,000.00	\$330,000.00	\$345,675.00
Construction of New Structure (assume concrete or concrete steel composite)	Construction	\$1,750,000.00	\$175,000.00	\$1,925,000.00	\$2,016,437.50
Mobilization and Demobilization	Construction	\$75,000.00	\$7,500.00	\$82,500.00	\$86,418.75
Traffic Management, Site Control, and Signage	Construction	\$60,000.00	\$6,000.00	\$66,000.00	\$69,135.00
Insurance and Bonding	Construction	\$50,000.00	\$5,000.00	\$55,000.00	\$57,612.50
Contract Administration and Inspection	Engineering	\$70,000.00	\$7,000.00	\$77,000.00	\$80,657.50
<b>Total Cost</b>				<b>\$2,733,500.00</b>	<b>\$2,863,341.25</b>



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# Single vs. Two Lane Structures

## SINGLE VS. TWO LANE STRUCTURES

### Single Lane Structure Benefits:

- Lower cost to build (approximately 20%)
- Lower cost of on-going maintenance and future replacement costs at end of lifecycle
- Lower overall environmental impact (smaller structure footprint, less material production)

### Two Lane Structure Benefits

- Higher level of safety (especially if there are any local changes in horizontal and vertical alignment)
- Can provide passage to larger width vehicles (farm equipment)
- Increases the level of service designation of the road and future growth potential

## **Municipal Class Environmental Assessments**

- A Municipal Class Environment Assessment (MCEA) is completed according the applicable schedule for the type of project/activity
- There are schedules A, A+, B, C and Master Plan activities

# **Municipal Class Environmental Assessments *Schedule A***

- Schedule A and A+ are pre-approved activities with low potential for environmental impacts
- Relatively low cost to implement with no mandatory points of agency and public consultation and no potential for orders against a project
- Public notice of the project upon completion of a Schedule A+ assessment is sometimes appropriate, but it is recommended if there is considerable interest and importance of the project, that public meetings are considered.



## **Municipal Class Environmental Assessments *Schedule B***

- Schedule B and C activities are for projects having some potential for negative environmental impacts
- Require a more involved process including multiple points of agency and public consultation
- Schedule B and C projects have mandatory agency and public review periods

## Municipal Class Environmental Assessments

- Replacement of an existing structure can fall under a Schedule A+ where the structure is to be for the same purpose, use, capacity, and at the same location, and is either less than 40 years old, or is more than 40 years old with no historical significance.
- The same “capacity” refers to traffic and hydraulic considerations, requiring that the structure be for the same number of lanes (structure width) and provides the same hydraulic cross-sectional opening
- Retirement of an existing structure facility can also fall under a Schedule A+ activity, with public consultation not mandatory, however recommended for activities with significant interest

## Municipal Class Environmental Assessments

- The time commitment and cost of an MCEA can vary significantly based several factors
- Environmental, historical, or archeological significance can all elevate the project to a higher schedule
- An MCEA can cost as little as \$5,000 (pre-approved schedule A and A+ with no public consultation) to over \$50,000 for a higher complexity schedule B or C
- A case-by-case approach is needed to determine the approximate time and expense requirement of an MCEA



Thank you!

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