MUNICIPALITY OF ARRAN-ELDERSLIE

BRIDGE INFRASTRUCTURE MASTER PLAN

APPENDICES

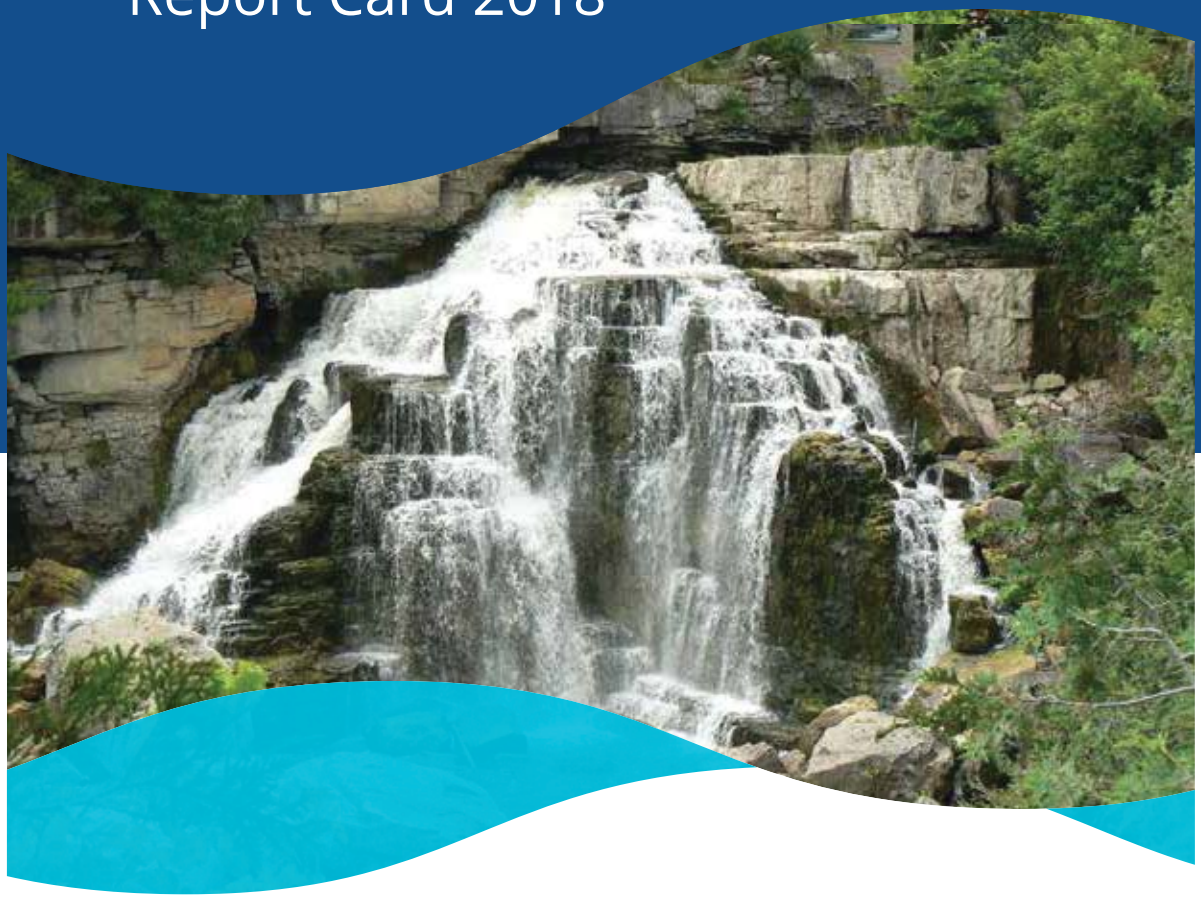
BMROSS
engineering better communities

APPENDIX A

WATERSHED REPORT CARDS

Grey Sauble

WATERSHED
Report Card 2018



Watershed Checkup

Grey Sauble Conservation has prepared this report card as a summary of the state of your forests, wetlands, and water resources.

Grey Sauble Conservation

Member of Conservation ONTARIO

WHERE ARE WE?



What is a Watershed?

A watershed is an area of land drained by a creek or stream. Similar to the branch of a tree, creeks empty into streams, which then empty into larger streams, eventually forming one main trunk. Within this system, everything is connected to everything else. In other words, actions which take place at the top of the system can and do affect those downstream.

Why Measure?

Measuring helps us better understand our watershed. It helps us to focus our efforts where they are needed most and track progress. It also helps us to identify healthy and ecologically important areas that require protection or enhancement. We measured:

- Surface Water Quality
- Forest Conditions
- Wetland Conditions

GRADING

A	Excellent
B	Good
C	Fair
D	Poor
F	Very Poor
	Insufficient Data

What is a watershed report card?

Ontario's Conservation Authorities report on watershed conditions every five years. The watershed report cards use Conservation Ontario guidelines and standards developed by Conservation Authorities and their partners.

SURFACE WATER QUALITY

Total phosphorus and Escherichia coli (bacteria) were measured. The type and number of Benthic invertebrates (small aquatic animals living in the sediment) were also identified. The results indicate pollution levels and stream health as measures of water quality. High surface water quality supports safe drinking water and provides social, economic and health benefits to people and animals.

What Did we Find?

- Watersheds score very well with most watersheds achieving a grade of Excellent or Good.
- Watersheds achieving a lower grade typically have poor forest cover grades as well, specifically poor treed riparian areas along watercourses.

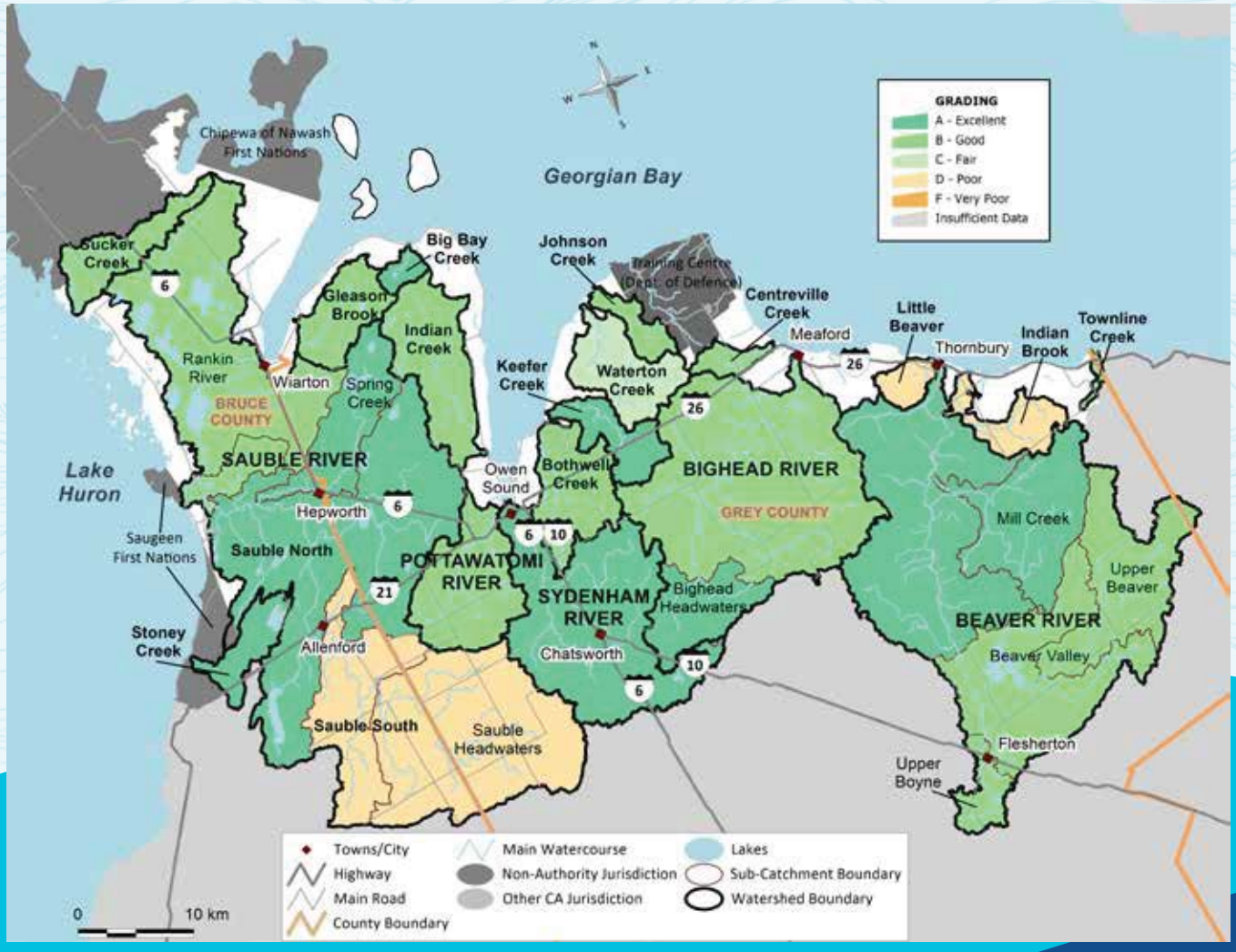


FOREST CONDITIONS

The percentages of forest cover, forest interior, and stream edges forested were measured. Forest interior provides habitat for many species that don't survive in smaller patches of trees. Forested stream edges cool water for native fish, prevent erosion and reduce contaminants entering streams.

What Did we Find?

- Grades were generally Good to Excellent.
- In areas with more intensive agriculture, grades were lower.
- Forest cover grades take time to improve since after trees are planted it may take years before they form a tree canopy.

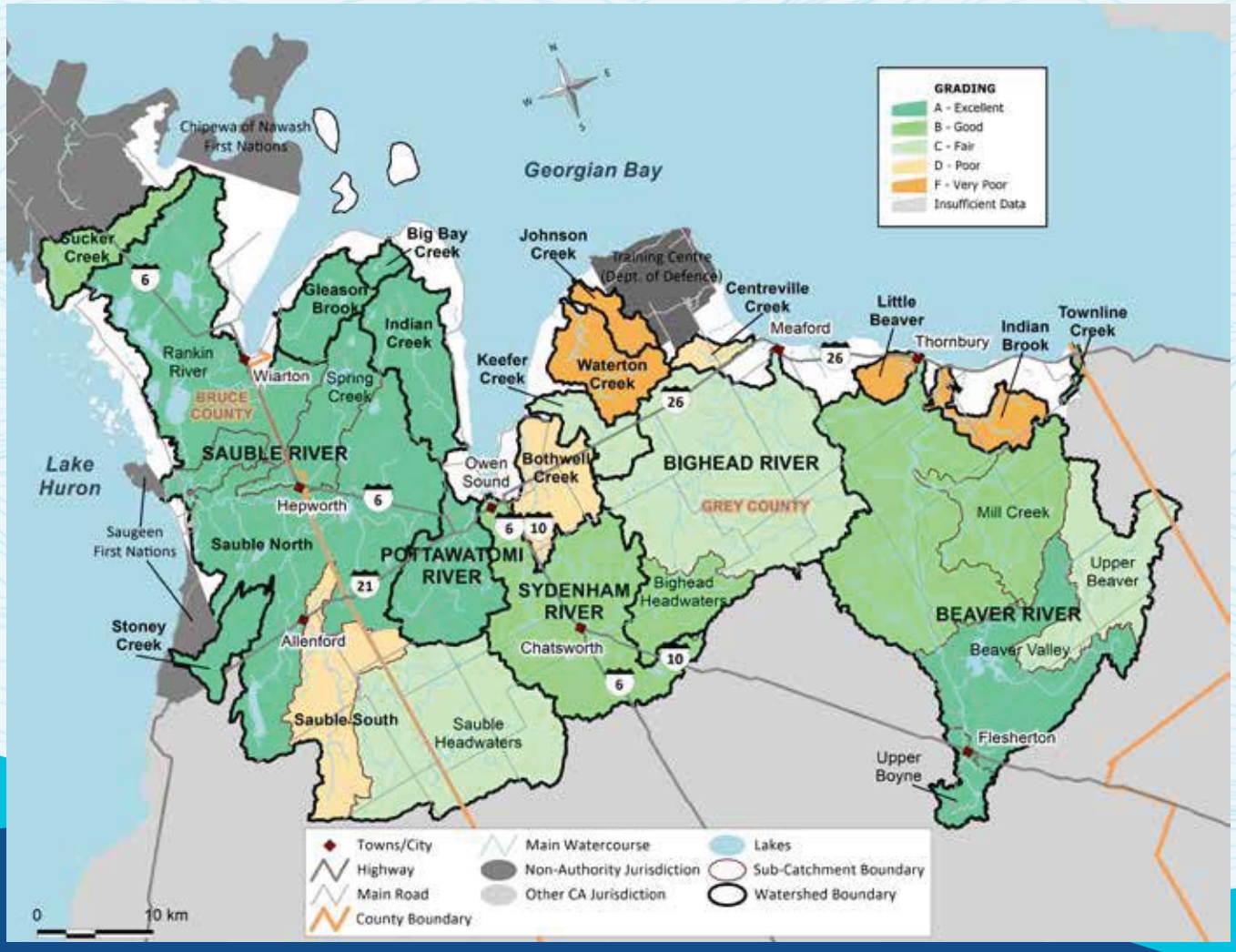


WETLAND CONDITIONS

The percentage of wetland cover was measured. Wetlands have large biodiversity and mitigate both flooding and droughts downstream.

What Did we Find?

- Most of the larger watersheds score very well.
- Some of the smaller high gradient watersheds had poor wetland coverage.
- Drainage improvements for agriculture likely has the greatest impact on wetland coverage.
- It is important to maintain our current wetlands as it is very difficult to increase wetland coverage.



Watershed Features

Grey Sauble Conservation is a unique area of jurisdiction consisting of 5 major watersheds and many smaller watersheds that outlet directly to Lake Huron and Georgian Bay. The topography ranges from sandy beaches at Sauble Beach, flat agricultural lands, the Niagara Escarpment, and the rolling hills in the Beaver Valley.

Watershed Grades Table

Watershed Name	Catchment Name	Sub Catchment	Forest Cover Grade	Wetland Grade	Surface Water Grade
Beaver River	Beaver River		A	B	A
	Beaver Valley	Upper Beaver	B	C	B
		Upper Beaver	B	A	B
		Upper Boyne	B	A	A
	Mill Creek		A	B	A
Big Bay Creek	Big Bay Creek		A	A	C
Bighead River	Bighead Headwaters		A	B	A
	Bighead River		B	C	B
Bothwell Creek	Bothwell Creek		B	D	B
Centreville Creek	Centreville Creek		B	D	B
Gleason Brook	Gleason Brook		B	A	A
Indian Brook	Indian Brook		D	F	B
Indian Creek	Indian Creek		B	A	B
Johnson Creek	Johnson Creek		B	F	Insufficient Data
Keefer Creek	Keefer Creek		A	C	B
Little Beaver River	Little Beaver		D	F	C
Pottawatomi River	Pottawatomi River		B	A	B
Sauble River	Rankin River		B	A	A
	Sauble Headwaters		D	C	C
	Sauble North		A	A	B
	Sauble River		B	A	A
	Sauble South		D	D	B
	Spring Creek		A	A	A
Stoney Creek	Stoney Creek		A	A	Insufficient Data
Sucker Creek	Sucker Creek		B	B	Insufficient Data
Sydenham River	Sydenham River		A	B	B
Townline Creek	Townline Creek		B	A	C
Waterton Creek	Waterton Creek		C	F	B

Watershed Report Cards are issued every 5 years.

A five year cycle allows time to understand potential problems, to work with municipalities and others to measurably improve watershed health, and enough data to be a reliable summary of watershed conditions.

For more details about the information found in these maps or this table, visit greysauble.on.ca or contact us.
You can find our contact information on the back panel.



WHAT ARE WE DOING?

Grey Sauble Conservation (GSC) staff monitor the health of our watershed by collecting data on environmental indicators

- Surface water samples at 27 locations are collected 8 times each year.
- As part of the Biological Monitoring and Assessment Program (BioMAP), benthic samples from 30 long-term monitoring sites are collected.
- Over 5,000 stream crossings have important water quality and quantity information updated by staff and volunteers, which includes stream crossing type and size, flow, water clarity, and the presence of fish.
- Over 900 sites have been classified by water temperature during warm summer days in order to assess watershed health and classify the system as cold water, cool water, or warm water.

GSC's programs and services contribute to the protection and improvement of watershed health

- To date close to 4 million trees have been planted across our watershed.
- Supporting development in appropriate areas and reducing impacts through environmental planning.
- Landowners and partners have been engaged to help restore and protect natural features and water quality through GSC's stewardship efforts.

HOW CAN WE ENHANCE THE WATERSHED?

What Can You Do?

Be a Watershed Steward!

- Plant native species, particularly trees and shrubs along streams, lakes, rivers, and ponds.
- Learn about invasive species and how you can prevent them from spreading.
- Decommission unused wells, as they provide a direct pathway to our groundwater systems.
- Inspect and pump out your septic system every three to five years.
- Do not dump anything down road side catch basins because they are connected directly to local waterbodies.
- Conserve water by using a rain barrel and low-flow household products.
- Keep livestock out of waterways, employ cover crops to reduce erosion.
- Reduce or eliminate the use of chemicals, pesticides, and fertilizers. Do not let them get into our waterways.
- Keep recreational activities clean! Have your boat motor checked for leaks.



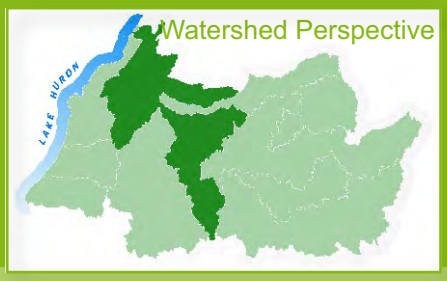
What Can Your Community Do?

- Consider and promote low impact development in your municipality.
- Support local sub-watershed studies.
- Support local initiatives to monitor water quality and quantity.

*Do you have questions not answered by this summary document? Visit **greysauble.on.ca** for more information:*

Grey Sauble Conservation
237897 Inglis Falls Road, RR 4 Owen Sound, ON
N4K 5N6
E-mail: j.bittorf@greysauble.on.ca
Website: greysauble.on.ca
Phone: 519-376-3076 | **Fax:** 519-371-0437

WATERSHED REPORT CARD



Lower Main Watershed

B

The Saugeen River downstream of Walkerton drains 908 square kms. This section of the river is 76 kilometres in length with an average gradient of 0.88 metres per kilometre. The main tributaries include Mill, Burgoyne, Snake, Vesta, Pearl, Deer, Otter, Willow and Silver Creeks as well as numerous smaller unnamed streams.

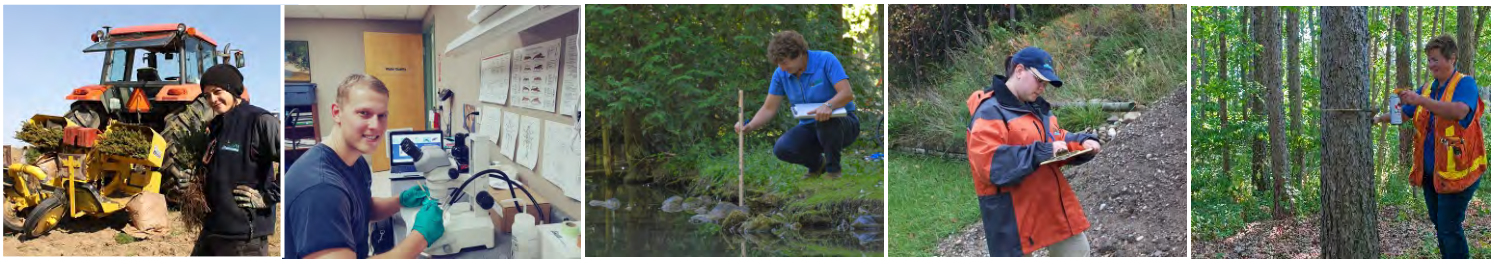
The watershed is predominantly agricultural and also includes the main communities of Southampton, Mildmay, Paisley and Walkerton.



Working to Keep Your Future Green

Staff work with partners and organizations in implementing projects that aim to improve the local environment. Research, lab and field work, data analysis, observations, testing, and so much more, is completed by staff in helping to determine the best and most applicable environmental measures to apply in each sub-watershed.

Watersheds are complex systems where everything is connected. We all live downstream.



Saugeen Conservation is a proud member of Conservation Ontario

1078 Bruce Rd. 12, P.O. Box 150, Formosa ON N0G 1W0 Tel. 519-367-3040Email: publicinfo@svca.on.ca www.svca.on.ca

Alternative formats of this report are available upon request.

General Information

Area
908 sq. km

Municipalities
Town of Saugeen Shores, Municipality of Arran-Elderslie, Municipality of Brockton Municipality of South Bruce, Howick Township, Municipality of West Grey, Township of Chatsworth, Municipality of Kincardine, Town of South Bruce Peninsula

Physiography
23% till plain (undrumlinized), 23% clay plain, 19% till plain (drumlinized), 12% sand plain, 11% till moraine, 5% spillway, 3% kame moraine, 2% drumlin, 1% beaches and shorecliffs, 1% water

Soils
33% silty clay, 23% medium to moderately fine loam, 16% fine to moderately coarse sandy loam, 12% silty loam, 6% other (may include small percentages of alluvium, breypan, bottomlands etc), 5% clay loam, 3% organic material, 1% coarse sandy loam and loamy sand

Dams
There are 21 dams in the watershed, of which 7 are considered large dams (greater than 3 metres in height).

Sewage Treatment Facilities
Paisley, Port Elgin, Walkerton, Mildmay (Southampton has a plant that discharges directly to Lake Huron)

Woodlot Size
Small and fragmented forests are largely limited to the back of farm lots, many connected by corridors - also some areas with larger forests providing forest interior conditions

Land Use
76% agriculture; 20% forested; 1.2% urban

Provincially Significant Natural Areas
- Murray's Bog, Glammis Bog, Kinghurst West, Edengrove Wetland, Nutley Fen, Otter Creek, Sangs Creek

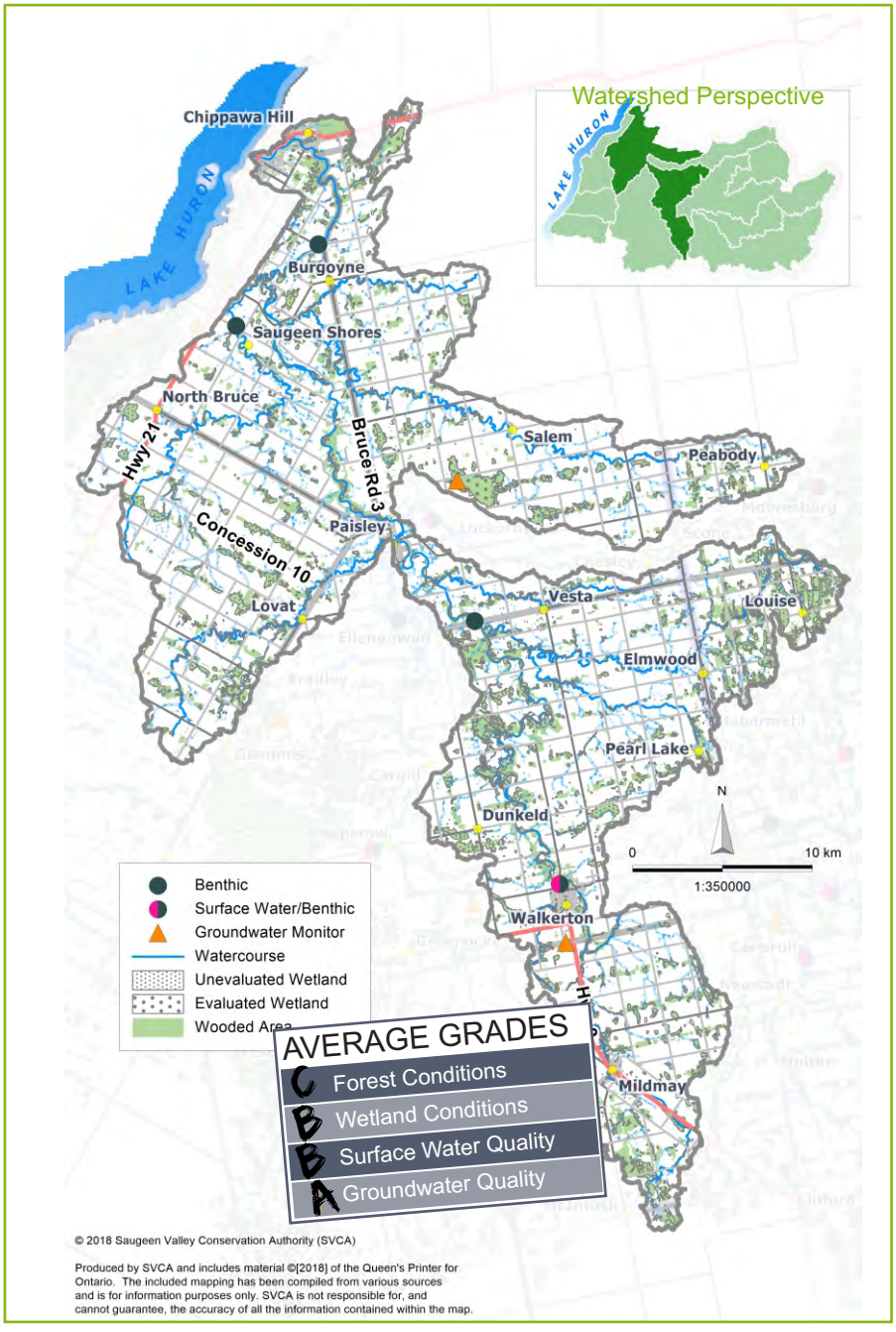
Groundwater Aquifer Sources
Guelph Formation, Salina Formation, Bass Island Formation, Bois Blanc Formation; Oriskany Formation, Detroit River Group; Onondage Formation, Dromore Swamp Complex

Stream Flow (mean)
Mean annual flow - 59 cubic metres per second (cms)

Stream Flow (low) *
7Q10 flow[1] - 8.19 cms 7Q20 flow[2] -7.71 cms

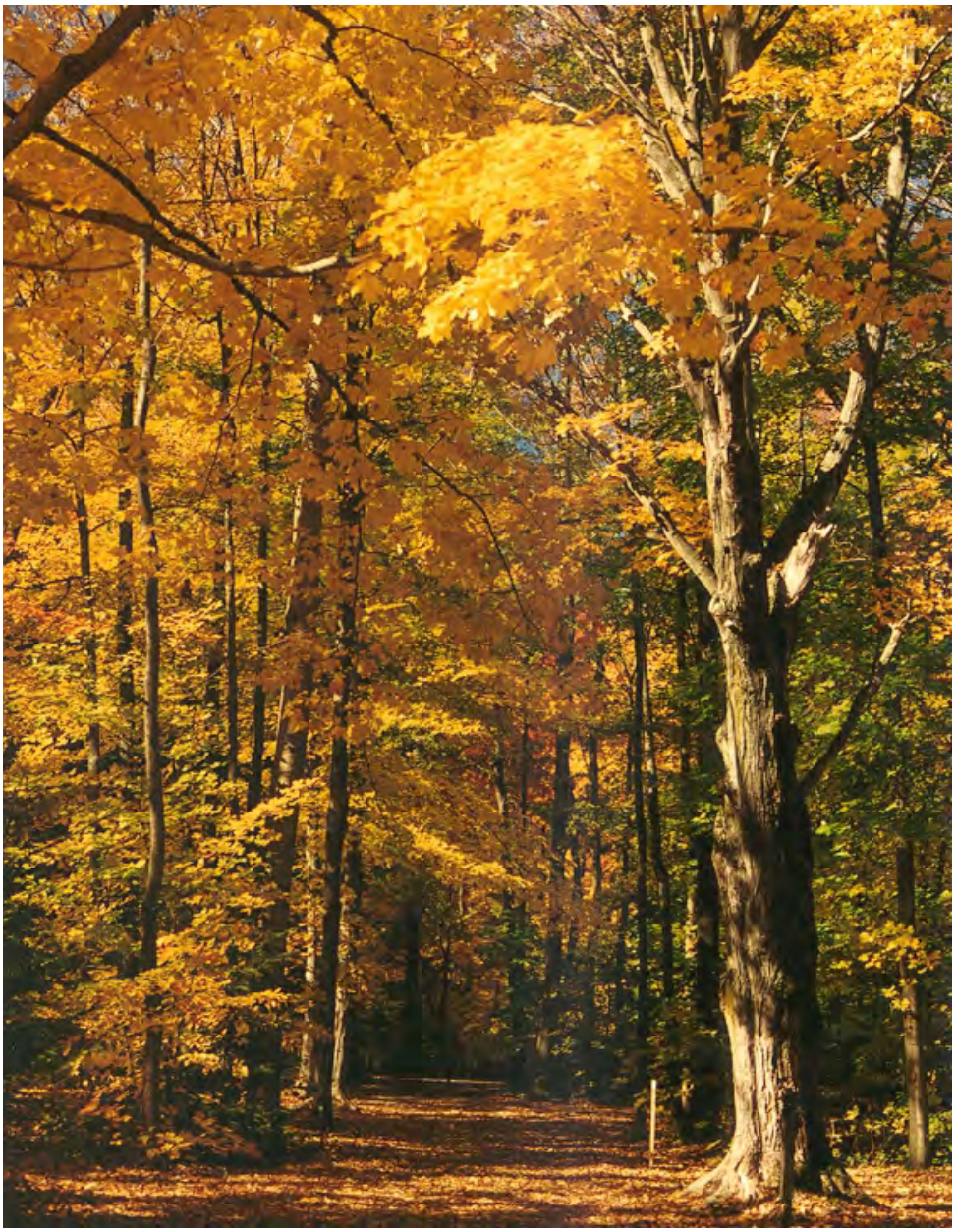
Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)
Hungerford's Crawling Beetle, American Badger, American Beach Grass, Barn Swallow, Beach-dune Tiger Beetle, Beaked Spikerush, Black Meadowlark, Bobolink, Brush-tipped Emerald, Lake Sturgeon, Least Bittern, Loggerhead Shrike, Butternut, Dwarf Lake Iris, Eastern Ribbon Snake, Elfin Skimmer, Golden Redhorse, Grass Carp, Great Lakes Sandreed, Greene's Rush, Green-striped Darner, Low Nutrush, Massasauga Rattlesnake, Eastern Milksnake, Northern Brook Lamprey, Northern Map Turtle, Ocellated Darner, Pugnose Shiner, Rainbow Mussel, Rainbow Smelt, Ram's-head Lady Slipper, Red-shouldered Hawk, Redside Dace, Rigid Sedge, Sand-dune Wildrye, Scarlet Beebalm, Tuberous Indian-plaintain, Stiff Gentian, Short-eared Owl, Snapping Turtle, Shortnose Cisco, Southern Twayblade, Sphagnum Sprite

[1] 7Q10 - the lowest mean flow for seven consecutive days that has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year.
[2] 7Q20 - the lowest mean flow for seven consecutive days that has a 20-year recurrence interval period, or a 1 in 20 chance of occurring in any one year.



	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Forest Conditions	Forest Cover (% of Area)	C 19.0	C 19.5	**C 19.4**	Forest cover is the percentage of the watershed that is forested or wooded. ***Environment Canada suggests that 30% forest cover is the minimum required to support healthy wildlife habitat.***
	Forest Interior (% of Area)	D 3.4	D 3.5	**D 3.3**	Forest interior refers to the protected core area found inside a woodlot. It is the sheltered, secluded environment away from forest edges and open habitats. ***Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain healthy plant and animal species.***
	Riparian Cover (% of Area)	C 29.0	D 24.4	**C 29.8**	Riparian Cover is the percentage of forested habitat along a given waterway. ***Environment Canada guidelines suggest that at least 75% of stream length should have 30 metre naturally vegetated buffers. Forested vegetation represents about two-thirds with the rest being marsh, meadow, and shrub thicket.***
	Average Grade	C	D	**C**	Grade C indicates ecosystem conditions that need to be enhanced.
Wetland Condition	Wetland Cover	No Data	B 9.1	**B 9.1**	Wetland cover is the percentage of existing wetland in a watershed. ***Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed. Grade B indicates good ecosystem conditions. Some areas may require enhancement.***

	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Surface Water Quality	Benthic Invertebrates (FBI)	C 5.68	D 5.97	**D 5.86**	Benthos or benthic invertebrates are bottom dwelling insects, crustaceans, worms, mollusks, and related aquatic animals that live in watercourses. They are good indicators of water quality, responding quickly to environmental stressors such as pollutants. ***The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values ranging from 1 (healthy) to 10 (degraded).***
	Total Phosphorus (mg/L)	C 0.04	B 0.026	**A 0.018**	Total phosphorus is indicative of nutrient levels within a watercourse. Phosphorus is required for the growth of aquatic plants and algae, however, concentrations above the Provincial Water Quality Objective may result in unhealthy stream conditions. ***The Provincial Water Quality Objective is 0.03 mg/L.***
	E. coli (cfu/100mL)	B 81	B 50	**B 31**	*E. coli* originate from the wastes of warm blooded animals, including humans, livestock, wildlife, pets and waterfowl. ***The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.***
	Average Grade	C	C	**B**	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Groundwater Quality	Nitrite + Nitrate (mg/L)	No Data	A 0.06	**A 0.04**	Nitrates are present in water as a result of decaying plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. ***The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.***
	Chloride (mg/L)	No Data	A 1.0	**A 1.8**	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. ***The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.***
	Average Grade	No Data	A	**A**	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.



Forest Conditions

The forest conditions of the Lower Main Saugeen River Watershed improved from a 'D' to a 'C'. However, forest cover still falls short of meeting the Environment Canada guidelines of 30%. Forest interior grades did not change with a grade of 'D'. Forested riparian cover improved from a 'D' to a 'C' grade. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover. The Lower Main Saugeen River Watershed has only 29.8% of the riparian zone forested. Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are improved.

Wetland Conditions

This report card summarizes the conditions of all wetlands. This watershed scores a 'B' grade with 9.1% wetland cover. This is just below the Environment Canada recommendation of 10% as the minimum required for a healthy watershed. It would be advisable to allow low lying or wet areas to naturalize. These are key areas for overall watershed health. It is also important to restore previously drained wetlands, where possible. Existing wetlands should be protected.

The wetland evaluation system was created to protect important wetlands valued at a provincial scale. Under the Planning Act, provincially significant wetlands are protected from development and alteration.

Surface Water Quality

This watershed scores an average grade of 'B' for surface water quality, an improvement from the last report card. The average total phosphorus concentration is below the Provincial Water Quality Objective of 0.03 mg/L and has improved from a 'B' to an 'A' grade. E. coli continues to fall below the recreational guidelines of 100 CFU/100mL maintaining a 'B' grade. The grade for aquatic organisms or benthic invertebrates continues to be a 'D'. Increased efforts should be made to encourage landowners and the agricultural community to preserve and enhance natural land cover. In addition to managing current land use practices, climate change and invasive species pose significant threats and efforts will need to be made to address these stressors to maintain or improve the current scores.

Groundwater Quality

The groundwater quality in the two wells in this area continues to score an 'A' grade. It should be noted that groundwater aquifers do not conform to watershed boundaries but rather flow in an east to west direction through the watershed. Note: there have been exceedences of the Ontario Drinking Water Standards for sodium and fluoride during this study period.

Ecosystem Grade Description

A	Excellent conditions.
B	Good conditions. Some areas may require enhancement and/or improvements.
C	Conditions that warrant general improvements.
D	Poor conditions. Overall improvements necessary.
F	Degraded conditions, in need of considerable improvement.



What is being done *in this Watershed?*

- ✓ **Saugeen Conservation** aims to improve watershed health through virtually all its programs.

- ✓ **Saugeen Conservation** is a key player in providing assistance and technical expertise to local groups, committees, ministries etc. that work to improve the local environment.

- ✓ Through **Saugeen Conservation's tree planting efforts and Ontario's 50 Million Tree Program,** a total of 75,923 trees were planted in this watershed area during this study period.

- ✓ **SauGREEN for the Environment** is a local environmental community group focused in the Saugeen Shores area. They focus on various environmental initiatives including waste diversion, rain barrels, tree planting, Tall Tree Initiative and other eco-friendly projects. Together Saugeen Conservation and SauGREEN installed a rain garden at Fairy Lake.

- ✓ Saugeen Conservation partnered with **Trout Unlimited Canada** and the Southampton Shoreline Residents Association to implement the **Yellow Fish Road Program** in Southampton. Yellow Fish Road is a nation-wide environmental education program to help Canadians understand that stormdrains are corridors to our rivers, lakes and streams.

- ✓ In 2016, the **Hamel Dam in Mildmay was removed** along Otter Creek. Aquatic life can now freely access an additional two km of coldwater stream.

- ✓ The **Ontario Steelheader's Association and the Lake Huron Fishing Club** release adult rainbow trout into this river system on an annual basis.. (This was discontinued in 2016.) The Steelheader's also operate a fish ladder (in conjunction with the MNRF), at Denny's Dam to help native fish access spawning habitat upstream.

- ✓ Saugeen Conservation works closely with **local agricultural organizations** to provide ongoing workshops and seminars for farmers on a variety of different conservation topics.

- ✓ **Grey Bruce Sustainability Network** works closely with Saugeen Conservation on several different environmental and educational projects. Within this watershed, programs include WaterWORKS, which includes hands-on activities for high school students in promoting careers in related fields and facilitating appreciation of water quality issues.





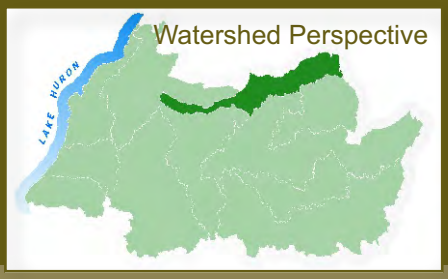


What is being done *in this Watershed?*

- ✓ The **Bruce Grey Woodlands Association** hosts various workshops and tours on forestry related topics.
- ✓ The **Forest Health Collaborative** helps to educate municipalities and the public on forest health issues.
- ✓ **Stewardship Grey Bruce** offers funding and technical support for landowners in the watershed interested in completing habitat enhancement projects.
- ✓ **Lake Huron Fishing Club** actively stocks steelhead salmon in the Saugeen River. The club operates two hatcheries (Kincardine and Port Elgin), rearing young fish for the School Salmon Hatchery which has grown from 10 schools in 2012 to 47 Schools by 2016. All reared salmon are released into the Saugeen or Penetangore Rivers (fully funded by Bruce Power).
- ✓ **Environmental self assessments** are now available for the rural non-farm landowner with the release of The Rural Landowner Stewardship Guide for the Lake Huron Watershed. This guide provides a framework for landowners to evaluate their property and help determine best management practices.
- ✓ Saugeen Conservation offers over **50 different hands-on environmental programs** to over 10,000 children annually, including the Grey Bruce Children's Water Festival and the Bruce Grey Forest Festival.
- ✓ The **Brockton Fisheries Task Force** (of which Saugeen Conservation is a part), works closely with several partners to educate the general public about the local fisheries resource and to help ensure sustainability along the Saugeen River.
- ✓ The **Grey-Bruce ALUS** program recognizes land stewardship and assists farmers in implementing and funding projects to produce ecosystem services. ALUS aims to improve the biodiversity on the agricultural landscape.
- ✓ **Saugeen Nature** is active in the Saugeen Watershed through education and other partnerships. They promote the wide use and conservation of natural resources and encourage the preservation of wild species and natural areas in Grey and Bruce counties.
- ✓ **Ducks Unlimited Canada** supported a wetland creation project in the Lower Main watershed partnering with a private landowner to allow a marginally farmed area to revert back to a wetland.
- ✓ **Healthy Lake Huron** is an initiative of local environmental organizations, including Saugeen Conservation. Together they coordinate actions to protect and improve overall water quality along the southeast shores of Lake Huron.

Recognizing our Important Partners

WATERSHED REPORT CARD



North Saugeen River Watershed

A

The North Saugeen River is a tributary of the main Saugeen River and drains 269 square kilometres of predominantly agricultural and forested land. The river is 52 kms in length with an average gradient of 3 metres per km. Tributaries include Negro and Hamilton Creeks and smaller unnamed creeks. Communities include Holland Centre, Williamsford, Mooresburg, Scone, and Chesley.

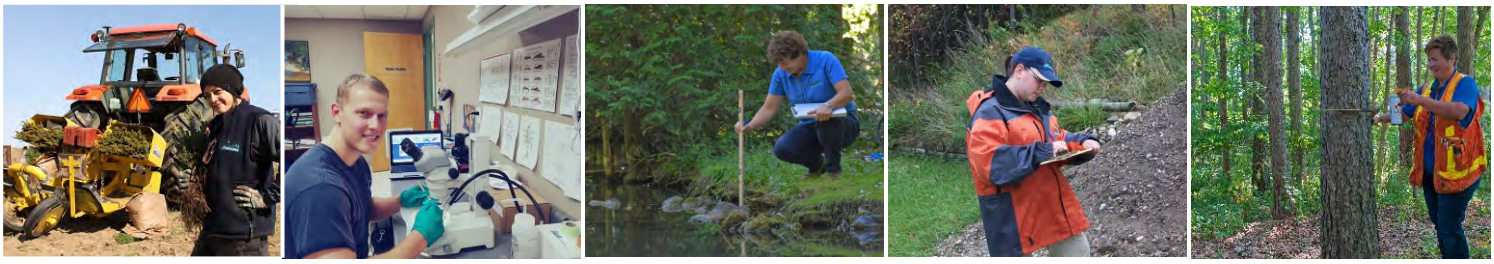
There are a number of natural ponds and lakes in this watershed, including Robson Lakes and McCullough Lake.



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Watersheds are complex systems where everything is connected. We all live downstream.



Saugeen Conservation is a proud member of Conservation Ontario

1078 Bruce Rd. 12, P.O. Box 150, Formosa ON N0G 1W0 Tel. 519-367-3040 Email: publicinfo@svca.on.ca www.svca.on.ca

Alternative formats of this report are available upon request.

General Information

Area
269 sq. km

Municipalities
Municipality of Arran-Elderslie, Municipality of West Grey, Township of Chatsworth, Municipality of Grey Highlands

Physiography
34% till moraine, 28% spillway, 22% till plain (drumlinized), 10% clay plain, 1% water, 1% sand plain, 1% drumlin, 1% peat and muck, 1% till plain (undrumlinized)

Soils
65% medium to moderately fine loam, 11% organic material, 9% silty clay, 5% fine to moderately coarse sandy loam, 4% other (may include small percentages of alluvium, breypan, bottomlands etc), 2% clay loam, 2% silty loam, 1% coarse sandy loam and loamy sand

Dams
In total there are 12 dams in the watershed, of which 9 are considered large dams (greater than 3 metres in height).

Sewage Treatment Facilities
Chesley

Woodlot Size
Large forested areas with forest interior in the central watershed

Land Use
51% agriculture; 45% forested; 1% urban

Provincially Significant Natural Areas
- Kinghurst Forest, Kinghurst West, Beaverdale Fen, Lily Oak Forest, Robson Lakes, Kinghurst West, Harriston Lake, Beaverdale Bog, Minkes - Stewart Lakes, Negro Lake, Hamilton Creek, Wodenhouse Marsh Wetland

Groundwater Aquifer Sources
Salina Formation, Guelph Formation, Amabel Formation

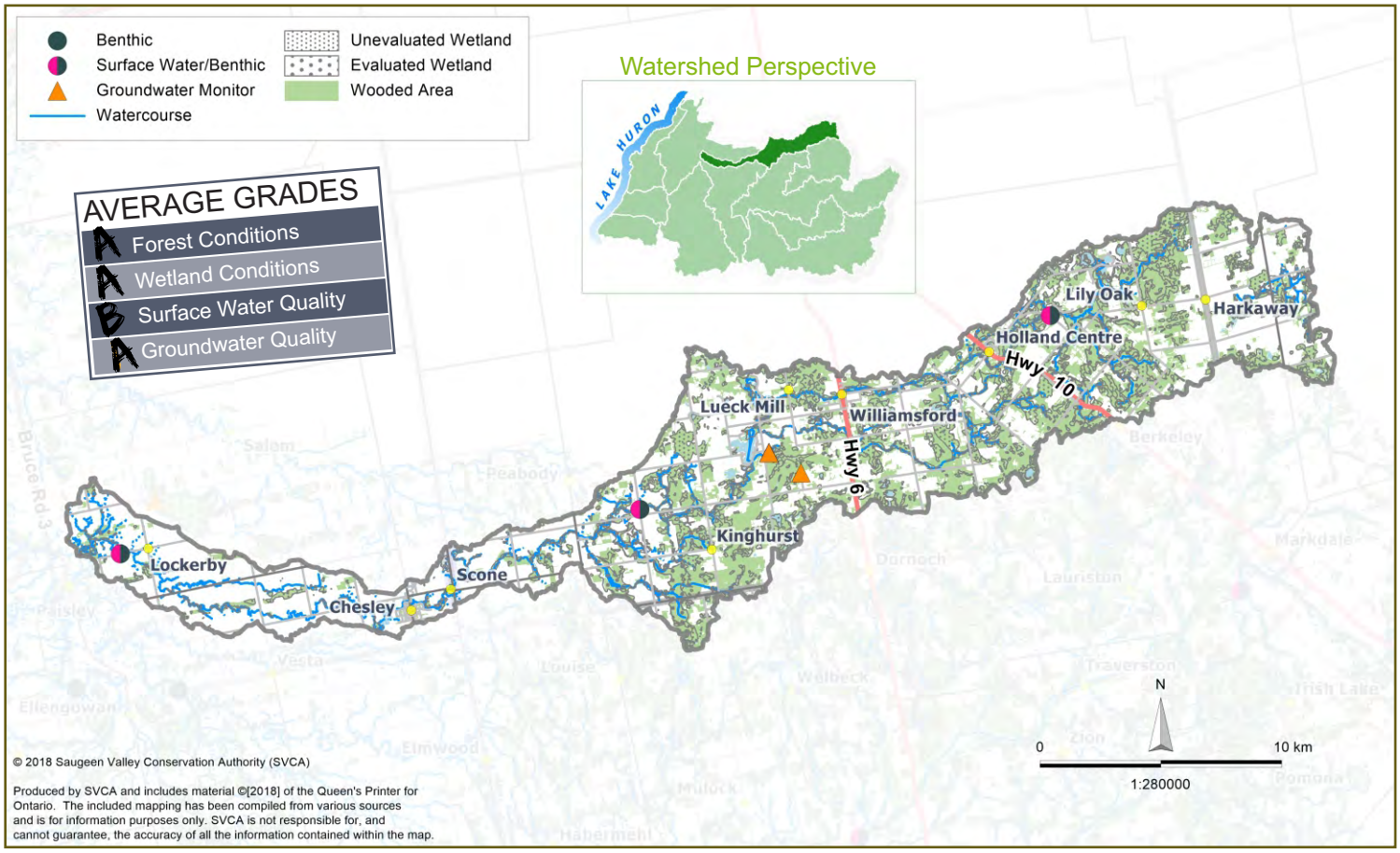
Stream Flow (mean)
Mean annual flow - 5.35 cubic metres per second (cms)

Stream Flow (low) *
7Q10 flow[1] - 1.87 cms 7Q20 flow[2] - 1.85 cms

Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)
Bobolink, Eastern Meadow Lark,,Eastern Red Damsel, Elfin Skimmer, Golden Redhorse, Ocellated Darner, Rainbow Mussel, Red-shouldered Hawk, Hungerford's Crawling Water Beetle, Eastern Prairie Fringed-orchid, Ebony Boghaunter, Jefferson X Blue-spotted Salamander, Eastern Ribbonsnake, Harlequin Darner, Hart's-tongue Fern, Massasauga Rattlesnake, Eastern Milksnake, Northern Map Turtle,Snapping Turtle, Rusty Snaketail,Scarlet Beebalm,

* [1] 7Q10 - the lowest mean flow for seven consecutive days that has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year.

[2] 7Q20 - the lowest mean flow for seven consecutive days that has a 20-year recurrence interval period, or a 1 in 20 chance of occurring in any one year.



	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Forest Conditions	Forest Cover (% of Area)	A 41.2	A 44.6	**A 44.5**	Forest cover is the percentage of the watershed that is forested or wooded. ***Environment Canada suggests that 30% forest cover is the minimum required to support healthy wildlife habitat.***
	Forest Interior (% of Area)	A 12.3	A 13.7	**A 12.9**	Forest interior refers to the protected core area found inside a woodlot. It is the sheltered, secluded environment away from forest edges and open habitats. ***Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain healthy plant and animal species.***
	Riparian Cover (% of Area)	B 43.0	C 42.3	**B 45.5**	Riparian Cover is the percentage of forested habitat along a given waterway. ***Environment Canada guidelines suggest that at least 75% of stream length should have 30 metre naturally vegetated buffers. Forested vegetation represents about two-thirds with the rest being marsh, meadow, and shrub thicket.***
	Average Grade	A	B	**A**	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.
Wetland Conditions	Wetland Cover	No Data	A 21.9	**A 21.9**	Wetland cover is the percentage of existing wetland in a watershed. ***Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed. Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.***

	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Surface Water Quality	Benthic Invertebrates (FBI)	A 3.76	C 5.27	**B 4.99**	Benthos or benthic invertebrates are bottom dwelling insects, crustaceans, worms, mollusks, and related aquatic animals that live in watercourses. They are good indicators of water quality, responding quickly to environmental stressors such as pollutants. ***The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values ranging from 1 (healthy) to 10 (degraded).***
	Total Phosphorus (mg/L)	B 0.030	A 0.006	**B 0.025**	Total phosphorus is indicative of nutrient levels within a watercourse. Phosphorus is required for the growth of aquatic plants and algae, however, concentrations above the Provincial Water Quality Objective may result in unhealthy stream conditions. ***The Provincial Water Quality Objective is 0.03 mg/L.***
	E. coli (cfu/100mL)	B 57	B 41	**B 58**	*E. coli* originate from the wastes of warm blooded animals, including humans, livestock, wildlife, pets and waterfowl. ***The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.***
	Average Grade	B	B	**B**	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Groundwater Quality	Nitrite + Nitrate (mg/L)	No Data	A 0.19	**A 0.21**	Nitrates are present in water as a result of decaying plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. ***The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.***
	Chloride (mg/L)	No Data	A 9.5	**A 9.0**	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. ***The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.***
	Average Grade	No Data	A	**A**	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.



Forest Conditions

With an average grade of 'A' for forest conditions, the North Saugeen River Watershed exceeds the Environment Canada guidelines of 30% forest cover and 10% forest interior. Both forest cover and forest interior scored an 'A' grade which is the same as the last report card. The grade for riparian cover improved to a 'B' from a 'C' grade. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover. The North Saugeen River Watershed has 45.5% of the riparian zone forested. Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are maintained or improved.

Wetland Conditions

This report card summarizes the conditions of all wetlands. This watershed scores an 'A' grade with 21.9% wetland cover. This is above the Environment Canada recommendation of 10% as the minimum needed for a healthy watershed. Existing wetlands should be protected to maintain this grade.

The wetland evaluation system was created to help protect wetlands valued at a provincial scale. Under the Planning Act, provincially significant wetlands are protected from development and alteration.

Surface Water Quality

This watershed scores an average grade of 'B' for surface water quality, the same as the last report card. This indicates good ecosystem conditions, however, some areas need to be enhanced. While the phosphorus grade declined from an 'A' to a 'B', the E. coli grade stayed the same at a 'B'. The average total phosphorus concentration is still below the Provincial Water Quality Objective of 0.03 mg/L. as is the average E. coli at 100 CFU/100mL. The benthic invertebrate grade improved from a 'C' to a 'B'. Changes in aquatic organisms or benthic invertebrates are seen as early indicators of changes in water quality. Efforts must continue to encourage landowners and the agricultural community to protect and improve natural land cover.

Groundwater Quality

The groundwater quality in the two monitoring wells in this watershed continues to be excellent. The wells monitor three overburden aquifers and one bedrock aquifer. It should be noted that groundwater aquifers do not conform to watershed boundaries but rather flow in an east to west direction through the watershed. There have been no exceedences of the Ontario Drinking Water Standards during this study period.

Ecosystem Grade Description

A	Excellent conditions.
B	Good conditions. Some areas may require enhancement and/or improvements.
C	Conditions that warrant general improvements.
D	Poor conditions. Overall improvements necessary.
F	Degraded conditions, in need of considerable improvement.

What is being done *in this Watershed?*



- ✓ **Saugeen Conservation** aims to improve watershed health through virtually all its programs.
- ✓ **Saugeen Conservation** is a key player in providing assistance and technical expertise to local groups, committees, ministries etc. that work to improve the local environment.
- ✓ Through **Saugeen Conservation's tree planting efforts and Ontario's 50 Million Tree Program,** a total of 213,042 trees were planted in this watershed.
- ✓ In 2015, **Saugeen Conservation removed the Lockerby Dam** on this river system. Fish can now move freely along this part of the waterway. The site was also rehabilitated. Numerous partners were involved in this endeavour.
- ✓ **McCullough Lake Cottagers Association** completed shoreline restoration for various properties around the lake that will result in improved water quality.
- ✓ The **Ontario Steelheader's Association and the Lake Huron Fishing Club** release adult rainbow trout into this river system on an annual basis. (This was discontinued in 2016.)
- ✓ Saugeen Conservation works closely with **local agricultural organizations** to provide ongoing workshops and seminars for farmers on a variety of different conservation topics.
- ✓ **Grey Bruce Sustainability Network** works closely with Saugeen Conservation on several different environmental and educational projects.
- ✓ **Saugeen Nature** is active in the Saugeen Watershed through education and other partnerships. They promote the wide use and conservation of natural resources and encourage the preservation of wild species and natural areas in Grey and Bruce counties.



What is being done *in this Watershed?*



- ✓ The **Bruce Grey Woodlands Association** hosts various workshops and tours on forestry related topics.
- ✓ The **Forest Health Collaborative helps to** educate municipalities and the public on forest health issues.
- ✓ **Stewardship Grey Bruce** offers funding and technical support for landowners in the watershed interested in completing habitat enhancement projects.
- ✓ The **Lake Huron Fishing Club** (with funding from Bruce Power), works with local schools in setting up fish aquariums to educate students about the importance of a healthy fishery.
- ✓ **Saugeen Conservation** offers over **50 different hands-on environmental programs** to over 10,000 children annually, including the Grey Bruce Children's Water Festival and the Bruce Grey Forest Festival. This watershed also plays host to the Grey Bruce Children's Water Festival (Village of Chesley), a hands-on initiative for grade four students across Grey and Bruce.
- ✓ The **Grey-Bruce ALUS** program recognizes land stewardship and assists farmers in implementing and funding projects to produce ecosystem services. ALUS aims to improve the biodiversity on the agricultural landscape.
- ✓ **Bruce Grey Woodlands Association** educates the community through workshops and tours on forest related topics.
- ✓ Environmental self assessments are available for the rural non-farm landowner with the release of The Rural Landowner Stewardship Guide for the Lake Huron Watershed. This guide provides a framework for landowners to evaluate their property and help determine best management practices.

Recognizing our Important Partners

Saugeen Valley Conservation Foundation · Grey Sauble Conservation · Grey Highlands · West Grey · Township of Chatsworth · Enbridge · Bruce Power · RBC Blue Water Project · Community Foundation Grey Bruce · Bruce Grey Woodlands Association · Grey Bruce Sustainability Network · Stewardship Grey Bruce · Ontario · Fisheries and Oceans Canada · Pêches et Océans Canada · Ontario Power Generation · ALUS · Bluewater District School Board · OPP · TD · TD Friends of the Environment Foundation · Healthy Lake Huron · Lake Huron Fishing Club

APPENDIX B

EXCERPTS FROM PLANNING DOCUMENTS

COUNTY OF BRUCE

OFFICIAL PLAN

Adopted By County Council
May 20, 1997

Approved by Minister of Municipal Affairs
September 15, 1998

Approved by the Ontario Municipal Board
November 16, 1999

Five Year Review Approved by MMAH
June 21, 2010

(Office Consolidation – Jan. 2006)
(Update – May, 2008)
(Consolidation - including OPA 99 – Feb. 2009)
(Consolidation - including Adopted OPA #116 – April, 2009)
(Consolidation - including MMAH Decision – August, 2010)
(Consolidated Copy – September 23, 2010)
(OMB Decision [PL091020] – June 30, 2011)
(Update – August 2011)
(OMB Oral Decision [PL091020] - January 18, 2012)
(Consolidation including OMB Decision of Mar 1, 2012 [PL091020] – March 22, 2012)
(Consolidation – June 2012) (Consolidation – January 2013) (Office Consolidation – April 2013)
(Consolidation – June 2013), (Consolidation – October 2013) (December 2013), (April 2014), (Nov. 2014) (February, 2015) (July 2015) (Sept 2015) (June 2016) (Nov. 2016) (Mar 2017) (July 2017) (Aug. 2017) (September 2017)

TABLE OF CONTENTS

PART A PLAN FRAMEWORK 1
1.0 INTRODUCTION 1
1.1 PURPOSE 1
1.2 CONTEXT 1
1.3 HOW TO USE THE PLAN 2
2.0 STRUCTURE OF THE PLAN 4
2.1 PLAN COMPONENTS 4
2.2 FUNCTION 4
PART B - THE PLAN 5
3.0 VISION, GOALS AND OBJECTIVES 5
3.1 INTRODUCTION 5
3.2 VISION 5
3.3 PRINCIPLE OF SUSTAINABLE DEVELOPMENT 5
3.4 COUNTY GOALS & OBJECTIVES 5
3.4.1 County Goals 5
4.0 GENERAL POLICIES 7
4.1 INTRODUCTION 7
4.2 GENERAL OBJECTIVES 7
4.3 THE ENVIRONMENT 7
4.3.1 Objectives 7
4.3.2 General Policies 8
4.3.2.1 Cold and Warm Water Streams 8
4.3.2.2 Drinking Water Source Protection 8
4.3.2.3 Areas of Natural or Scientific Interest (ANSI) 9
4.3.2.4 Locally Significant Wetlands 10
4.3.2.5 Provincially Significant Wetlands 10
4.3.2.6 Significant Woodlands 11
4.3.2.7 Threatened and Endangered Species 11
4.3.2.8 Significant Valleylands 12
4.3.2.9 Deer Wintering Areas 12
4.3.2.10 Significant Wildlife Habitat 13
4.3.2.11 Karst 13
4.3.2.12 Headwater/Recharge Areas 13
4.3.3 Requirements for Environmental Impact Studies 13
4.3.4 Conservation Authority Regulations 14
4.4 POPULATION AND HOUSING 15
4.4.1 Population and Housing Objectives 15
4.4.2 Population Projections 15
4.4.3 Settlement Patterns 16
4.4.4 Housing Projections / Number of Residential Units Required 16
4.4.4.1 General Housing Policies 17
4.4.4.2 Affordable Housing Policies 20
4.5 ECONOMIC DEVELOPMENT 22
4.5.1 Objectives 22
4.5.2 General Policies 22
4.6 TRANSPORTATION 23
4.6.1 Objectives 23
4.6.2 General Policies 23
4.6.3 Roads 24
4.6.3.1 Arterial Roads 24
4.6.3.2 Collector Roads 24
.4.6.3.3 Local Roads 24
4.6.3.4 Provincial Highways 24
4.6.3.5 County Roads 25
4.6.3.6 Scenic Roads 25
4.6.4 Railway 25

4.6.5 Recreational Trails 26
4.6.6 Airports 26
4.6.7 Harbours 26
4.7 SERVICES AND UTILITIES 27
4.7.1 Objectives 27
4.7.2 General Policies 27
4.7.3 Waste Management 27
4.7.4 Major Utilities 28
4.7.5 Water and Sewer Services 29
4.7.5.1 Infrastructure 29
4.7.5.2 Multi Year Sewage and Water Servicing Plan – Local Official Plans 29
4.7.5.3 Water & Sewer Servicing Study – Planning Applications 29
4.7.5.4 Interim Servicing – Primary Urban Communities 30
4.7.5.5 Servicing – Secondary Urban Communities, Hamlet, Rural Recreational, Inland Lake and other Identified Designations 31
4.7.5.5.1 Secondary Urban Communities Designation 31
4.7.5.5.2 Rural Recreational Area Designation 32
4.7.5.5.3 Inland Lake Designation AND Hamlet Designation 32
4.7.5.5.4 Estate Designation 33
4.7.5.6 Communal Policies 33
4.7.5.7 Municipal Water and Sewer Services - New or Expansion 33
4.7.5.8 Servicing Reports, Studies, Plans and Statements 33
4.7.6 Settlement Capacity Studies 35
4.8 MINERAL RESOURCE 35
4.8.1 Objectives 35
4.8.2 Identified Areas 36
4.8.3 Permitted Uses 36
4.8.4 General Policies 36
4.8.5 Establishment/Expansion of New Pits and Quarries 37
4.8.5.1 Supporting Information Requirements 37
4.8.5.2 Locational Criteria 37
4.8.6 Wayside Pits and Quarries and Portable Asphalt Plants 38
4.8.7 Exceptions 38
4.9 COMMUNITY FACILITIES 42
4.9.1 General Policies 42
4.9.2 Locational Guidelines 42
4.10 HERITAGE 42
4.10.1 Objectives 42
4.11 ENERGY CONSERVATION AND DEVELOPMENT 43
4.12 WATERSHED PLANNING 44
4.13 SURFACE WATER MANAGEMENT PLANS 44
4.14 WIND ENERGY CONVERSION SYSTEMS (Deleted in Entirety) 44
4.15 NIAGARA ESCARPMENT PLAN 44
4.15.1 ANSI Areas 45
4.15.2 Wetland Areas 45
4.15.3 Woodlands 46
4.15.4 Housing 46
4.15.5 Transportation and Utility Facilities 46
4.15.6 Individual or Communal Services 46
4.15.7 Mineral Resource 46
4.15.8 Community Facilities 47
4.16 NEW SENSITIVE USES IN THE VICINITY OF A WIND ENERGY CONVERSION SYSTEM 47
5.0 DETAILED LAND USE POLICIES 48
5.1 GENERAL POLICIES 48
5.2 URBAN AREAS 48
5.2.1 Objectives 48
5.2.2 Primary Urban Communities 49

5.2.2.1 Area of Application 49
5.2.2.2 General Policies 49
5.2.2.3 Permitted Uses 49
5.2.2.4 Local Official Plans 49
5.2.2.5 Future Land Needs 50
5.2.2.6 Consent Policies 51
5.2.2.7 Servicing Policies 51
5.2.2.8 Plans of Subdivision 51
5.2.3 Secondary Urban Communities 51
5.2.3.1 Area of Application 51
5.2.3.2 General Policies 51
5.2.3.3 Permitted Uses 51
5.2.3.4 Development Policies 52
5.2.3.5 Residential 52
5.2.3.6 Commercial 52
5.2.3.7 Industrial 53
5.2.3.8 Consent Policies 54
5.2.3.9 Servicing Policies 54
5.2.3.10 Plans of Subdivision 54
5.2.4 Hamlet Communities 54
5.2.4.1 Area of Application 54
5.2.4.2 General Policies 54
5.2.4.3 Permitted Uses 54
5.2.4.4 Development Policies 55
5.2.4.4.1 Development Policies – Commercial and Dry Industrial Uses 55
5.2.4.5 Consent Policies 55
5.2.4.6 Servicing Policies 55
5.2.4.7 Plans of Subdivision 55
5.2.4.8 Exceptions 56
5.3 RURAL RECREATIONAL AREA 56
5.3.1 Objectives 56
5.3.2 Area of Application 56
5.3.3 Permitted Uses 57
5.3.4 General Policies 57
5.3.5 Development Policies 57
5.3.5.1 Required Studies 57
5.3.5.2 Other Development Policies 58
5.3.5.3 Subdivision Policies 59
5.3.5.4 Consents 60
5.3.6 Seasonal to Permanent Residential Conversion Policies 60
5.3.7 Commercial Policies 60
5.3.8 Rural Recreational Areas and Local Official Plans 61
5.3.9 Island Development Policies 61
5.3.10 Implementation 62
5.3.11 Exceptions – Rural Recreational Areas 62
5.4 INLAND LAKE DEVELOPMENT AREA 63
5.4.1 Introduction 63
5.4.2 Areas of Application 63
5.4.3 Permitted Uses 63
5.4.4 General Policies 63
5.4.5 Inland Lakes Subdivision Policies 63
5.4.6 Inland Lakes Residential Consent Policies 64
5.4.7 Inland Lakes Residential - Development of Existing Lots 64
5.4.8 Seasonal to Permanent Residential Conversion Policies 64
5.4.9 Inland Lakes Commercial Policies 64
5.4.9.1 Uses Permitted 64
5.4.10 Implementation 64
5.4.10.1 Local Official Plans 64
5.4.11 Exceptions 64

5.5 AGRICULTURAL AREAS 65
5.5.1 Introduction 65
5.5.2 Agricultural Objectives 65
5.5.3 Area of Application 66
5.5.4 Permitted Uses 66
5.5.4.1 Secondary Compatible Uses 66
5.5.4.2 Change in Permitted Use – Legal Conforming Uses 67
5.5.5 General Policies 67
5.5.6 Farm Size 67
5.5.7 Consent Policies 68
5.5.8 Home Industries and Home Occupations 68
5.5.9 Farm Related Commercial and Industrial Uses 68
5.5.10 Institutional Uses 68
5.5.11 Provincial Minimum Distance Separation 70
5.5.11.1 MDS Catastrophe Policy 70
5.5.11.2 MDS Cemetery 70
5.5.12 Secondary Farm Residence 70
5.5.13 Exceptions – Agricultural Areas 70
5.5.14 Intensive Livestock Operations (Deleted) 81
5.6 RURAL AREA 81
5.6.1 Introduction 81
5.6.2 Objectives 81
5.6.3 Area of Application 81
5.6.4 Permitted Uses 81
5.6.4.1 Farm Size 82
5.6.4.2 Home Industries and Home Occupations 82
5.6.5 Consent Policies 82
5.6.5.1 Estate Residential Subdivisions 82
5.6.6 Rural Industrial 82
5.6.6.1 Permitted Uses 83
5.6.6.2 Locational Criteria 83
5.6.6.3 Design and Site Plan Criteria 83
5.6.6.4 Site Plans 84
5.6.7 Rural Commercial 84
5.6.7.1 Permitted Uses 84
5.6.7.2 Locational Criteria 84
5.6.7.3 Design and Site Plan Criteria 84
5.6.7.4 Site Plans 85
5.6.8 Provincial Minimum Distance Separation 85
5.6.8.1 MDS Catastrophe Policy 85
5.6.8.2 MDS Cemetery 86
5.6.9 Exceptions – Rural Area 86
5.7 ESTATE RESIDENTIAL AREA 90
5.7.1 Introduction 90
5.7.2 Permitted Uses 91
5.7.3 General Policies 91
5.7.4 Site Conditions 91
5.7.5 Design 91
5.7.6 Services 92
5.7.7 Home Occupations 92
5.7.8 Plans of Subdivision 92
5.8 HAZARD LAND AREA 93
5.8.1 Introduction 93
5.8.2 Objectives 93
5.8.3 Areas of Application 93
5.8.4 Permitted Uses 93
5.8.5 General Policies 93
5.8.6 Great Lakes Shoreline Hazard Areas 95

5.8.6.1 General Principles 95
5.8.6.2 Permitted Uses 95
5.8.6.3 General Policies 95
5.8.7 Implementation 96
5.8.8 Exceptions – Hazard Land Area 96
5.9 MAJOR OPEN SPACE AREA 97
5.9.1 Introduction 97
5.9.2 Objectives 97
5.9.3 Area of Application 98
5.9.4 General Policies 98
5.9.5 Permitted Uses 98
5.9.6 Implementation 98
5.9.7 Exceptions – Major Open Space 98
5.10 TRAVEL TRAILER PARK AND COMMERCIAL CAMPGROUND AREA 99
5.10.1 Area of Application 99
5.10.2 Permitted Use 99
5.10.3 General Policies 99
5.10.4 Site Conditions 100
5.10.5 Scale and Density 100
5.10.6 Services 100
5.10.7 Design 100
5.10.8 Implementation 101
5.11 DEVELPOMENT CONTROL AREA 102
5.12 SPECIAL POLICY AREAS 102
5.12.1 Special Policy Area 'A' – Being Additional Policies for the Hamlet of Dyers Bay 102
5.12.1.1 Land Use Policies 102
5.12.2 Special Policy Area 'B' – Being Additional Policies for Hay Island 105
5.12.3 Special Policy Area 'C' – Being Additional Policies for the Lakewood Community 106
5.12.3.2 Additional Hazard Land Area Policies 110
5.12.4 Special Policy Area 'D' – Inland Lakes Special Policy Area - Being Additional Policies for the lands adjacent to Purvis Lake, Silver Lake, Otter Lake, Pearl Lake, Dankert Lake, Marl Lake and Lake Rosalind 111
5.12.4.1 Introduction 111
5.12.4.2 Land Use Policies 111
5.12.5 Special Policy Area 'E' – Arran Township Campground 112
5.13 BRUCE NUCLEAR POWER DEVELOPMENT 113
5.14 NIAGARA ESCARPMENT PLAN 113
5.14.1 Escarpment Natural Area 113
5.14.1.1 Objectives 113
5.14.1.2 Permitted Uses 114
5.14.1.3 New Lots 114
5.14.2 Various Designations (Niagara Escarpment Plan) 114
5.14.3 Urban Areas (Niagara Escarpment Plan) 114
5.14.4 Escarpment Recreation Areas 115
5.14.5 Agricultural Areas 115
5.14.6 Rural Areas 116
5.14.7 Estate Residential Development 116
5.14.8 Travel Trailer Park and Commercial Campground Area 116
6.0 IMPLEMENTATION 117
6.1 GENERAL POLICIES 117
6.2 REVIEW OF THE PLAN 117
6.3 LOCAL OFFICIAL PLANS 117
6.4 LOCAL ZONING BY-LAWS 118
6.5 DEVELOPMENT APPLICATIONS 118
6.5.1 Subdivision and Condominium Approvals and Agreements, and Multi-Unit Developments 118
6.5.2 Site Plan Control 120

6.5.3 Land Division Policies 121
6.5.3.1 General Policies 121
6.5.3.2 Consents - Primary, Secondary Urban and Hamlet Communities 122
6.5.3.3 Consents – Agricultural Areas 122
6.5.3.4 Consents – Rural Areas 124
6.5.3.5 Consents – Rural Recreational Areas 126
6.5.3.6 Consents - Inland Lake Areas 127
6.5.3.7 Consents - Major Open Space Areas 127
6.5.3.8 Consents – Mineral Resource Areas 127
6.5.3.9 Consents - Niagara Escarpment Planning Area 127
6.6 HOLDING PROVISIONS 128
6.6.1 General 128
6.7 LEGAL NON-CONFORMING USE 129
6.7.1 Legal Non-Conforming Use – Agricultural and Rural Areas 129
6.8 FINANCIAL IMPACT OF DEVELOPMENT 130
6.9 PUBLIC PARTICIPATION 130
6.9.1 First Nations 130
6.10 COMMITTEE OF ADJUSTMENT 131
6.11 PUBLIC WORKS 131
6.12 MUNICIPAL FINANCE 131
6.13 MAINTENANCE AND OCCUPANCY BY-LAWS 132
6.14 PRESERVATION OF TOPSOIL 132
6.15 LAND ACQUISITION 132
6.16 PROVINCIAL POLICIES 132
6.17 APPLICATIONS TO THE BRUCE COUNTY OFFICIAL PLAN 133
6.18 PRE-SUBMISSION CONSULTATION 133
6.19 OTHER INFORMATION TO BE SUBMITTED IN SUPPORT OF A PLANING APPLICATION 133
6.20 GUIDELINE DOCUMENTS 135
6.21 ALTERNATIVE NOTICE 135
7.0 INTERPRETATION 137

LAND USE SCHEDULES

Schedule 'A': Land Use (North Section)
Schedule 'A': Land Use (South Section - Interior)
Schedule 'A': Land Use (South Section - Lakeshore)

Schedule 'B': Transportation (North Section)
Schedule 'B': Transportation (South Section)

Schedule 'C': Constraint (North Section)
Schedule 'C': Constraint (South Section)
Schedule 'C-2': Constraint (North Section)
Schedule 'C-2': Constraint (South Section)

Special Policy Area 'A': Dyers Bay (Schedule 1)
Special Policy Area 'B': Hay Island (Schedule 2)
Special Policy Area 'C: Lakewood (Schedule 3)
Special Policy Area 'D: Lake Rosalind (Schedule 4)
Special Policy Area 'D: Pearl Lake (Schedule 5)
Special Policy Area 'D: Purvis (Schedule 6)
Special Policy Area 'D': Silver Lake (Schedule 7)
Special Policy Area 'E': Arran Lake Campground (Schedule 8)

APPENDICES

Note: The Appendices are provided for reference purposes only and do not form part of this Official Plan
Appendix 'A': Traditional Territories of the Saugeen Ojibway Nations (as provided by Saugeen Ojibway Nation)

.2 **Transportation**

i) Develop adequate and appropriate transportation systems and facilities that move people and goods in a safe, environmentally responsible and economically efficient manner within the County, and between the County and other areas.

.3 **Environmental**

i) Protect and preserve in their natural state, those areas within the County that are ecologically significant;
ii) Encourage the restoration to a natural state, lands that have been abandoned, neglected or degraded; and
iii) Protect and enhance air, land and water quality.

.4 **Social**

i) Maintain the small community environment and enhance the quality of life in Bruce County;
ii) Ensure the provision of educational, social, recreational, health and cultural facilities and services to meet the needs and resources of County residents;
iii) Provide affordable housing for all residents of Bruce County;
iv) Ensure an adequate supply of land is available to accommodate anticipated development to the year 2021 recognizing the future needs and resources of the Community.
v) Encourage a co-operative and mutual approach to social and land use planning issues with the first Nation Communities.

.5 **Economic**

i) Provide opportunities for the continued development of a diverse, sustainable and viable economic base within the County, which is compatible with the natural environment;
ii) Strengthen the industrial and commercial base of the County;
iii) Recognize the interest in and importance of economic growth of the County;
iv) Recognize, promote and strengthen tourism as a viable, vital component of the County economy; and, recognize, promote and strengthen the agricultural community as a viable and vital component of the County's economy;
v) Promote energy generation as a viable form of economic development including, but not limited to, nuclear, renewable alternative and green energy supply.

.6 **Mineral Resources**

i) Ensure the protection of mineral resources for future extraction to meet existing and future demands.

4.6 TRANSPORTATION

4.6.1 Objectives

i) Minimize the environmental and financial costs associated with the development of transportation systems and facilities in the County;
ii) Encourage all jurisdictions to consult with each other in transportation upgrading and maintenance programs;
iii) Encourage the continued existence and development of public and private airports, which serve the County;
iv) Encourage the development of public and private harbour facilities and recreational marine facilities, including marine transportation system, to serve the public and enhance the economic diversity of the County;
v) Maintain and enhance the carrying capacity of the existing and proposed County road system;
vi) Encourage a railway network for the movement of goods and people within the County, and between the County and other areas;
vii) Encourage the preservation of railway rights-of-way for possible future use as transportation, utility or recreation corridors; and,
viii) Recognize, promote and encourage recreational transportation routes including canoe routes, cross-country ski, snowmobile, hiking and bicycle trails.

4.6.2 General Policies

.1 County Council supports the planning, design and operation of a fully integrated County transportation network composed of Provincial highways, County roads, local roads, scenic roads, railways, recreational trails, airports and harbours.

.2 The transportation network is designed to facilitate the movement of people and goods within and through the County.

.3 The transportation network depicted on Schedule 'B' anticipates the future needs of the County, as well as future alterations to Provincial and County transportation systems to maintain an adequate transportation network. It is the policy of County Council to encourage the Ministry of Transportation to construct a 4-lane highway to serve the long term needs of Bruce County, or alternately to provide traffic passing areas on Provincial Highways. Such highways will help strengthen the economy of the County including the tourism, agricultural, industrial, mineral resource and other sectors

.4 The Roads transportation network is classified on the basis of road function as indicated on Schedule 'B'. Where additional land is required for widenings, realignments, extensions and intersection improvements, such land shall be obtained, wherever possible, in the course of approving plans of subdivision or the granting of severances and minor variances, site plan agreements or through development agreements. Where the construction of new or improvements/alterations to existing transportation components are undertaken, any surplus lands which do not meet the minimum lot requirements of the local Municipal zoning by-laws shall be amalgamated where possible with adjoining lands.

.5 Roads within the Planning Area shall be classified according to Section 4.6.3 [Roads].

.6 An Official Plan Amendment to Schedule 'B' of this Plan is required when major re-routing of roads are made to the Provincial highways and County road system indicated on Schedule B.

4.6.3 Roads

4.6.3.1 Arterial Roads

.1 The policies of this section shall apply to all County roads as identified as Arterial roads on Schedule 'B' of this plan.

.2 County Council wishes to maintain and upgrade the Arterial Highway system to ensure improved regional access to major markets and urban centres, within and outside of the County.

.3 County Council in consultation with the local municipalities shall encourage the construction of by-passes around Primary and Secondary Urban Areas, where traffic volumes and congestion warrant.

4.6.3.2 Collector Roads

.1 The policies of this section shall apply to all roads identified as Collector Roads or Proposed Collector Roads on Schedule 'B' of this Plan.

.2 The County shall ensure a continued program of improvements to the County Collector Road network, or Primary Urban Communities, Secondary Urban Communities, Rural Recreational Area, the BNPD / BEC and other major destination points.

4.6.3.3 Local Roads

.1 County Council encourages local municipalities to provide local roads, which are consistent with and accessible by the road network of the adjacent municipality, the County and the Province.

.2 New development on existing private roads may be considered by the local municipality provided that such development occurs on lots which existed on the date of adoption of this Plan and which could legally be conveyed on that date, provided that all other policies of this Plan are met and subject to appropriate zoning. No new private roads shall be permitted.

.3 Private roads are those roads not maintained by a municipality, located either on a municipal or private right-of-way providing access to a cluster of residential uses.

.4 This policy shall not be interpreted so as to prohibit development of Plans of Condominium using private roadways of a standard suitable to the municipalities.

4.6.3.4 Provincial Highways

.1 There are three provincial highways serving the County of Bruce (Highway 6, Highway 9 and Highway 21) which are under the jurisdiction and control of the Ministry of Transportation (MTO). Development that falls within the MTO's permit control areas as defined under the Public Transportation and Highway Improvement Act is subject to all the safety and geometric requirements of the MTO.

.2 New entrances or the upgrading of entrances, location of buildings, signs and encroachments within the MTO's permit control area of a provincial highway shall be subject to the approval of the MTO. MTO requirements may conflict with this Official Plan and therefore in such a situation, the highway standard would apply.

.3 For major development proposals for large traffic generators located within the permit control area of a provincial highway, MTO will require an application to prepare a transportation impact assessment in accordance with its "General Guidelines for the preparation of Traffic Impact Studies". The main purpose of a traffic impact study is to demonstrate how the transportation impacts of a proposed development or redevelopment can be mitigated and addressed in a manner

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Provincial Policy Statement, 2020

Under the *Planning Act*

Ontario

PROVINCIAL POLICY STATEMENT, 2020

Approved by the Lieutenant Governor in Council, Order in Council No. 229/2020

This Provincial Policy Statement was issued under section 3 of the *Planning Act* and came into effect May 1, 2020. It replaces the Provincial Policy Statement issued April 30, 2014.

Table of Contents

PART I: PREAMBLE **1**

PART II: LEGISLATIVE AUTHORITY **2**

PART III: HOW TO READ THE PROVINCIAL POLICY STATEMENT **2**

PART IV: VISION FOR ONTARIO'S LAND USE PLANNING SYSTEM **5**

PART V: POLICIES **7**

1.0 BUILDING STRONG HEALTHY COMMUNITIES **7**

1.1 Managing and Directing Land Use to Achieve Efficient and Resilient Development and Land Use Patterns 7

Settlement Areas 8

Rural Areas in Municipalities 10

Rural Lands in Municipalities 11

Territory Without Municipal Organization 12

1.2 Coordination 12

Land Use Compatibility 14

1.3 Employment 14

Employment Areas 15

1.4 Housing 16

1.5 Public Spaces, Recreation, Parks, Trails and Open Space 17

1.6 Infrastructure and Public Service Facilities 17

Sewage, Water and Stormwater 18

Transportation Systems 20

Transportation and Infrastructure Corridors 20

Airports, Rail and Marine Facilities 21

Waste Management 21

Energy Supply 22

1.7 Long-Term Economic Prosperity 22

1.8 Energy Conservation, Air Quality and Climate Change 22

2.0 WISE USE AND MANAGEMENT OF RESOURCES **24**

2.1 Natural Heritage 24

2.2 Water 25

2.3 Agriculture 26

2.4 Minerals and Petroleum 28

2.5 Mineral Aggregate Resources 29

2.6 Cultural Heritage and Archaeology 31

3.0 PROTECTING PUBLIC HEALTH AND SAFETY **32**

3.1 Natural Hazards 32

3.2 Human-Made Hazards 34

4.0 IMPLEMENTATION AND INTERPRETATION **35**

5.0 FIGURE 1 **37**

6.0 DEFINITIONS **40**

c) directing the development of new housing towards locations where appropriate levels of *infrastructure* and *public service facilities* are or will be available to support current and projected needs;
d) promoting densities for new housing which efficiently use land, resources, *infrastructure* and *public service facilities*, and support the use of *active transportation* and transit in areas where it exists or is to be developed;
e) requiring *transit-supportive* development and prioritizing *intensification,* including potential air rights development, in proximity to transit, including corridors and stations; and
f) establishing development standards for *residential intensification*, *redevelopment* and new residential development which minimize the cost of housing and facilitate compact form, while maintaining appropriate levels of public health and safety.

1.5 Public Spaces, Recreation, Parks, Trails and Open Space

1.5.1 Healthy, active communities should be promoted by:

a) planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate *active transportation* and community connectivity;
b) planning and providing for a full range and equitable distribution of publicly-accessible built and natural settings for *recreation*, including facilities, parklands, public spaces, open space areas, trails and linkages, and, where practical, water-based resources;
c) providing opportunities for public access to shorelines; and
d) recognizing provincial parks, conservation reserves, and other protected areas, and minimizing negative impacts on these areas.

1.6 Infrastructure and Public Service Facilities

1.6.1 *Infrastructure* and *public service facilities* shall be provided in an efficient manner that prepares for the *impacts of a changing climate* while accommodating projected needs.

Planning for *infrastructure* and *public service facilities* shall be coordinated and integrated with land use planning and growth management so that they are:

a) financially viable over their life cycle, which may be demonstrated through asset management planning; and
b) available to meet current and projected needs.

1.6.2 Planning authorities should promote *green infrastructure* to complement *infrastructure*.

1.6.3 Before consideration is given to developing new *infrastructure* and *public service facilities*:

a) the use of existing *infrastructure* and *public service facilities* should be optimized; and
b) opportunities for adaptive re-use should be considered, wherever feasible.

1.6.4 *Infrastructure* and *public service facilities* should be strategically located to support the effective and efficient delivery of emergency management services, and to ensure the protection of public health and safety in accordance with the policies in Section 3.0: Protecting Public Health and Safety.

1.6.5 *Public service facilities* should be co-located in community hubs, where appropriate, to promote cost-effectiveness and facilitate service integration, access to transit and *active transportation*.

1.6.6 Sewage, Water and Stormwater

1.6.6.1 Planning for *sewage and water services* shall:

a) accommodate forecasted growth in a manner that promotes the efficient use and optimization of existing:
   1. *municipal sewage services* and *municipal water services*; and
   2. *private communal sewage services* and *private communal water services*, where *municipal sewage services* and *municipal water services* are not available or feasible;
b) ensure that these systems are provided in a manner that:
   1. can be sustained by the water resources upon which such services rely;
   2. prepares for the *impacts of a changing climate;*
   3. is feasible and financially viable over their lifecycle; and
   4. protects human health and safety, and the natural environment;
c) promote water conservation and water use efficiency;
d) integrate servicing and land use considerations at all stages of the planning process; and
e) be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5. For clarity, where *municipal sewage services and municipal water services* are not available, planned or feasible, planning authorities have the ability to consider the use of the servicing options set out through policies 1.6.6.3, 1.6.6.4, and 1.6.6.5 provided that the specified conditions are met.

1.6.6.2 *Municipal sewage services* and *municipal water services* are the preferred form of servicing for *settlement areas* to support protection of the environment and minimize potential risks to human health and safety. Within *settlement areas* with existing *municipal sewage services* and *municipal water services*, *intensification* and *redevelopment* shall be promoted wherever feasible to optimize the use of the services.

sufficient *reserve sewage system capacity* shall include treatment capacity for hauled sewage from *private communal sewage services* and *individual on-site sewage services*.

1.6.6.7 Planning for stormwater management shall:

a) be integrated with planning for *sewage and water services* and ensure that systems are optimized, feasible and financially viable over the long term;
b) minimize, or, where possible, prevent increases in contaminant loads;
c) minimize erosion and changes in water balance, and prepare for the *impacts of a changing climate* through the effective management of stormwater, including the use of *green infrastructure*;
d) mitigate risks to human health, safety, property and the environment;
e) maximize the extent and function of vegetative and pervious surfaces; and
f) promote stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development.

1.6.7 Transportation Systems

1.6.7.1 *Transportation systems* should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs.

1.6.7.2 Efficient use should be made of existing and planned *infrastructure*, including through the use of *transportation demand management* strategies, where feasible.

1.6.7.3 As part of a *multimodal transportation system*, connectivity within and among *transportation systems* and modes should be maintained and, where possible, improved including connections which cross jurisdictional boundaries.

1.6.7.4 A land use pattern, density and mix of uses should be promoted that minimize the length and number of vehicle trips and support current and future use of transit and *active transportation*.

1.6.8 Transportation and Infrastructure Corridors

1.6.8.1 Planning authorities shall plan for and protect corridors and rights-of-way for *infrastructure*, including transportation, transit and electricity generation facilities and transmission systems to meet current and projected needs.

1.6.8.2 *Major goods movement facilities and corridors* shall be protected for the long term.

1.6.8.3 Planning authorities shall not permit *development* in *planned corridors* that could preclude or negatively affect the use of the corridor for the purpose(s) for which it was identified.

2.0 Wise Use and Management of Resources

Ontario's long-term prosperity, environmental health, and social well-being depend on conserving biodiversity, protecting the health of the Great Lakes, and protecting natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits.

Accordingly:

2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term *ecological function* and biodiversity of *natural heritage systems*, should be maintained, restored or, where possible, improved, recognizing linkages between and among *natural heritage features and areas*, *surface water features* and *ground water features*.

2.1.3 *Natural heritage systems* shall be identified in Ecoregions 6E & 7E[1], recognizing that *natural heritage systems* will vary in size and form in *settlement areas*, *rural areas*, and *prime agricultural areas*.

2.1.4 *Development* and *site alteration* shall not be permitted in:

a) *significant wetlands* in Ecoregions 5E, 6E and 7E[1]; and
b) *significant coastal wetlands*.

2.1.5 *Development* and *site alteration* shall not be permitted in:

a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E[1];
b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)[1];
c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)[1];
d) *significant wildlife habitat*;
e) *significant areas of natural and scientific interest*; and
f) *coastal wetlands* in Ecoregions 5E, 6E and 7E[1] that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

[1] Ecoregions 5E, 6E and 7E are shown on Figure 1.

2.1.6 *Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.

2.1.7 *Development* and *site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.

2.1.8 *Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.

2.1.9 Nothing in policy 2.1 is intended to limit the ability of *agricultural uses* to continue.

2.2 Water

2.2.1 Planning authorities shall protect, improve or restore the *quality and quantity of water* by:

a) using the *watershed* as the ecologically meaningful scale for integrated and long-term planning, which can be a foundation for considering cumulative impacts of development;
b) minimizing potential *negative impacts*, including cross-jurisdictional and cross-*watershed* impacts;
c) evaluating and preparing for the *impacts of a changing climate* to water resource systems at the watershed level;
d) identifying water resource systems consisting of *ground water features*, *hydrologic functions*, *natural heritage features and areas*, and *surface water features* including shoreline areas, which are necessary for the ecological and hydrological integrity of the *watershed*;
e) maintaining linkages and related functions among *ground water features*, *hydrologic functions*, *natural heritage features and areas*, and *surface water features* including shoreline areas;
f) implementing necessary restrictions on *development* and *site alteration* to:
    1. protect all municipal drinking water supplies and *designated vulnerable areas*; and
    2. protect, improve or restore *vulnerable* surface and ground water, *sensitive surface water features* and *sensitive ground water features*, and their *hydrologic functions*;
g) planning for efficient and sustainable use of water resources, through practices for water conservation and sustaining water quality;
h) ensuring consideration of environmental lake capacity, where applicable; and
i) ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces.

2.2.2 *Development* and *site alteration* shall be restricted in or near *sensitive surface water features* and *sensitive ground water features* such that these features and their related *hydrologic functions* will be protected, improved or restored.

Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore *sensitive surface water features*, *sensitive ground water features*, and their *hydrologic functions*.

2.3 Agriculture

2.3.1 *Prime agricultural areas* shall be protected for long-term use for agriculture.

Prime agricultural areas are areas where *prime agricultural lands* predominate. *Specialty crop areas* shall be given the highest priority for protection, followed by Canada Land Inventory Class 1, 2, and 3 lands, and any associated Class 4 through 7 lands within the *prime agricultural area*, in this order of priority.

2.3.2 Planning authorities shall designate *prime agricultural areas* and *specialty crop areas* in accordance with guidelines developed by the Province, as amended from time to time.

Planning authorities are encouraged to use an *agricultural system* approach to maintain and enhance the geographic continuity of the agricultural land base and the functional and economic connections to the *agri-food network.*

2.3.3 Permitted Uses

2.3.3.1 In *prime agricultural areas*, permitted uses and activities are: *agricultural uses*, *agriculture-related uses* and *on-farm diversified uses*.

Proposed *agriculture-related uses* and *on-farm diversified uses* shall be compatible with, and shall not hinder, surrounding agricultural operations. Criteria for these uses may be based on guidelines developed by the Province or municipal approaches, as set out in municipal planning documents, which achieve the same objectives.

2.3.3.2 In *prime agricultural areas*, all types, sizes and intensities of *agricultural uses* and *normal farm practices* shall be promoted and protected in accordance with provincial standards.

2.3.3.3 New land uses in *prime agricultural areas,* including the creation of lots and new or expanding livestock facilities, shall comply with the *minimum distance separation formulae*.

3.0 Protecting Public Health and Safety

Ontario's long-term prosperity, environmental health and social well-being depend on reducing the potential for public cost or risk to Ontario's residents from natural or human-made hazards.

Development shall be directed away from areas of natural or human-made hazards where there is an unacceptable risk to public health or safety or of property damage, and not create new or aggravate existing hazards.

Mitigating potential risk to public health or safety or of property damage from natural hazards, including the risks that may be associated with the impacts of a changing climate, will require the Province, planning authorities, and conservation authorities to work together.

Accordingly:

3.1 Natural Hazards

3.1.1 Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of:

a) *hazardous lands* adjacent to the shorelines of the *Great Lakes - St. Lawrence River System* and *large inland lakes* which are impacted by *flooding hazards*, *erosion hazards* and/or *dynamic beach hazards*;
b) *hazardous lands* adjacent to *river, stream and small inland lake systems* which are impacted by *flooding hazards* and/or *erosion hazards*; and
c) *hazardous sites.*

3.1.2 *Development* and *site alteration* shall not be permitted within:

a) the *dynamic beach hazard*;
b) *defined portions of the flooding hazard along connecting channels* (the St. Marys, St. Clair, Detroit, Niagara and St. Lawrence Rivers);
c) areas that would be rendered inaccessible to people and vehicles during times of *flooding hazards*, *erosion hazards* and/or *dynamic beach hazards*, unless it has been demonstrated that the site has safe access appropriate for the nature of the *development* and the natural hazard; and
d) a *floodway* regardless of whether the area of inundation contains high points of land not subject to flooding.

3.1.3 Planning authorities shall prepare for the *impacts of a changing climate* that may increase the risk associated with natural hazards.

3.1.4 Despite policy 3.1.2, *development* and *site alteration* may be permitted in certain areas associated with the *flooding hazard* along *river, stream and small inland lake systems*:

a) in those exceptional situations where a *Special Policy Area* has been approved. The designation of a *Special Policy Area*, and any change or modification to the official plan policies, land use designations or boundaries applying to *Special Policy Area* lands, must be approved by the Ministers of Municipal Affairs and Housing and Natural Resources and Forestry prior to the approval authority approving such changes or modifications; or

b) where the *development* is limited to uses which by their nature must locate within the *floodway*, including flood and/or erosion control works or minor additions or passive non-structural uses which do not affect flood flows.

3.1.5 *Development* shall not be permitted to locate in *hazardous lands* and *hazardous sites* where the use is:

a) an *institutional use* including hospitals, long-term care homes, retirement homes, pre-schools, school nurseries, day cares and schools;

b) an *essential emergency service* such as that provided by fire, police and ambulance stations and electrical substations; or

c) uses associated with the disposal, manufacture, treatment or storage of *hazardous substances*.

3.1.6 Where the *two zone concept* for *flood plains* is applied, *development* and *site alteration* may be permitted in the *flood fringe*, subject to appropriate floodproofing to the *flooding hazard* elevation or another *flooding hazard* standard approved by the Minister of Natural Resources and Forestry.

3.1.7 Further to policy 3.1.6, and except as prohibited in policies 3.1.2 and 3.1.5, *development* and *site alteration* may be permitted in those portions of *hazardous lands* and *hazardous sites* where the effects and risk to public safety are minor, could be mitigated in accordance with provincial standards, and where all of the following are demonstrated and achieved:

a) *development* and *site alteration* is carried out in accordance with *floodproofing standards*, *protection works standards*, and *access standards*;

b) vehicles and people have a way of safely entering and exiting the area during times of flooding, erosion and other emergencies;

c) new hazards are not created and existing hazards are not aggravated; and

d) no adverse environmental impacts will result.

3.1.8 *Development* shall generally be directed to areas outside of lands that are unsafe for *development* due to the presence of *hazardous forest types for wildland fire*.

Development may however be permitted in lands with *hazardous forest types for wildland fire* where the risk is mitigated in accordance with *wildland fire assessment and mitigation standards.*

The Corporation Of The

Municipality Of Arran-Elderslie

By-Law Number 36-09

A by-law to regulate the use of land and the erection, use, bulk, height, spacing of and other matters relating to buildings and structures and to restrict certain uses of land and the erection and use of certain buildings and structures in the Municipality of Arran-Elderslie.

Passed by Municipal Council June 29, 2009
Ontario Municipal Board Decision July 5, 2010

The Corporation of the Municipality of Arran-Elderslie
P. O. Box 70, 1925 Bruce Road 10
Chesley ON N0G 1L0
Tel: 519-363-3039

Housekeeping

1. By-law 59-10, December 24, 2010
2. By-laws 38-11, 39-11, October 11, 2011
3. By-law 23-2013, April 22, 2013

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Prepared by the Bruce County
Planning & Economic Development Department

Table of Contents

Section 1 - Administration 1

Section 2 - Definitions 5

Section 3 - General Provisions For All Zones 33

3.1 PERMITTED USES 33
3.1.1 Services And Utilities *33*
3.1.2 Temporary Buildings & Construction Facilities *33*
3.1.3 Ornamental Structures *34*
3.1.4 Services *34*
3.1.5 Multi-Purpose Recreational Trails *35*
3.2 USES PERMITTED IN ALL ZONES 35
3.3 BUFFER ON LANDS ADJOINING INDUSTRIAL OR RESIDENTIAL USES/ZONES 35
3.4 NON-CONFORMING USES 36
3.5 NON-COMPLYING USES 37
3.6 ACCESSORY BUILDINGS AND STRUCTURES 37
3.7 NUMBER OF MAIN BUILDINGS PER LOT 39
3.8 ACCESSORY DWELLINGS 39
3.9 HOME OCCUPATION - DOMESTIC & PROFESSIONAL USES 40
3.10 HOME OCCUPATION - BED & BREAKFAST ESTABLISHMENT 41
3.11 HOME INDUSTRY 42
3.12 ESTABLISHED BUILDING LINE 43
3.13 EXCEPTIONS TO MAXIMUM HEIGHT REGULATIONS 43
3.14 PERMITTED YARD ENCROACHMENTS 43
3.15 PLANTING AREA/VISUAL SCREENING 44
3.16 LANDSCAPED OPEN SPACE 45
3.17 OPEN STORAGE & OUTDOOR DISPLAY - INDUSTRIAL/COMMERCIAL ZONES 45
3.18 REDUCTION OF REQUIREMENTS 46
3.19 MINIMUM DISTANCE SEPARATION GUIDELINES (MDS) 47
3.20 NOT USED 47
3.21 WATERCOURSE SETBACKS 47
3.22 SETBACKS FROM DISPOSAL AREAS - WASTE & SEWAGE 48
3.23 PROVINCIAL OR COUNTY STREET RIGHT-OF-WAY SETBACKS 48
3.24 STREETS 49
3.25 FRONTAGE ON A STREET 49
3.26 SIGHT TRIANGLES 50
3.27 OFF-STREET PARKING REGULATIONS 50
3.28 LOADING REGULATIONS 57
3.29 PROVISIONS FOR AN EXISTING MOBILE HOME NOT IN A MOBILE HOME PARK 58
3.30 CONFLICTING REGULATIONS OR PROVISIONS 58
3.31 LIGHTING 58
3.32 DRAINAGE OF LOTS 58
3.33 SETBACKS FROM PRIVATE STREET 59
3.34 METEOROLOGICAL TOWERS 59
3.35 WELLHEAD PROTECTION AREA (WHPA) OVERLAY ZONE 59

Section 4 - Establishment Of Zones 60
4.1 General 60
4.2 Zone Symbols 60
4.3 Exceptions 61
4.4 Special Holding Provisions 61
4.5 Temporary Use By-Law 62
4.6 Incorporation Of Zoning Map 62
4.7 Zoning Maps 62
4.7.1 Boundaries Of Zones 62
4.7.2 Other Boundary Features – Streets, Watercourses Etc. 63
4.7.3 More Than One Zone On A Lot 64
4.7.4 Zoning Maps – Wellhead Protection Area (Whpa) Overlay Zone) 64

Section 5 - General Provisions For All Agricultural Zones - A 65
5.1 No Dwelling Permitted – Severed Agricultural Parcels 65
5.2 Not Used 65
5.3 Not Used 65
5.4 Requirements For Kennels 65
5.5 Accessory Buildings And Structures – Non-Farm Lot 65

Section 6 - General Agriculture (A1) 67
6.1 Scoping Note 67
6.2 Uses Permitted 67
6.3 Zone Provisions 68
6.4 Special Provisions 69

Section 7 – Not Used 95

Section 8 – Hamlet Residential (Hr) 96
8.1 Scoping Note 96
8.2 Uses Permitted 96
8.3 Zone Provisions 96
8.4 Special Provisions 98

Section 9 – Cottage Residential (R4) 100
9.1 Scoping Note 100
9.2 Uses Permitted 100
9.3 Zone Provisions 100
9.4 Special Provisions 101

Section 10 –Urban Residential Zones (R1, R2, R3) 103
10.1 Scoping Note 103
10.2 Uses Permitted 103
10.3 Zone Provisions – 'R1' And 'R2' 104
10.4 Zone Provisions – 'R3' 106
10.5 Special Provisions R1 107
10.5 Special Provisions R1 – Cont'd 107
10.6 Special Provisions – R2 109
10.7 Special Provisions - R3 110

Section 11 - Travel Trailer Park And Campground (Ttp) 111
11.1 Scoping Note 111
11.2 Uses Permitted 111
11.3 Zone Provisions 111
11.4 Additional Provisions - Travel Trailer Park And Campground 112
11.5 Special Provisions 112

Section 12 -Commercial Zones (C1, C2, C3, C4) 114
12.1 Scoping Note 114
12.2 Uses Permitted 114
12.3 Zone Provisions 116
12.4 Additional Provisions – Automobile Gas Bars & Automobile Repair Establishments 117
12.5 Special Provisions 117

Section 12a - Mixed Use (Mu) 119
12A.1 Scoping Note 119
12A.2 Holding Zone (H) (Housekeeping By-Law 59-10, 08NOV10) 119
12A.3 Uses Permitted 119
12A.4 Requirements To Remove The Holding "H" Symbol 119

Section 13 - Hamlet Commercial (Hc) 121
13.1 Scoping Note 121
13.2 Uses Permitted 121
13.3 Zone Provisions 122
13.4 Additional Provisions –Gasoline Pumps, Natural Gas And Propane Facilities 122
13.5 Off-Street Parking Regulations 122
13.6 Special Provisions 123

Section 14 - General Provisions For Industrial Zones (Bp1, Bp2, Hi, M2, M1, M3) 124

Section 15 - Business Park Zone (Bp1 & Bp2) 126
15.1 Scoping Note 126
15.2 Uses Permitted 126
15.3 Zone Provisions 127
15.4 Special Provisions 129

Section 16 - Hamlet Industrial (Hi) 130
16.1 Scoping Note 130
16.2 Uses Permitted 130
16.3 Zone Provisions 130
16.4 Special Provisions 131

Section 17 - Extractive Industrial (M2) 132
17.1 Scoping Note 132
17.2 Permitted Uses 132
17.3 Zone Provisions 132
17.4 Additional Provisions - Extractive Industrial 133
17.5 Special Provisions 134

Section 3 - General Provisions For All Zones

3.1 Permitted Uses

3.1.1 Services and Utilities

.1 Nothing contained in this By-law shall prevent the Corporation; any agency or department of the Federal, Provincial or County Government; any utility company; any railway company or any local or County Board or Commission from:

a) Installing a watermain, sanitary sewer main, sewage or water pumping station, storm sewer main, gas main, electric power transformer/distribution station, transmission tower, communications tower, pipeline, overhead or underground electric line, cable service, or telephone line, road or street subject to there being no outdoor storage of goods, materials or equipment in any yard.

b) Erecting any required accessory service buildings for the purpose of supplying a public service subject to compliance with the provisions prescribed for the Zone in which it is to be located and subject to there being no outdoor storage of goods, materials or equipment in any yard.

.2 A sewage and/or water pumping station or 'water well' owned and operated by, or for, the Corporation, may be erected no closer than 3 metres (9.8 ft.) to the lot lines and shall be exempt from all other zone provisions of the zone in which it is located.

.3 Any electric power facilities and any receiving or transmitting tower and facilities of any radio or television station existing on the date of passing of this By-law are permitted.

Explanatory Note:

Public Utilities and similar uses are subject to the Environmental Assessment Act, and also may be subject to other legislation.

3.1.2 Temporary Buildings & Construction Facilities

.1 Nothing contained in this By-law shall prevent the erection or location of any sheds, scaffolds, construction trailers or other structures incidental to building construction on a lot for so long as the same is necessary for work in progress which has neither been finished, nor abandoned provided any necessary permits are obtained. All temporary buildings and/or construction facilities shall be noted on the Building Permit at time of issuance.

APPENDIX C

ONTARIO STRUCTURE INSPECTION MANUAL (OSIM) REPORTS

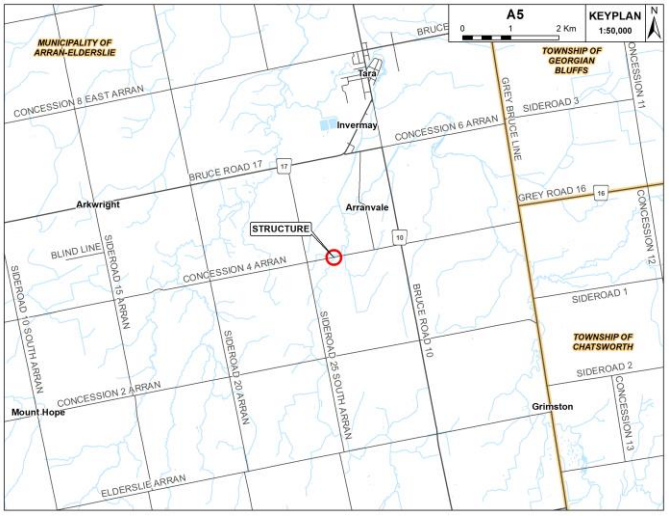
Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Summary Report:



2-South Elevation



Datum: NAD83 17N **Northing:** 4921107 **Easting:** 487730

Structure Name:	Hunts Bridge		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 56	**CRV:**	$698,400
Road Name:	Concession 4			**Inspection Date:**	2024-08-28
Structure Location:	Lot 27			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	6-10 Years	**Current Load Limit:**	9
Overall Comments:	Earth filled arch in fair condition. Recommendations include patch repair barrel walls and retaining wall. Load limit 9.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Retaining walls	Patch repair wall and barrel edges (7m2)	6 to 10 yrs.	$35,000
Culverts	Patch repair soffit and abutment spalls (2m2)	6 to 10 yrs.	$32,800
Barriers	Guiderail post replacement	6 to 10 yrs.	$10,000
			$0
			$0
			$0
			$0
Various	Associated Work		$90,000
		Total	$167,800

Additional Investigations:

Investigation Description	Priority	Estimated Cost
Concrete Substructure Condition Survey	Normal	$10,000

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Inventory Data:

Structure Name:	Hunts Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Concession 4	Northing:	4921107
Structure Location:	Lot 27	Easting:	487730
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Arches	Surface Type:	Gravel
Structure Type:	Earth Filled Arch	Detour Length Around Bridge:	(km)
Total Deck Length:	14.7 (m)	Fill on Structure: 0	(m)
Overall Str. Width:	4.9 (m)	Skew Angle: 0	(Degrees)
Total Struct. Area:	72.03 (sq.m)	Direction of Structure:	East/West
Roadway Width:	4.1 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	56

Span Length(s): 12.3 (m) (m) (m) (m) (m)

MTO Number: **BMROSS File Number:**

Historical Data:

Year Built:	1910 est.	Last Biennial Inspection:	2022
Current Load Limit:	9 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
		New parapets and guiderail since 2008	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Field Inspection Information:

Date of Inspection: 2024-08-28 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey	Expose top of arch	Normal	$10,000
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$10,000

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 6-10 Years

Overall Comments: Earth filled arch in fair condition. Recommendations include patch repair barrel walls and retaining wall. Load limit 9.

Replacement Value:

Structure Type: Bridge

Replacement Cost: $ 698,400

Structure Area: 72 (sq.m)

Complexity Factor: 1

Price per sq. m.: $ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Retaining walls	Patch repair wall and barrel edges (7m2)	6 to 10 yrs.	$35,000
Culverts	Patch repair soffit and abutment spalls (2m2)	6 to 10 yrs.	$32,800
Barriers	Guiderail post replacement	6 to 10 yrs.	$10,000
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$77,800**

Associated Work Required:

Mobilize / Demobilize	Access platform ($10,000)	$20,000
Approaches		$5,000
Traffic Control / Detours		$15,000
Utilities		$0
Right of Way		$0
Environmental Study	Permits	$5,000
Engineering		$25,000
Other	Bonding and insurance	$5,000
Contingencies	Condition on top of arch unknown	$15,000

Associated Work Sub-Total:	**$90,000**
Total Cost:	**$167,800**

Justification:

Expose top of arch to determine condition on top of concrete arch.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Element Data:						
Element Group:	Barriers				**Length:**	19.5
Element Name:	Barrier/Parapet Walls				**Width:**	0.25
Location:					**Height:**	0.9
Material:	Precast Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	35.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:					**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		90% (31.59)	10% (3.51)		$3,510	$2,510
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	15.2
Element Name:	Railing Systems				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	4
Element Type:	Steel Flex Beam on Wood Post				**Total Quantity:**	60.8 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		30% (18.24)	70% (42.56)		$12,160	$6,141
Comments:	Some posts starting to deteriorate.					
Performance Deficiencies:						
Recommended Work:	Replace posts as needed.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Culverts				**Length:**	12.3
Element Name:	Barrels				**Width:**	4.9
Location:					**Height:**	2.6
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Arch				**Total Quantity:**	85.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:					**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		60% (51.48)	30% (25.74)	10% (8.58)	$30,030	$17,117
Comments:	Spalled and delaminated 2m² on abutment and some on soffit. Condition on top of arch unknown.					
Performance Deficiencies:						
Recommended Work:	Patch repairs spalls and/or re-face abutment.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A5

Element Data:						
Element Group:	Retaining walls				**Length:**	19.7
Element Name:	Walls				**Width:**	0.35
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Reinforced Concrete				**Total Quantity:**	m2
Environment:					**Limited / Not Inspected:**	☐
Protection System:					**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% ()	20% ()		$0
Comments:	Retaining wall element includes the wingwalls. Spalled, delaminated and horizontal cracks (3m2 north face, 4m2 south face).					
Performance Deficiencies:						
Recommended Work:	Patch repair wall and barrel edges.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing East



2-South Elevation



3-Soffit and East Abutment



4-Parapet Wall-North Side



5-North Elevation (East End)



6-North Elevation (West End)



7-Guiderail Posts

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A11

Summary Report:



2-East Elevation



Datum: NAD83 17N **Northing:** 4920549 **Easting:** 478901

Structure Name:	Wilson Bridge	**BMROSS File #:**		**MTO #:**	
Main Hwy / Road #:		**Bridge Condition Index (BCI:)**	45	**CRV:**	$504,400
Road Name:	Sideroad 5 South			**Inspection Date:**	2024-07-30
Structure Location:	Concession 6			**Next Inspection:**	2026-01-01
Condition Summary:	Maintenance recommended	**Recommended Timing:**		**Current Load Limit:**	12
Overall Comments:					

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
			$0
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$0
		Total	$0

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Embankments	13 - Erosion Control at Bridges	Move rocks at outlet from middle of stream to north side of stream	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A11

Inventory Data:

Structure Name:	Wilson Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Sideroad 5 South	Northing:	4920549
Structure Location:	Concession 6	Easting:	478901
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Arches	Surface Type:	Gravel
Structure Type:	Earth Filled Arch	Detour Length Around Bridge:	(km)
Total Deck Length:	9 (m)	Fill on Structure: 0.4	(m)
Overall Str. Width:	5.8 (m)	Skew Angle: 0	(Degrees)
Total Struct. Area:	52.2 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.9 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	45
Span Length(s):	7 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1910	Last Biennial Inspection:	2022
Current Load Limit:	12 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2005		New railings and curbs	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A11

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGavey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast, Rain

Temperature: 24 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Maintenance recommended **Recommended Timing:**

Overall Comments:

Replacement Value:

Structure Type:	Bridge	Structure Area:	52	(sq.m)
Replacement Cost:	$ 504,400	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
			$0
			$0
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$0**

Associated Work Required:

Mobilize / Demobilize		$0
Approaches		$0
Traffic Control / Detours		$0
Utilities		$0
Right of Way		$0
Environmental Study		$0
Engineering		$0
Other		$0
Contingencies		$0

Associated Work Sub-Total:	**$0**
Total Cost:	**$0**

Justification:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Embankments	13 - Erosion Control at Bridges	Move rocks at outlet from middle of stream to north side of stream	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A11

Element Data:						
Element Group:	Abutments				**Length:**	3
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.1
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	6.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (6.6)		$2,310	$924
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	12.9
Element Name:	Railing Systems				**Width:**	0.3
Location:	East and West				**Height:**	0.53
Material:	Steel				**Count:**	2
Element Type:	Steel Flex Beam on Wood Post				**Total Quantity:**	25.8 m
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (25.8)			$5,160	$3,870
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Culverts				**Length:**	7
Element Name:	Barrels				**Width:**	5.8
Location:					**Height:**	2.3
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Arch				**Total Quantity:**	84.7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (84.7)		$29,645	$11,858
Comments:	Crack about 1/3 of the way up the arch appears to be a cold joint but is a little concerning. Monitor.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Embankments & Streams				**Length:**	3.1
Element Name:	Embankments				**Width:**	3.1
Location:	All wingwalls				**Height:**	1.6
Material:					**Count:**	4
Element Type:					**Total Quantity:**	4 Each
Environment:					**Limited / Not Inspected:**	☐
Protection System:					**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (4)		$0	$0
Comments:	Armoured with broken concrete.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:	13 - Erosion Control at Bridges					
Maintenance work:	Move rocks at outlet from middle of stream to north side of stream				**Maintenance Priority:**	Within 1 Yr.

Element Data:						
Element Group:	Sidewalks/curbs				**Length:**	12.9
Element Name:	Curbs				**Width:**	0.4
Location:					**Height:**	0.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:					**Total Quantity:**	15.5 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (15.5)			$620	$465
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing North



2-East Elevation



3-North Abutment



4-South Abutment



5-Rocks in Centre of Stream



6-Northwest Rock Embankment



7-West Curb and Railing

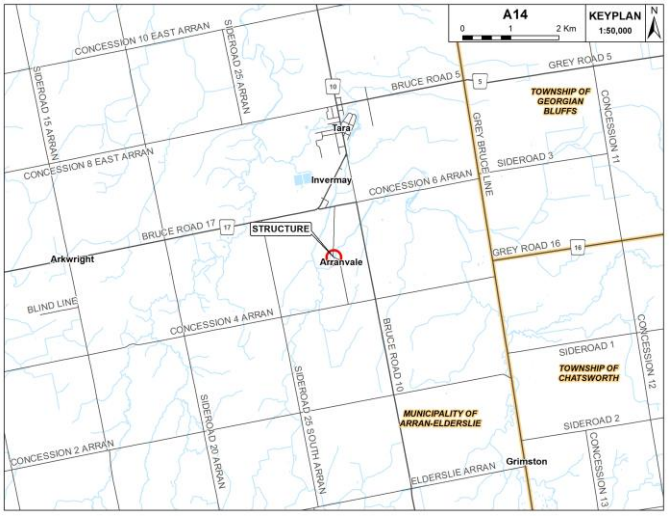
Ontario Structure Inspection Manual - Inspection Report:

Site Number: A14

Summary Report:



2-Northeast Elevation



Datum: NAD83 17N **Northing:** 4922249 **Easting:** 488266

Structure Name:	Arranvale Bridge		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 45	**CRV:**	$1,474,400
Road Name:	Mill Road			**Inspection Date:**	2024-08-28
Structure Location:	Lot 29			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	6-10 Years	**Current Load Limit:**	14
Overall Comments:	Half through truss bridge in fair condition. Single lane bridge with a load limit of 14.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Replace deck boards	6 to 10 yrs.	$16,000
Decks	HL-2 wear surface	6 to 10 yrs.	$10,000
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$9,000
		Total	$35,000

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Deck Top - Thin Slab	12 - Bridge Surface Repair	Seal asphalt with a slurry seal type product.	Within 2 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A14

Inventory Data:

Structure Name:	Arranvale Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Mill Road	Northing:	4922249
Structure Location:	Lot 29	Easting:	488266
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 200-499	% Trucks:
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Truss	Surface Type:	Asphalt
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	27.9 (m)	Fill on Structure: 0	(m)
Overall Str. Width:	5.45 (m)	Skew Angle: 0	(Degrees)
Total Struct. Area:	152.055 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.7 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	45
Span Length(s):	27.3 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	14 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2023		Angle struck by a vehicle replaced by township staff	0
2020		Bottom chord repaired	0
		Deck, joints and asphalt wearing surface.	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A14

Field Inspection Information:

Date of Inspection: 2024-08-28 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 6-10 Years

Overall Comments: Half through truss bridge in fair condition. Single lane bridge with a load limit of 14.

Replacement Value:

Structure Type:	Bridge	Structure Area:	152 (sq.m)
Replacement Cost:	$ 1,474,400	Complexity Factor:	1
		Price per sq. m.:	$ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Replace deck boards	6 to 10 yrs.	$16,000
Decks	HL-2 wear surface	6 to 10 yrs.	$10,000
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total: $26,000

Associated Work Required:

Mobilize / Demobilize		$1,000
Approaches		$0
Traffic Control / Detours		$2,000
Utilities		$0
Right of Way		$0
Environmental Study		$0
Engineering		$3,000
Other		$0
Contingencies		$3,000

Associated Work Sub-Total: $9,000

Total Cost: $35,000

Justification:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Deck Top - Thin Slab	12 - Bridge Surface Repair	Seal asphalt with a slurry seal type product.	Within 2 Yr.

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	6.0
Location:					**Height:**	2.9
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	34.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (34.8)			$31,320	$23,490
Comments:	Refaced in the past.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	3.1
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.6
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	9.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (9.9)			$3,465	$2,599
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	27.9
Element Name:	Railing Systems				**Width:**	0.1
Location:					**Height:**	0.8
Material:	Steel				**Count:**	2
Element Type:	Steel Flex Beam on Steel Post				**Total Quantity:**	55.8 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (44.64)	20% (11.16)	$11,160	$3,571
Comments:	Vehicle strike on east side caused minor deflection in guiderail. Some wood posts beginning to deteriorate in guiderail on approaches.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.8
Element Name:	Floor Beams				**Width:**	0.15
Location:					**Height:**	0.38
Material:	Steel				**Count:**	5
Element Type:	I-type				**Total Quantity:**	29 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (29)		$12,180	$4,872
Comments:	Crossbeams. Cover plates added to top and bottom flange. Scale rusting on top flange.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.6
Element Name:	Floor Beams				**Width:**	0.15
Location:					**Height:**	0.26
Material:	Steel				**Count:**	42
Element Type:	I-type				**Total Quantity:**	187.4 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (187.4)		$78,708	$31,483
Comments:	Stringers. Scale rusting and significant loss of coating, but do not think there is any noteworthy structural section loss yet.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	27.9
Element Name:	Deck Top - Thin Slab				**Width:**	4.8
Location:					**Height:**	0.14
Material:	Wood				**Count:**	1
Element Type:	Laminated Wood Decking - transverse				**Total Quantity:**	133.9 m2
Environment:	Moderate				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (133.9)		$16,068	$6,427
Comments:	Coated in asphalt. Wearing surface is badly deteriorating on wheel track. If surface is not sealed, suspect decking boards will need replaced within 6-10 years.					
Performance Deficiencies:						
Recommended Work:	Consider replacing asphalt with multi-layer tar and chip or HL-2 so it fits back together.				**Recommended Timing:**	None
Maintenance needs:	12 - Bridge Surface Repair					
Maintenance work:	Seal asphalt with a slurry seal type product.				**Maintenance Priority:**	Within 2 Yr.

Element Data:						
Element Group:	Decks				**Length:**	27.9
Element Name:	Soffit - Thick Slab				**Width:**	4.8
Location:					**Height:**	0.14
Material:	Wood				**Count:**	1
Element Type:					**Total Quantity:**	134 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (134)		$46,900	$18,760
Comments:	Not clipped to stringers.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	27.9
Element Name:	Bottom Chords				**Width:**	0.3
Location:					**Height:**	0.1
Material:	Steel				**Count:**	2
Element Type:	Channel				**Total Quantity:**	39.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		10% (3.91)	90% (35.19)		$11,730	$5,103
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	27.9
Element Name:	Top Chords				**Width:**	0.30
Location:					**Height:**	0.19
Material:	Steel				**Count:**	2
Element Type:	Box/Trapezoidal				**Total Quantity:**	37.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (37.9)		$11,370	$4,548
Comments:	Painted coating deteriorated and flaking off 30%. Diagonal top chords have rust pockets penetrating the channel under the top plates. Monitor.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing South



2-Northeast Elevation



3-Crossbeams and Deck Soffit



4-Stringers and Soffit



5-South Abutment



6-Edge of Wood Decking



7-Guiderail Posts



8-Deck Top Asphalt



9-West End Stringers



Bottom Chord Truss Members



Repaired Diagonal Truss Angle



Truss at Northwest Bearing



Underside of Diagonal Truss Members

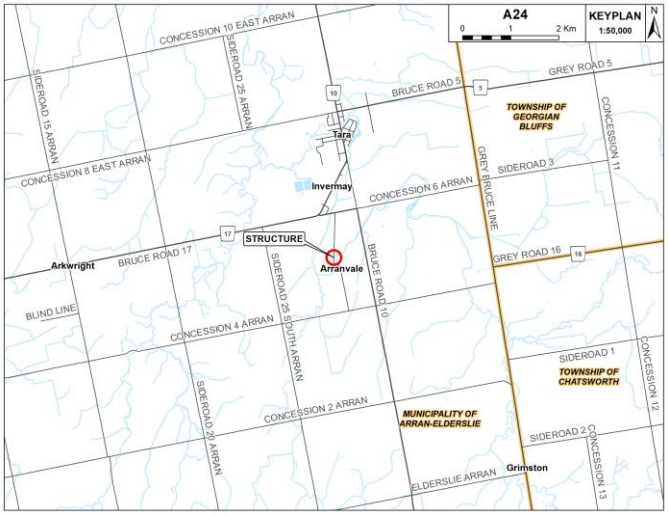
Ontario Structure Inspection Manual - Inspection Report:

Site Number: A24

Summary Report:



2-West Elevation



Datum: NAD83 17N **Northing:** 4922383 **Easting:** 488256

Structure Name:	Ruff Bridge		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 41	**CRV:**	$533,500
Road Name:	Mill Road			**Inspection Date:**	2024-08-28
Structure Location:	Lot 29, Concession 6			**Next Inspection:**	2026-01-01
Condition Summary:	Replacement recommended	**Recommended Timing:**	6-10 Years	**Current Load Limit:**	N/A
Overall Comments:	Solid slab in poor condition. Recommend replacing the structure with pipe or box culvert when time comes to replace.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace structure with CSP or box culvert	6 to 10 yrs.	$290,000
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$81,000
		Total	$371,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A24

Inventory Data:

Structure Name:	Ruff Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Mill Road	Northing:	4922383
Structure Location:	Lot 29, Concession 6	Easting:	488256
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	20 — No. of Lanes: 2
Current County:	Bruce	AADT:	200-499 — % Trucks:
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Slab	Surface Type:	Gravel
Structure Type:	Solid Slab	Detour Length Around Bridge:	(km)
Total Deck Length:	9.2 (m)	Fill on Structure:	0.1 (m)
Overall Str. Width:	7.0 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	55 (sq.m)	Direction of Structure:	North/South
Roadway Width:	6.0 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	2	Bridge Condition Index:	41
Span Length(s):	3.4 (m) 3.5 (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	(tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A24

Field Inspection Information:

Date of Inspection: 2024-08-28 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Replacement recommended **Recommended Timing:** 6-10 Years

Overall Comments: Solid slab in poor condition. Recommend replacing the structure with pipe or box culvert when time comes to replace.

Replacement Value:

Structure Type: Bridge

Replacement Cost: $ 533,500

Structure Area: 55 (sq.m)

Complexity Factor: 1

Price per sq. m.: $ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace structure with CSP or box culvert	6 to 10 yrs.	$290,000
			$0
			$0
			$0
			$0
			$0
			$0
		Repair/Rehabilitation Sub-Total:	**$290,000**

Associated Work Required:

Mobilize / Demobilize		$10,000
Approaches		$0
Traffic Control / Detours		$0
Utilities		$0
Right of Way		$0
Environmental Study	Approvals	$7,000
Engineering		$36,000
Other		$0
Contingencies		$28,000
	Associated Work Sub-Total:	**$81,000**
	Total Cost:	**$371,000**

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A24

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	7.1
Location:					**Height:**	1.5
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	21.3 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (21.3)		$19,170	$7,668
Comments:						
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	1.5
Element Name:	Wingwalls				**Width:**	0.53
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	3.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (3.6)		$1,260	$504
Comments:						
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	9.2
Element Name:	Barrier/Parapet Walls				**Width:**	0.48
Location:					**Height:**	1.0
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	18.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (9.2)	50% (9.2)	$1,840	$368
Comments:	East parapet badly spalled. Barrier walls are extra thick.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	9.2
Element Name:	Deck Top - Thick Slab				**Width:**	7.0
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Orthotropic Concrete Deck System				**Total Quantity:**	64.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			75% (48.3)	25% (16.1)	$22,540	$6,762
Comments:	Condition assumed.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	7.2
Element Name:	Soffit - Thick Slab				**Width:**	7.0
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	50.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			75% (37.8)	25% (12.6)	$17,640	$5,292
Comments:	Underside of deck on south span heavily delaminated. North span in better condition.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Piers				**Length:**	7.8
Element Name:	Shafts/Columns/Pile Bents				**Width:**	1.2
Location:					**Height:**	1.6
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Concrete Shafts, Pier Walls				**Total Quantity:**	28.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		60% (17.28)	40% (11.52)		$25,920	$15,811
Comments:	Lower half refaced.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing North



2-West Elevation



3-South Span Soffit



4-North Span Soffit



5-East Parapet Wall

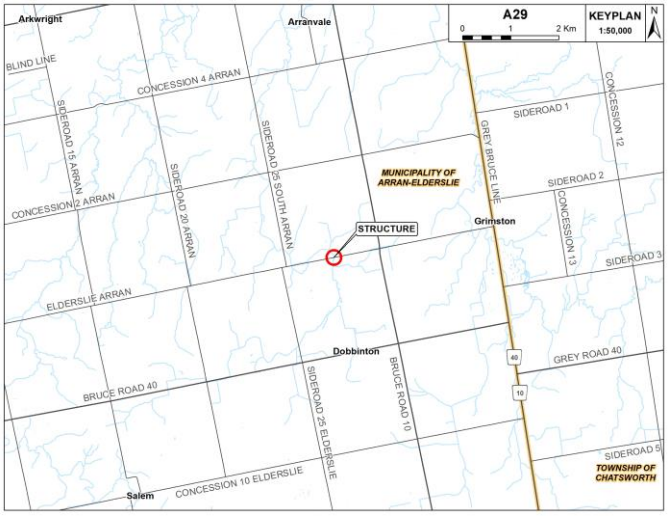
Ontario Structure Inspection Manual - Inspection Report:

Site Number: A29

Summary Report:



2-North Elevation



Datum: NAD83 17N **Northing:** 4917241 **Easting:** 488928

Structure Name:		**BMROSS File #:**		**MTO #:**	
Main Hwy / Road #:		**Bridge Condition Index (BCI:)**	54	**CRV:**	$572,300
Road Name:	Arran/Elderslie Boundary			**Inspection Date:**	2024-08-28
Structure Location:	1.0km West of County Road 10			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	6-10 Years	**Current Load Limit:**	N/A
Overall Comments:	Solid slab in fair condition. Recommend exposing deck top and doing concrete patch repairs to deck top and soffit.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair deck top and soffit	6 to 10 yrs.	$40,000
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$53,000
		Total	$93,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A29

Inventory Data:

Structure Name:			
Main Hwy / Road #:		On ☑ Under ☐ Crossing Type:	
Road Name:	Arran/Elderslie Boundary	Northing:	4917241
Structure Location:	1.0km West of County Road 10	Easting:	488928
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: 80	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Slab	Surface Type:	Gravel
Structure Type:	Solid Slab	Detour Length Around Bridge:	(km)
Total Deck Length: 10.4 (m)		Fill on Structure: 0.25	(m)
Overall Str. Width: 5.65 (m)		Skew Angle: 0	(Degrees)
Total Struct. Area: 58.76 (sq.m)		Direction of Structure:	East/West
Roadway Width: 4.7 (m)		Min. Vert. Clearance:	(m)
Number of Spans: 1		Bridge Condition Index:	54
Span Length(s): 8.6 (m)	(m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930s	Last Biennial Inspection:	2022
Current Load Limit:	(tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2008		Downloaded from county.	0
		Abutments have been refaced.	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A29

Field Inspection Information:

Date of Inspection: 2024-08-28 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 6-10 Years

Overall Comments: Solid slab in fair condition. Recommend exposing deck top and doing concrete patch repairs to deck top and soffit.

Replacement Value:

Structure Type: Bridge

Structure Area: 59 (sq.m)

Replacement Cost: $ 572,300

Complexity Factor: 1

Price per sq. m.: $ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair deck top and soffit	6 to 10 yrs.	$40,000
			$0
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$40,000**

Associated Work Required:

Mobilize / Demobilize	Site access	$10,000
Approaches	Remove gravel and restore afterwards	$5,000
Traffic Control / Detours		$5,000
Utilities		$0
Right of Way		$0
Environmental Study	Permits	$4,000
Engineering		$15,000
Other	Bonding and Insurance	$2,000
Contingencies		$12,000

Associated Work Sub-Total:	**$53,000**
Total Cost:	**$93,000**

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A29

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	5.7
Location:	E/W				**Height:**	1.5
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	17.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		90% (15.39)	10% (1.71)		$15,390	$11,004
Comments:	Abutments previously re-faced and extra thick.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	3.2
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	2.4
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	15.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		40% (6.16)	50% (7.7)	10% (1.54)	$5,390	$2,695
Comments:	Some concrete spalling off however wingwalls are over-built. Cracks at connections to parapet walls.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	10.3
Element Name:	Barrier/Parapet Walls				**Width:**	0.45
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	24.7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		50% (12.35)	40% (9.88)	10% (2.47)	$2,470	$1,321
Comments:	Spall on southeast corner and other places however abutments are built extra thick.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	10.4
Element Name:	Deck Top - Thin Slab				**Width:**	5.65
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	58.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			85% (49.98)	15% (8.82)	$7,056	$2,399
Comments:	Covered in gravel, rating assumed.					
Performance Deficiencies:						
Recommended Work:	Expose deck top while doing soffit repairs to examine any required repairs.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	8.6
Element Name:	Soffit - Thin Slab				**Width:**	5.65
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	48.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			85% (41.31)	15% (7.29)	$5,832	$1,983
Comments:	Spalls and delaminations. Rebar exposed in places. Appears to be deteriorating slowly. Suggest soffit repairs to cover exposed rebar.					
Performance Deficiencies:						
Recommended Work:	Expose deck top and repair/overlay and patch repair soffit where rebar is exposed.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing North



2-North Elevation



3-Soffit



4-East Abutment



5-Southwest Wingwall



6-South Parapet Wall

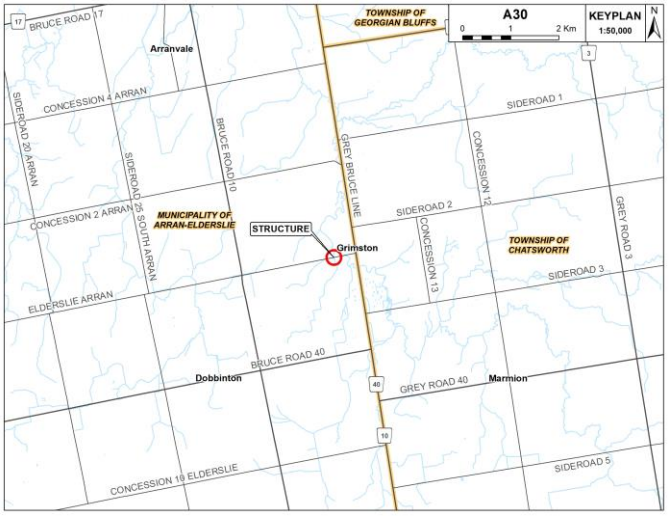
Ontario Structure Inspection Manual - Inspection Report:

Site Number: A30

Summary Report:



2-North Elevation



Datum: NAD83 17N **Northing:** 4917801 **Easting:** 491791

Structure Name:		**BMROSS File #:**		**MTO #:**	
Main Hwy / Road #:		**Bridge Condition Index (BCI:)**	38	**CRV:**	$1,105,800
Road Name:	Arran Elderslie Boundary			**Inspection Date:**	2024-08-28
Structure Location:	0.3 km West of Grey-Bruce Line			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years	**Current Load Limit:**	12

Overall Comments: Solid slab in poor condition. An option to perform concrete patch repairs is presented but given the condition and age of the bridge, we would normally recommend replacement. Replacement cost expected to be about $1.85 million. Current load limit, 12.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair deck top, soffit, wingwall	1 to 5 yrs.	$70,200
Barriers	Patch repair	1 to 5 yrs.	$25,000
Piers	Patch repair	1 to 5 yrs.	$20,000
Abutments	Rip rap in front of east abutment	1 to 5 yrs.	$12,000
			$0
			$0
			$0
Various	Associated Work		$102,000
		Total	$229,200

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A30

Inventory Data:

Structure Name:			
Main Hwy / Road #:		On ☑ Under ☐ Crossing Type:	
Road Name:	Arran Elderslie Boundary	Northing:	4917801
Structure Location:	0.3 km West of Grey-Bruce Line	Easting:	491791
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: / No. of Lanes:	/ 2
Current County:	Bruce	AADT: / % Trucks:	50-199 /
Geographic Twp.:	ARRAN	Special Routes:	
Structure Group:	Slab	Surface Type:	Gravel
Structure Type:	Solid Slab	Detour Length Around Bridge:	(km)
Total Deck Length:	19.3 (m)	Fill on Structure:	0.1 (m)
Overall Str. Width:	5.9 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	113.87 (sq.m)	Direction of Structure:	East/West
Roadway Width:	4.9 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	2	Bridge Condition Index:	38
Span Length(s):	8.6 (m) 8.6 (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930s	Last Biennial Inspection:	2022
Current Load Limit:	12 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2008		Downloaded from county.	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A30

Field Inspection Information:

Date of Inspection: 2024-08-28 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Solid slab in poor condition. An option to perform concrete patch repairs is presented but given the condition and age of the bridge, we would normally recommend replacement. Replacement cost expected to be about $1.85 million. Current load limit, 12.

Replacement Value:

Structure Type:	Bridge	Structure Area:	114	(sq.m)
Replacement Cost:	$ 1,105,800	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: A30

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair deck top, soffit, wingwall	1 to 5 yrs.	$70,200
Barriers	Patch repair	1 to 5 yrs.	$25,000
Piers	Patch repair	1 to 5 yrs.	$20,000
Abutments	Rip rap in front of east abutment	1 to 5 yrs.	$12,000
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total: $127,200

Associated Work Required:

Mobilize / Demobilize	Include access platform floating working surface	$25,000
Approaches	Remove gravel to inspect deck top	$10,000
Traffic Control / Detours		$5,000
Utilities		$0
Right of Way		$0
Environmental Study	Permits	$5,000
Engineering		$27,000
Other	Bonding and insurance	$5,000
Contingencies		$25,000

Associated Work Sub-Total: $102,000

Total Cost: $229,200

Justification:

Given the age of the structure and the observed deficiencies, replacement of this structure should be considered.

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	5.9
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Conventional Closed				**Total Quantity:**	14.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		90% (12.78)	10% (1.42)		$12,780	$9,138
Comments:	Have been refaced. Deep water at front face of east abutment.					
Performance Deficiencies:						
Recommended Work:	Rip rap in front of east abutment.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	2.7
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	2.2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	11.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			75% (8.93)	25% (2.98)	$4,165	$1,250
Comments:	Southeast wingwall cracked and shifted. Hole under wingwall. North east wingwall also cracked.					
Performance Deficiencies:						
Recommended Work:	Concrete repair and backfill with rip rap.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	19.3
Element Name:	Barrier/Parapet Walls				**Width:**	0.5
Location:					**Height:**	1.3
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	50.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		80% (40.16)	10% (5.02)	10% (5.02)	$5,020	$3,213
Comments:	Pararpet walls are extra thick. Spalls on top and at curb line. Also three cracks in barirer walls over the center pier. Barrier walls act as a load carrying beam.					
Performance Deficiencies:						
Recommended Work:	Patch repair.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	19.3
Element Name:	Deck Top - Thick Slab				**Width:**	5.9
Location:					**Height:**	0.28
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	113.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (91.12)	20% (22.78)	$39,865	$12,757
Comments:	Covered with gravel, rating assumed.					
Performance Deficiencies:						
Recommended Work:	Expose deck and perform patch repairs. Amount of repairs to deck top assumed to be localized.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	8.6
Element Name:	Soffit - Thick Slab				**Width:**	5.9
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	101.5 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (81.2)	20% (20.3)	$35,525	$11,368
Comments:	Badly sagged and spalling along north edge. East end 2m x 2x area and south east corner will need through deck repair.					
Performance Deficiencies:						
Recommended Work:	Patch repair.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Piers				**Length:**	7.5
Element Name:	Shafts/Columns/Pile Bents				**Width:**	0.91
Location:					**Height:**	1.5
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Concrete Rectangular Columns				**Total Quantity:**	25.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			85% (21.42)	15% (3.78)	$22,680	$7,711
Comments:	Underwater Investigation previously completed - about 1.4m deep at pier. No footings exposed except at abutment refacings. Silt and gravel bottom. Concrete spalling at water level and below. Does not appear to be significant scouring around pier.					
Performance Deficiencies:						
Recommended Work:	Patch repair.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing East



2-North Elevation



3-East End of Soffit



4-North Edge of Deck Soffit



5-West Abutment Re-Faced



6-East Side of Pier



7-West Side of Pier



8-West Side of Pier at Water Level



9-Northwest Corner of Abutment



North Parapet Wall



Southeast Wingwall

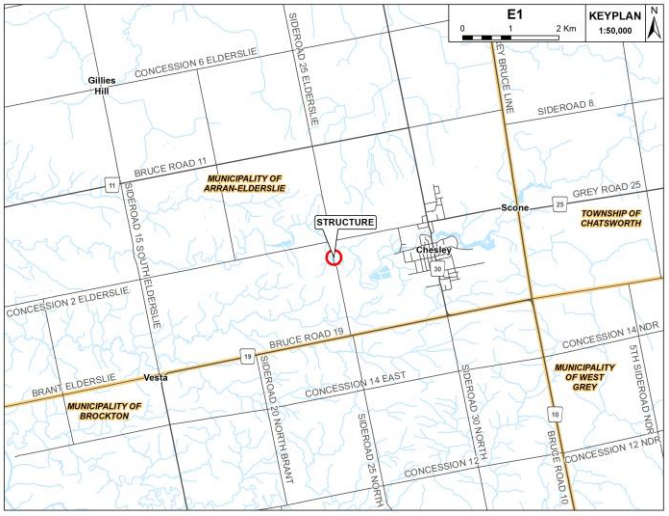
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E1

Summary Report:



2-East Elevation



Datum: NAD83 17N **Northing:** 4904769 **Easting:** 490339

Structure Name:	Priebe Bridge		**BMROSS File #:**	BR-773	**MTO #:**
Main Hwy / Road #:			**Bridge Condition Index (BCI:)**	34	**CRV:** $1,319,200
Road Name:	Sideroad 25				**Inspection Date:** 2024-05-31
Structure Location:	South of Concession 2				**Next Inspection:** 2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years		**Current Load Limit:** 10*
Overall Comments:	Half-through truss in poor condition. Needs emergency repairs to avoid closure, or rehabilitation to extend the life of the bridge. Load limit reduced from 10 tonnes to 5 tonnes until concrete deck is replaced.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Replace stringers and deck end beams	1 to 5 yrs.	$46,000
Decks	Replace concrete deck, with drains, curbs	1 to 5 yrs.	$120,000
Approaches	Site restoration, misc. site work	1 to 5 yrs.	$20,000
Abutments	Concrete repairs	1 to 5 yrs.	$12,000
			$0
			$0
			$0
Various	Associated Work		$118,000
		Total	$316,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E1

Inventory Data:

Structure Name:	Priebe Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Navigable Waterway
Road Name:	Sideroad 25	Northing:	4904769
Structure Location:	South of Concession 2	Easting:	490339
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: / No. of Lanes:	/ 1
Current County:	Bruce	AADT: / % Trucks:	200-499 /
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Concrete
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	25.1 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	5.4 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	135.54 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.5 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	34
Span Length(s):	23.2 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	BR-773

Historical Data:

Year Built:	1938	Last Biennial Inspection:	2022
Current Load Limit:	10* (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2002		Some stringers replaced, bearing seats repaired, some stringers repaired	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E1

Field Inspection Information:

Date of Inspection: 2024-05-31 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Sunny, Slight Breeze

Temperature: 22 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Half-through truss in poor condition. Needs emergency repairs to avoid closure, or rehabilitation to extend the life of the bridge. Load limit reduced from 10 tonnes to 5 tonnes until concrete deck is replaced.

Replacement Value:

Structure Type:	Bridge	Structure Area:	136 (sq.m)
Replacement Cost:	$ 1,319,200	Complexity Factor:	1
		Price per sq. m.:	$ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Replace stringers and deck end beams	1 to 5 yrs.	$46,000
Decks	Replace concrete deck, with drains, curbs	1 to 5 yrs.	$120,000
Approaches	Site restoration, misc. site work	1 to 5 yrs.	$20,000
Abutments	Concrete repairs	1 to 5 yrs.	$12,000
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total: $198,000

Associated Work Required:

Mobilize / Demobilize	and access platform	$35,000
Approaches		$10,000
Traffic Control / Detours		$10,000
Utilities		$0
Right of Way		$0
Environmental Study	Approval	$5,000
Engineering		$33,000
Other		$0
Contingencies		$25,000

Associated Work Sub-Total: $118,000

Total Cost: $316,000

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E1

Element Data:						
Element Group:	Abutments				**Length:**	0.7
Element Name:	Abutment Walls				**Width:**	6.4
Location:	North and South				**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	15.4 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (14.63)	5% (0.77)	$13,860	$5,267
Comments:	Abutment at south west corner has concrete spall off, below the bearing seat and a crack in the south abutment at centerling Should be repaired in those areas.					
Performance Deficiencies:	None					
Recommended Work:	Perform concrete repairs to abutment where required.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	2.6
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Mass Concrete				**Total Quantity:**	6.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (6.2)		$2,170	$868
Comments:	No concerns identified.					
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	25.1
Element Name:	Railing Systems				**Width:**	
Location:					**Height:**	
Material:	Corrugated Steel				**Count:**	2
Element Type:	Steel Flex Beam on Wood Post				**Total Quantity:**	50.2 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (47.69)	5% (2.51)	$10,040	$3,815
Comments:	Section of guide rail on south approach is badly damaged and should be replaced.					
Performance Deficiencies:						
Recommended Work:	Replace damaged section of guiderail				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	
Element Name:	Diaphragms				**Width:**	0.15
Location:					**Height:**	0.46
Material:					**Count:**	6
Element Type:	Cross Type				**Total Quantity:**	6 Each
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			65% (3.9)	35% (2.1)	$0	$0
Comments:	Cross beams at end are providing none to limited support for floor beams. Vertical studs installed to help support floor beams. Central beams in better condition, but coating disintegrated over 20-30%, and small amount of section loss.					
Performance Deficiencies:						
Recommended Work:	Replace end beams and recoat other cross beams to help preserve their condition.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.8
Element Name:	Floor Beams				**Width:**	0.23
Location:					**Height:**	0.11
Material:	Steel				**Count:**	30
Element Type:	I-type				**Total Quantity:**	131 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (104.8)	20% (26.2)	$55,020	$17,606
Comments:	Struts to support floor beams in end spans. Supplemental stringers: 208x130x9, installed at all ouside stringers. In the north bay 3 beams poor condition, south bay 2 in poor condition, in other bays about one in poor condition.					
Performance Deficiencies:	None					
Recommended Work:	Install two more supplemental stringers in end two bays below wheel tracks.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	25.1
Element Name:	Deck Top				**Width:**	4.9
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Cast-in-place Concrete on Supports				**Total Quantity:**	123 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (61.5)	50% (61.5)	$14,760	$2,952
Comments:	Many transverse cracks. Deck leaks water thru which propomotes corrosion of floor beams. One hole in deck covered with steel plate. Other holes starting to form elsewhere in the deck. Other holes starting.					
Performance Deficiencies:	None					
Recommended Work:	Deck is beyond repair or any repairs will not last long. Replace concrete bridge deck.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	23.2
Element Name:	Soffit - Thin Slab				**Width:**	5.4
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	125.3 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (75.18)	40% (50.12)	$15,036	$3,609
Comments:	Exposed rebar on underside of deck over 40% of area and concrete is spalling off. Installation of supplemental stringer may delay deck replacement work but suspect deck is flexing when exposed to heavier truck traffic.					
Performance Deficiencies:						
Recommended Work:	Replace concrete deck.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Sidewalks/curbs				**Length:**	25.1
Element Name:	Curbs				**Width:**	
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:					**Total Quantity:**	50.2 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (47.69)	5% (2.51)	$2,008	$763
Comments:	Section of concrete curb broken off south west corner of the deck. Allows water to land on truss bearing seat in that corner.					
Performance Deficiencies:						
Recommended Work:	Replace deck and curbs.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	26
Element Name:	Top Chords				**Width:**	0.31
Location:					**Height:**	0.15
Material:	Steel				**Count:**	2
Element Type:	T-type				**Total Quantity:**	52 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (52)		$15,600	$6,240
Comments:	Includes all truss members. Analysis should be completed before major repairs.					
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing South



2-East Elevation



3-Soffit



4-Soffit and South Abutment



5-Soffit and Stringers at North End (1)



6-Soffit and Stringers at North End (2)



7-North Abutment



8-West Girder Slight Deflection



9-West Girder Bearing Point



Deck Top



Deck Top Cracks



Guiderail Posts



Hole In Bridge Deck and Temporarily Installed Steel Cover Plate



North Bay Stringer Corroded Top Flange



South Bay Corroded Perforated Web

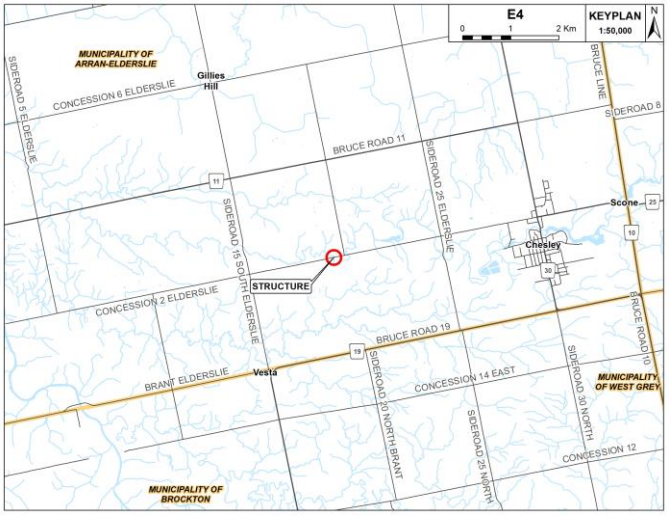
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E4

Summary Report:



2-South Elevation



Datum: NAD83 17N **Northing:** 4904663 **Easting:** 488065

Structure Name:	E4	**BMROSS File #:**	BR-564	**MTO #:**	
Main Hwy / Road #:		**Bridge Condition Index (BCI:)**	51	**CRV:**	$1,406,500
Road Name:	Concession 2			**Inspection Date:**	2024-05-31
Structure Location:	West of Sideroad 20, Lot 20			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	6-10 Years	**Current Load Limit:**	18/29/36
Overall Comments:	Half through truss in fair condition.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Barriers	Replace lattice railing with guiderail and hand rail	6 to 10 yrs.	$25,000
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$37,000
		Total	$62,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E4

Inventory Data:

Structure Name:	E4		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Navigable Waterway
Road Name:	Concession 2	Northing:	4904663
Structure Location:	West of Sideroad 20, Lot 20	Easting:	488065
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 200-499	% Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Concrete
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	22.7 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	6.4 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	145.28 (sq.m)	Direction of Structure:	East/West
Roadway Width:	5.2 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	51
Span Length(s):	21.9 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	BR-564

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	18/29/36 (tonnes)	Last Evaluation:	1991
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	1991

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
1991		Evaluation, deck replacement, truss repair	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E4

Field Inspection Information:

Date of Inspection: 2024-05-31 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Sunny, Slight Breeze

Temperature: 22 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 6-10 Years

Overall Comments: Half through truss in fair condition.

Replacement Value:

Structure Type:	Bridge	Structure Area:	145	(sq.m)
Replacement Cost:	$ 1,406,500	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Barriers	Replace lattice railing with guiderail and hand rail	6 to 10 yrs.	$25,000
			$0
			$0
			$0
			$0
			$0
			$0
		Repair/Rehabilitation Sub-Total:	**$25,000**

Associated Work Required:

Mobilize / Demobilize		$5,000
Approaches		$0
Traffic Control / Detours		$5,000
Utilities		$0
Right of Way		$0
Environmental Study		$2,000
Engineering		$15,000
Other		$0
Contingencies		$10,000
	Associated Work Sub-Total:	**$37,000**
	Total Cost:	**$62,000**

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E4

Element Data:						
Element Group:	Abutments				**Length:**	7.5
Element Name:	Abutment Walls				**Width:**	
Location:					**Height:**	2.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	33 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (33)		$29,700	$11,880
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	7.5
Element Name:	Ballast Walls				**Width:**	0.45
Location:	E/W				**Height:**	0.8
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:					**Total Quantity:**	12 m2
Environment:	Severe				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (12)			$4,200	$3,150
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	3.9
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.4
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	10.9 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (10.9)		$3,815	$1,526
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	22.7
Element Name:	Railing Systems				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	2
Element Type:	Steel Post and Lattice				**Total Quantity:**	45.4 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (36.32)	20% (9.08)	$9,080	$2,906
Comments:	Heavy vehicle impact damage at southwest and northeast corners. Minor impact vehicle damage at northwest corner. Replace lattice with SBGR channel and hand rail.					
Performance Deficiencies:						
Recommended Work:	Provide vehicular portection by replacing guiderail along front inside of truss.					
					Recommended Timing:	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.7
Element Name:	Floor Beams				**Width:**	0.11
Location:					**Height:**	0.25
Material:	Steel				**Count:**	35
Element Type:	I-type				**Total Quantity:**	164.5 m
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (164.5)		$69,090	$27,636
Comments:						
Performance Deficiencies:	None					
Recommended Work:						
					Recommended Timing:	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	22.7
Element Name:	Deck Top - Thin Slab				**Width:**	6.4
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	145.3 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (145.3)			$17,436	$13,077
Comments:	Deck replaced in 1991. Thin layer of asphalt covers 90% of deck. 0.5m of deck on north side exposed and covered with gravel. Rating assumed based on soffit.					
Performance Deficiencies:						
Recommended Work:						
					Recommended Timing:	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	21.9
Element Name:	Soffit - Thick Slab				**Width:**	5.5
Location:					**Height:**	0.18
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	120.5 m2
Environment:	Severe				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (120.5)			$42,175	$31,631
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Sidewalks/curbs				**Length:**	23.0
Element Name:	Curbs				**Width:**	
Location:					**Height:**	
Material:					**Count:**	2
Element Type:					**Total Quantity:**	46 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (43.7)	5% (2.3)	$0	$0
Comments:	Concrete is breaking off back of curb.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	23
Element Name:	Top Chords				**Width:**	0.36
Location:					**Height:**	0.19
Material:	Steel				**Count:**	2
Element Type:	I-type				**Total Quantity:**	67.2 m
Environment:	Severe				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (67.2)		$20,160	$8,064
Comments:	Bottom chord and other truss elements replaced in 1991.					
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing East



2-South Elevation



3-Soffit



4-East Abutment



5-Stringers Under Bridge



6-West Joint



7-South Curb



8-Deck Top



9-North Elevation

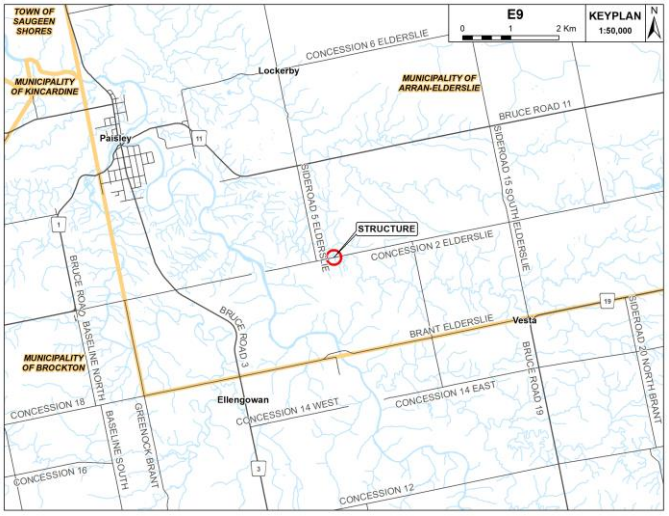
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Summary Report:



2-South Elevation



Datum: NAD83 17N **Northing:** 4903573 **Easting:** 482667

Structure Name:	E9		**BMROSS File #:**		**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)**	33	**CRV:**	$679,000
Road Name:	Concession 2				**Inspection Date:**	2024-05-31
Structure Location:	Lot 7				**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years		**Current Load Limit:**	N/A

Overall Comments: Half-through beams of girders in fair to poor condition. Patch repairs, deck overlay, and waterproof and pave recommended. Alternatively delay repairs and plan to replace.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Patch repair 3m³ along beams	1 to 5 yrs.	$34,000
Barriers	Patch repair	1 to 5 yrs.	$3,400
Decks	Overlay	1 to 5 yrs.	$28,400
Decks	Waterproof and pave	1 to 5 yrs.	$28,000
Abutments	Patch repair	1 to 5 yrs.	$30,000
Decks	Patch repair soffit	1 to 5 yrs.	$18,000
			$0
Various	Associated Work		$103,000
		Total	$244,800

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Inventory Data:

Structure Name:	E9		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Navigable Waterway
Road Name:	Concession 2	Northing:	4903573
Structure Location:	Lot 7	Easting:	482667
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT:	200-499 % Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Beam/Girder	Surface Type:	Asphalt
Structure Type:	Half-through Beams of Girders	Detour Length Around Bridge:	(km)
Total Deck Length:	11.0 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	6.4 (m)	Skew Angle:	20 R (Degrees)
Total Struct. Area:	70.4 (sq.m)	Direction of Structure:	East/West
Roadway Width:	5.6 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	33
Span Length(s):	9.1 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	(tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
		Gravel and surface treatment on deck	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Field Inspection Information:

Date of Inspection: 2024-05-31 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Sunny, Slight Breeze

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Half-through beams of girders in fair to poor condition. Patch repairs, deck overlay, and waterproof and pave recommended. Alternatively delay repairs and plan to replace.

Replacement Value:

Structure Type:	Bridge	Structure Area:	70	(sq.m)
Replacement Cost:	$ 679,000	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Patch repair 3m³ along beams	1 to 5 yrs.	$34,000
Barriers	Patch repair	1 to 5 yrs.	$3,400
Decks	Overlay	1 to 5 yrs.	$28,400
Decks	Waterproof and pave	1 to 5 yrs.	$28,000
Abutments	Patch repair	1 to 5 yrs.	$30,000
Decks	Patch repair soffit	1 to 5 yrs.	$18,000
			$0

Repair/Rehabilitation Sub-Total:	**$141,800**

Associated Work Required:

Mobilize / Demobilize	Site access, dewatering	$30,000
Approaches	Remove asphalt, restore approaches	$10,000
Traffic Control / Detours	Road closed	$5,000
Utilities		$0
Right of Way		$0
Environmental Study	Approvals	$5,000
Engineering		$28,000
Other	Bonding and Insurance	$5,000
Contingencies		$20,000

Associated Work Sub-Total:	**$103,000**
Total Cost:	**$244,800**

Justification:

Alternatively replace for about $1,000,000 including engineering.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	6.6
Location:					**Height:**	2.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Conventional Closed				**Total Quantity:**	29 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			70% (20.3)	30% (8.7)	$26,100	$7,308
Comments:	East abutment badly spalled and large vertical crack in the abutment.					
Performance Deficiencies:						
Recommended Work:	Patch repair or re-face abutment.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	11.0
Element Name:	Barrier/Parapet Walls				**Width:**	0.38
Location:					**Height:**	1.1
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	24.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (22.99)	5% (1.21)	$2,420	$920
Comments:	Not to current standard. Two spalls on top of south parapet wall.					
Performance Deficiencies:						
Recommended Work:	Patch repair barrier walls.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	38.0
Element Name:	Railing Systems				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	4
Element Type:	Steel Flex Beam on Wood Post				**Total Quantity:**	152 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (144.4)	5% (7.6)	$30,400	$11,552
Comments:	Impact damage at southwest corner connection to parapet wall.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	5.5
Element Name:	Floor Beams				**Width:**	0.31
Location:					**Height:**	0.34
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	T-type				**Total Quantity:**	21.8 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (17.44)	20% (4.36)	$4,360	$1,395
Comments:	Deep spalls, poor cover.					
Performance Deficiencies:						
Recommended Work:	Patch repair 3m³.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	9.1
Element Name:	Girders				**Width:**	0.44
Location:					**Height:**	0.77
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Rectangular-solid				**Total Quantity:**	36 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			70% (25.2)	30% (10.8)	$7,200	$2,016
Comments:	Concrete spalling off under side of girders.					
Performance Deficiencies:						
Recommended Work:	Repair the girders.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	11.0
Element Name:	Deck Top - Thin Slab				**Width:**	5.6
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Cast-in-place Concrete on Supports				**Total Quantity:**	61.6 m2
Environment:	Moderate				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (49.28)	20% (12.32)	$7,392	$2,365
Comments:	Covered with asphalt, rating assumed. Review condition of deck. Either patch or overlay deck.					
Performance Deficiencies:						
Recommended Work:	Overlay, waterproof and pave.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E9

Element Data:						
Element Group:	Decks				**Length:**	8
Element Name:	Soffit - Thin Slab				**Width:**	6.4
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	51.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (40.96)	20% (10.24)	$6,144	$1,966
Comments:	Spalls and delaminations.					
Performance Deficiencies:						
Recommended Work:	Patch repair.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing East



2-South Elevation



3-Soffit (1)



4-Soffit (2)



5-South Edge Beam and Crossbeam



6-North Edge Beam



7-East Abutment



8-Deck Wearing Surface



9-Guiderail Posts



Guiderail



North Elevation

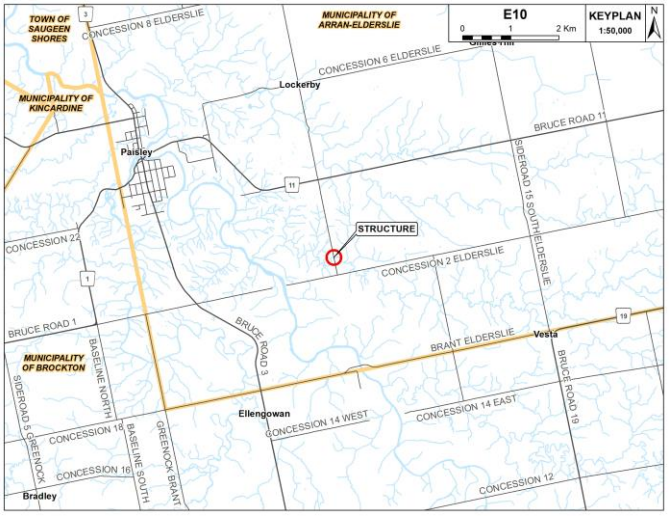
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E10

Summary Report:



2-East Elevation



Datum: NAD83 17N **Northing:** 4903863 **Easting:** 482230

Structure Name:	E10		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 39	**CRV:**	$737,200
Road Name:	Sideroad 5			**Inspection Date:**	2024-05-31
Structure Location:	Concession 3			**Next Inspection:**	2026-01-01
Condition Summary:	Maintenance recommended	**Recommended Timing:**		**Current Load Limit:**	11
Overall Comments:	Structure in fair condition. Expect bridge will be okay for another 20 years at which time will require repairs or replacement. Current load limit, 11. Repairs not recommended since it is a single lane structure.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$0
		Total	$0

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Railing Systems	18 - Other	Replace rotting guiderail posts where required	Within 2 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E10

Inventory Data:

Structure Name:	E10		
Main Hwy / Road #:		On ☑ Under ☐ Crossing Type:	Non-Navigable Waterway
Road Name:	Sideroad 5	Northing:	4903863
Structure Location:	Concession 3	Easting:	482230
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	80
		No. of Lanes:	1
Current County:	Bruce	AADT:	200-499
		% Trucks:	
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Beam/Girder	Surface Type:	Asphalt
Structure Type:	T-Beam	Detour Length Around Bridge:	(km)
Total Deck Length:	11.9 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	6.4 (m)	Skew Angle:	10 R (Degrees)
Total Struct. Area:	76.16 (sq.m)	Direction of Structure:	North/South
Roadway Width:	5.5 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	39
Span Length(s):	10.7 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	11 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2010		Beams and deck soffit repaired	0
2000		Railings raised and refaced, new approach guiderail	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E10

Field Inspection Information:

Date of Inspection: 2024-05-31 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Sunny, Slight Breeze

Temperature: 20 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Maintenance recommended **Recommended Timing:**

Overall Comments: Structure in fair condition. Expect bridge will be okay for another 20 years at which time will require repairs or replacement. Current load limit, 11. Repairs not recommended since it is a single lane structure.

Replacement Value:

Structure Type:	Bridge	Structure Area:	76	(sq.m)
Replacement Cost:	$ 737,200	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
			$0
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$0**

Associated Work Required:

Mobilize / Demobilize		$0
Approaches		$0
Traffic Control / Detours		$0
Utilities		$0
Right of Way		$0
Environmental Study		$0
Engineering		$0
Other		$0
Contingencies		$0

Associated Work Sub-Total:	**$0**
Total Cost:	**$0**

Justification:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Railing Systems	18 - Other	Replace rotting guiderail posts where required	Within 2 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E10

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	6.6
Location:					**Height:**	2.5
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Conventional Closed				**Total Quantity:**	33 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		10% (3.3)	80% (26.4)	10% (3.3)	$29,700	$11,732
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	2.8
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.6
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Mass Concrete				**Total Quantity:**	9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		25% (2.25)	50% (4.5)	25% (2.25)	$3,150	$1,221
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	12.4
Element Name:	Barrier/Parapet Walls				**Width:**	0.25
Location:					**Height:**	0.8
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	19.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (19.8)		$1,980	$792
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	68.4
Element Name:	Railing Systems				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	1
Element Type:	Steel Flex Beam on Wood Post				**Total Quantity:**	68.4 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (61.56)	10% (6.84)	$13,680	$4,925
Comments:	Guiderail at approaches: multiple wood posts starting to deteriorate.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:	18 - Other					
Maintenance work:	Replace rotting guiderail posts where required				**Maintenance Priority:**	Within 2 Yr.

Element Data:						
Element Group:	Beams/MLE's				**Length:**	5.4
Element Name:	Girders				**Width:**	0.35
Location:					**Height:**	0.30
Material:	Cast-in-place Concrete				**Count:**	5
Element Type:	Rectangular-solid				**Total Quantity:**	25.7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		20% (5.14)	80% (20.56)		$5,140	$2,416
Comments:	Some patch repairs previously completed have developed cracks.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	12
Element Name:	Deck Top - Thin Slab				**Width:**	5.4
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Cast-in-place Concrete on Supports				**Total Quantity:**	64.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (64.8)		$7,776	$3,110
Comments:	Covered with asphalt, rating assumed. Asphalt wearing surface recently re-paved 2m at each end of deck.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E10

Element Data:						
Element Group:	Decks				**Length:**	10.7
Element Name:	Soffit - Thin Slab				**Width:**	6.4
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	68.5 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			95% (65.08)	5% (3.42)	$8,220	$3,124
Comments:	Short legs of rebar exposed at multiple locations but did not see large spalling areas.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



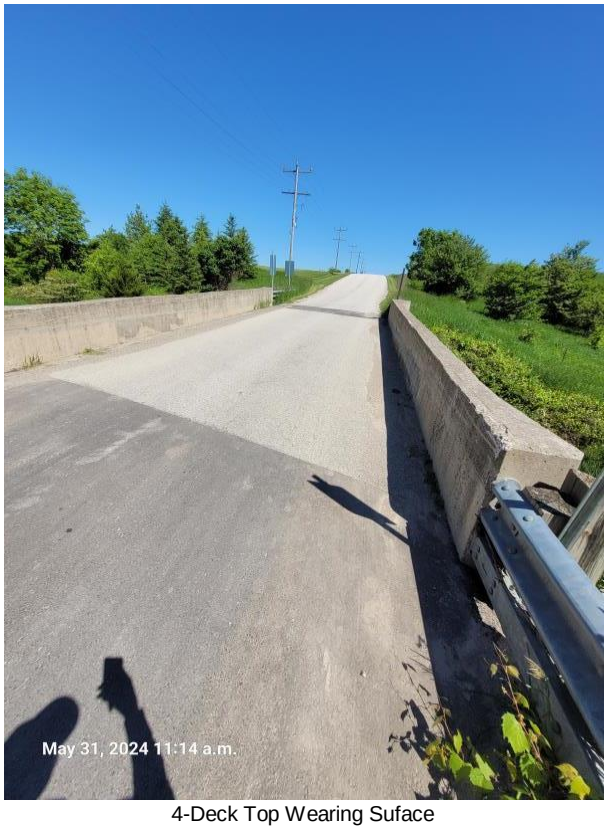
1-Facing North



2-East Elevation



3-Soffit



4-Deck Top Wearing Suface



5-Soffit and North Abutment



6-Soffit and South Abutment



7-Guiderail Posts



8-Guiderail

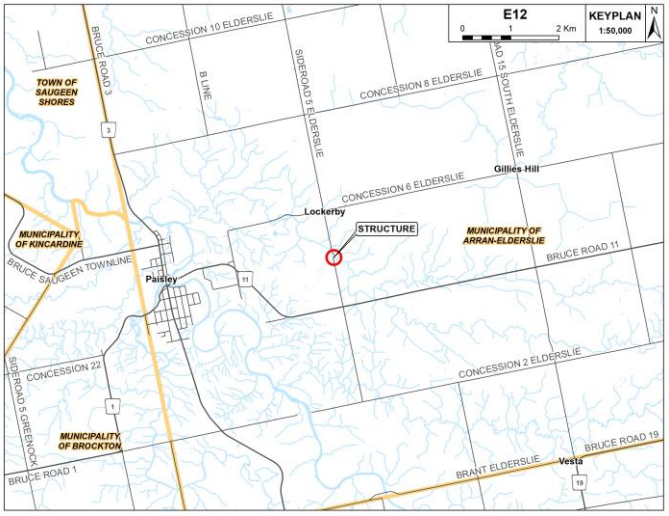
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E12

Summary Report:



2-West Elevation



Datum: NAD83 17N **Northing:** 4906509 **Easting:** 481708

Structure Name:	Pearces Bridge		**BMROSS File #:**	BR-280	**MTO #:**
Main Hwy / Road #:			**Bridge Condition Index (BCI:)**	40	**CRV:** $1,619,900
Road Name:	Sideroad 5				**Inspection Date:** 2024-05-31
Structure Location:	Concession 6				**Next Inspection:** 2026-01-01
Condition Summary:	Replacement recommended	**Recommended Timing:**	Within 1 yr.		**Current Load Limit:** 8
Overall Comments:	Half through truss in poor condition. In lieu of completing extensive repairs; recommend closure and replacement of structure.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace structure	Within 1 yr.	$2,100,000
			$0
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$973,000
		Total	$3,073,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E12

Inventory Data:

Structure Name:	Pearces Bridge		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Navigable Waterway
Road Name:	Sideroad 5	Northing:	4906509
Structure Location:	Concession 6	Easting:	481708
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 2
Current County:	Bruce	AADT: 200-499	% Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Wood
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	29.3 (m)	Fill on Structure: 0	(m)
Overall Str. Width:	5.7 (m)	Skew Angle: 0	(Degrees)
Total Struct. Area:	167.01 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.8 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	40
Span Length(s):	27.1 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	BR-280

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	8 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2008		Deck replaced and stringers replaced	0
2002		Some stringers replaced	0
1971		South abutment repaired	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E12

Field Inspection Information:

Date of Inspection: 2024-05-31 **Inspection Type:** OSIM Inspecton **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Sunny, Slight Breeze

Temperature: 15 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Replacement recommended **Recommended Timing:** Within 1 yr.

Overall Comments: Half through truss in poor condition. In lieu of completing extensive repairs; recommend closure and replacement of structure.

Replacement Value:

Structure Type:	Bridge	Structure Area:	167	(sq.m)
Replacement Cost:	$ 1,619,900	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E12

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace structure	Within 1 yr.	$2,100,000
			$0
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$2,100,000**

Associated Work Required:

Mobilize / Demobilize		$60,000
Approaches	Removal and re-align approaches when constructing new abutments	$320,000
Traffic Control / Detours		$10,000
Utilities		$0
Right of Way		$0
Environmental Study		$23,000
Engineering		$260,000
Other	Bonding and Insurance	$50,000
Contingencies		$250,000

Associated Work Sub-Total:	**$973,000**
Total Cost:	**$3,073,000**

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E12

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	8.2
Location:					**Height:**	2.3
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	37.7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (33.93)	10% (3.77)	$33,930	$12,215
Comments:	Abutments moved forward sometime in the past. South abutment has large crack and some efflorescence staining through smaller cracks. Cannot be sure abutment will not shift forward further in future.					
Performance Deficiencies:	None					
Recommended Work:	In lieu of concrete repairs recommend replace the structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	4.6
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	3.0
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	27.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (27.6)		$9,660	$3,864
Comments:	Wingwalls attached to abutment and at least one abutment shifted forward.					
Performance Deficiencies:	None					
Recommended Work:	Replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	29.3
Element Name:	Railing Systems				**Width:**	0.05
Location:					**Height:**	1.1
Material:	Steel				**Count:**	2
Element Type:	Steel Flex Beam on Steel Post				**Total Quantity:**	117.2 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	Galvanized				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (117.2)			$23,440	$17,580
Comments:	Appears sound.					
Performance Deficiencies:	None					
Recommended Work:	Replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	
Element Name:	Diaphragms				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	6
Element Type:	Cross Type				**Total Quantity:**	6 Each
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (3)	50% (3)	$0	$0
Comments:	Top flange of some cross beams appear to have lost 50% of top flange, rusted away. Southernmost and second from north appear to be in poorest condition.					
Performance Deficiencies:						
Recommended Work:	In lieu of replacing all cross beams, replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

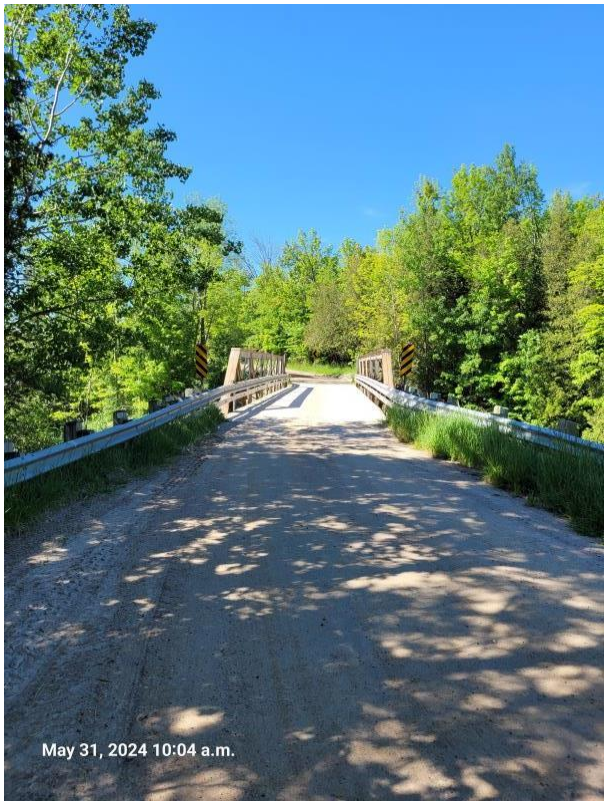
Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.0
Element Name:	Floor Beams				**Width:**	0.09
Location:					**Height:**	0.18
Material:	Steel				**Count:**	49
Element Type:	I-type				**Total Quantity:**	123.5 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			70% (86.45)	30% (37.05)	$51,870	$14,524
Comments:	Many floor beams are rusted through and providing no support for deck. From north to south: Bay 1 - 1 poor, 6 fair. Bay 2 - 4 poor, 3 fair. Bay 3 - 2 poor, 5 fair. Bay 4 - 2 poor, 5 fair. Bay 5 - 1 poor, 6 fair. Bay 6 - 3 poor, 4 fair. Bay 7 - fair.					
Performance Deficiencies:						
Recommended Work:	In lieu of replacing all the floor beams, replace the structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Bracing				**Length:**	
Element Name:	Bracing				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	16
Element Type:					**Total Quantity:**	16 Each
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (14.4)	10% (1.6)	$8,000	$2,880
Comments:	Diagonal cross bracing. Only found one in poor condition but are old like other members and slowly deteriorating.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	29.3
Element Name:	Deck Top - Thin Slab				**Width:**	4.9
Location:					**Height:**	0.14
Material:	Wood				**Count:**	1
Element Type:	Laminated Wood Decking - transverse				**Total Quantity:**	143.6 m2
Environment:	Severe				**Limited / Not Inspected:**	☐
Protection System:	Other				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (143.6)		$17,232	$6,893
Comments:	Abrasion to wood wearing down the surface of deck. Wooden deck allows water through and onto the floor beams below that are corroding. Deck would have to be removed to complete other repairs.					
Performance Deficiencies:	None					
Recommended Work:	Replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	27.1
Element Name:	Bottom Chords				**Width:**	0.16
Location:					**Height:**	0.08
Material:	Steel				**Count:**	2
Element Type:					**Total Quantity:**	2 Each
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
				100% (2)	$600	$0
Comments:	At north end, both bottom chords buckled by abutment moving inwards. Monitor. Gravel on bottom chords and bearing seats.					
Performance Deficiencies:	None					
Recommended Work:	In lieu of repairs recommend replacing the structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:	Remove gravel from bottom chords and bearing seats				**Maintenance Priority:**	Within 1 Yr.

Element Data:						
Element Group:	Trusses/Arches				**Length:**	
Element Name:	Top Chords				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	
Element Type:	T-type				**Total Quantity:**	
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% ()	20% ()		$0
Comments:	Element includes remaining truss members (top chord, vertical and diagonal members). Curve in top chord of each truss. Coating system is not protecting steal and surface rust is present throughout trusses.					
Performance Deficiencies:						
Recommended Work:	Replace structure.				**Recommended Timing:**	< 1 year
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing North



2-West Elevation



3-Soffit Looking North



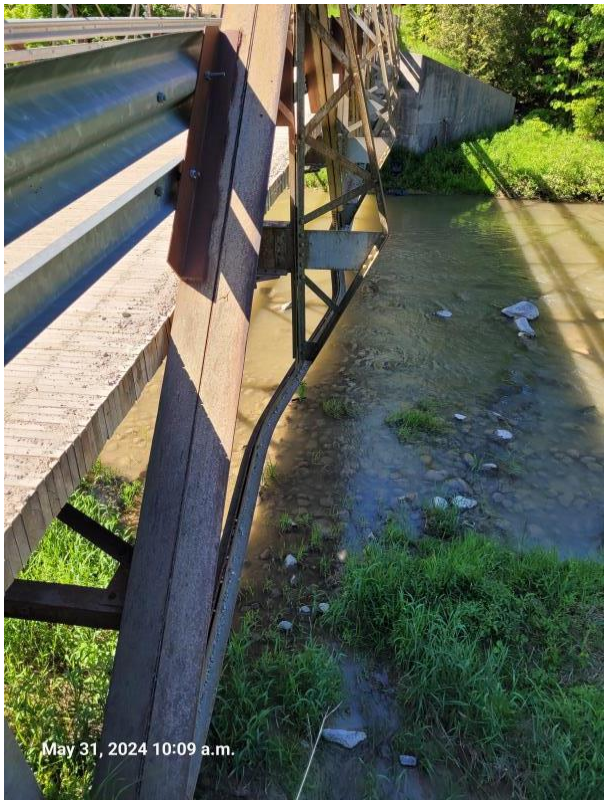
4-South Abutment and South Stringer



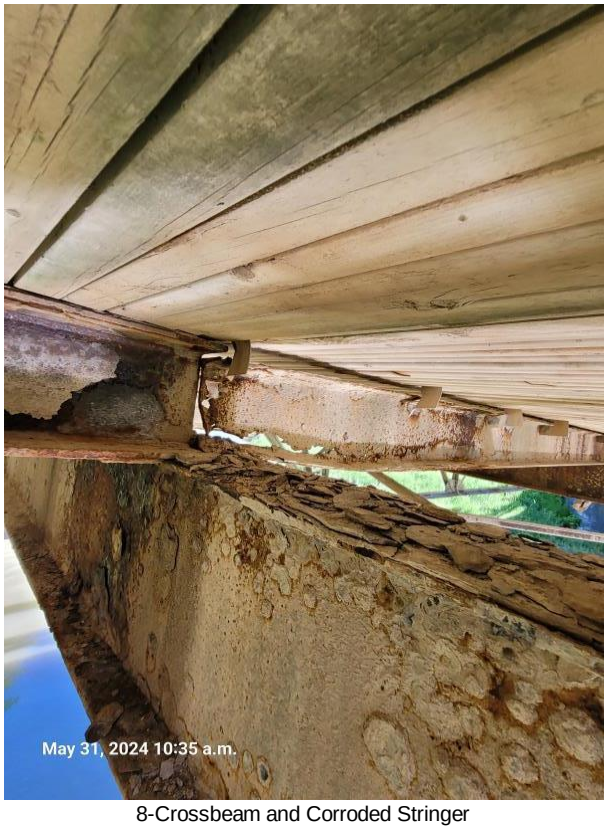
5-Bay 2 Stringers



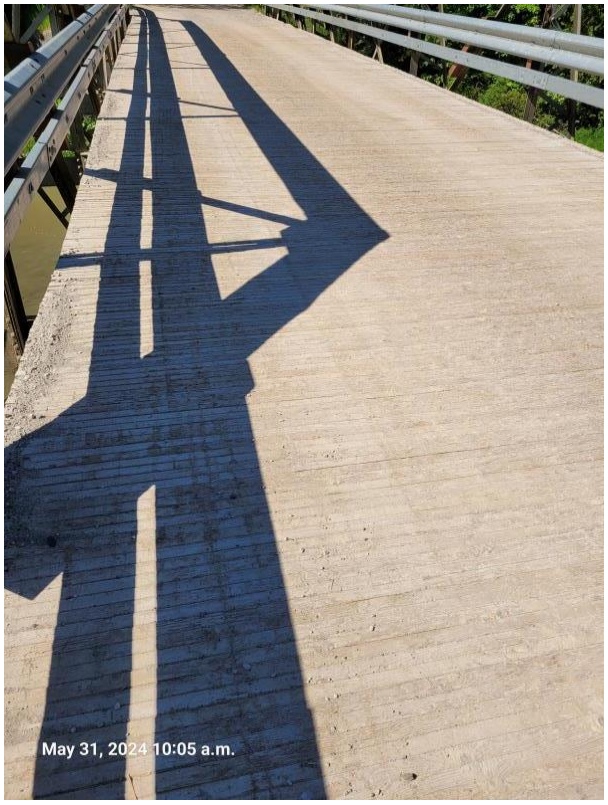
6-Bay 2 Crossbeam



7-Bent West Bottom Chord



8-Crossbeam and Corroded Stringer



9-Deck Top



Bent East Bottom Chord



Crossbeam



Top Chord-East Truss

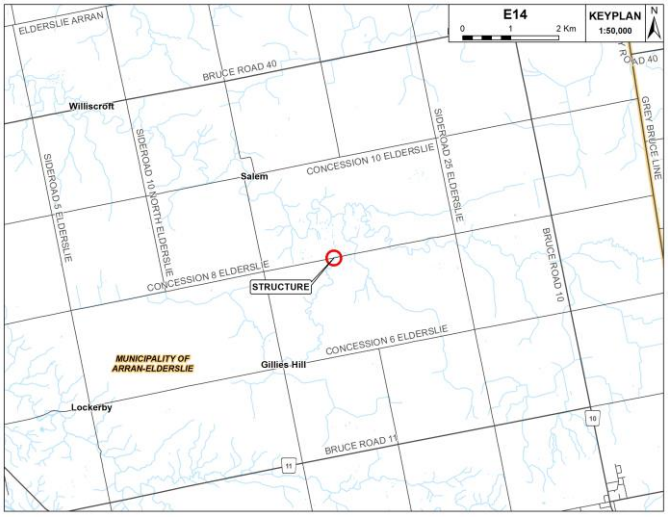
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E14

Summary Report:



2-South Elevation



Datum: NAD83 17N **Northing:** 4910574 **Easting:** 486556

Structure Name:	E14	**BMROSS File #:**		**MTO #:**	
Main Hwy / Road #:		**Bridge Condition Index (BCI:)**	31	**CRV:**	$640,200
Road Name:	Concession 8			**Inspection Date:**	7/30/2024
Structure Location:	Lot 19			**Next Inspection:**	1/1/2026
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years	**Current Load Limit:**	N/A

Overall Comments: Structure in poor condition. Patch repairs on girders and abutments recommended. Single lane bridge should be signed accordingly. To lighten load, recommend removing some gravel from bridge deck.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Abutments	Patch repair/re-face	1 to 5 yrs.	$21,500
Beams/MLE's	Patch repair girders	1 to 5 yrs.	$25,500
Decks	Soffit: Patch repairs at east end	1 to 5 yrs.	$26,500
			$0
			$0
			$0
			$0
Various	Associated Work		$63,000
		Total	$136,500

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Soffit - Thick Slab	12 Bridge surface repair	Remove some gravel from deck	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E14

Inventory Data:

Structure Name:	E14		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Concession 8	Northing:	4910574
Structure Location:	Lot 19	Easting:	486556
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Beam/Girder	Surface Type:	Gravel
Structure Type:	T-Beam	Detour Length Around Bridge:	(km)
Total Deck Length:	10.4 (m)	Fill on Structure:	0.2 (m)
Overall Str. Width:	6.3 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	65.52 (sq.m)	Direction of Structure:	East/West
Roadway Width:	5.5 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	31
Span Length(s):	9.4 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	(tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E14

Field Inspection Information:

Date of Inspection: 7/30/2024 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 26 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
			$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Structure in poor condition. Patch repairs on girders and abutments recommended. Single lane bridge should be signed accordingly. To lighten load, recommend removing some gravel from bridge deck.

Replacement Value:

Structure Type:	Bridge	Structure Area:	66 (sq.m)
Replacement Cost:	$ 640,200	Complexity Factor:	1
		Price per sq. m.:	$ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E14

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Abutments	Patch repair/re-face	1 to 5 yrs.	$21,500
Beams/MLE's	Patch repair girders	1 to 5 yrs.	$25,500
Decks	Soffit: Patch repairs at east end	1 to 5 yrs.	$26,500
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$73,500**

Associated Work Required:

Mobilize / Demobilize		$10,000
Approaches	Exposed bridge deck	$8,000
Traffic Control / Detours	Road Closed	$5,000
Utilities		$0
Right of Way		$0
Environmental Study	Permits	$3,000
Engineering		$20,000
Other	Insurance and Bonding	$2,000
Contingencies		$15,000

Associated Work Sub-Total:	**$63,000**
Total Cost:	**$136,500**

Justification:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Soffit - Thick Slab	12 Bridge surface repair	Remove some gravel from deck	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E14

Element Data:						
Element Group:	Abutments				**Length:**	6.5
Element Name:	Abutment Walls				**Width:**	
Location:					**Height:**	2.0
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	26 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (15.6)	40% (10.4)	$23,400	$5,616
Comments:	East abutment porous and spalled concrete.					
Performance Deficiencies:	None					
Recommended Work:	Patch repair/re-face.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	2.9
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (7)		$2,450	$980
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	11.9
Element Name:	Barrier/Parapet Walls				**Width:**	0.41
Location:					**Height:**	0.6
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Parapet Wall without Railing				**Total Quantity:**	76.6 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (76.6)		$7,660	$3,064
Comments:	Insufficient height.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	13
Element Name:	Girders				**Width:**	0.4
Location:					**Height:**	1.15
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Rectangular-solid				**Total Quantity:**	70.2 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (56.16)	20% (14.04)	$14,040	$4,493
Comments:	7m of edge beams require concrete repairs along bottom. Cross beams in fair condition.					
Performance Deficiencies:	None					
Recommended Work:	Patch repair edge and cross beams.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	9.4
Element Name:	Soffit - Thick Slab				**Width:**	5.5
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	51.7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (46.53)	10% (5.17)	$18,095	$6,514
Comments:	Concrete spalled off and exposed rebar in places, mostly at east end. Expose top of deck slab to assess condition of deck top. Reduce depth of gravel on the deck to lighten load on the deck top.					
Performance Deficiencies:	None					
Recommended Work:	Patch repairs at east end. Expose top and repair as required.				**Recommended Timing:**	1-5 years
Maintenance needs:	12 Bridge surface repair					
Maintenance work:	Remove some gravel from deck				**Maintenance Priority:**	Within 1 Yr.



1-Facing East



2-South Elevation



3-Deck Soffit and Crossbeams



4-Soffit (Repairs Required)



5-East Abutment



6-West Abutment



7-Edge Beams on South Side



8-North Elevation



9-South Parapet Wall

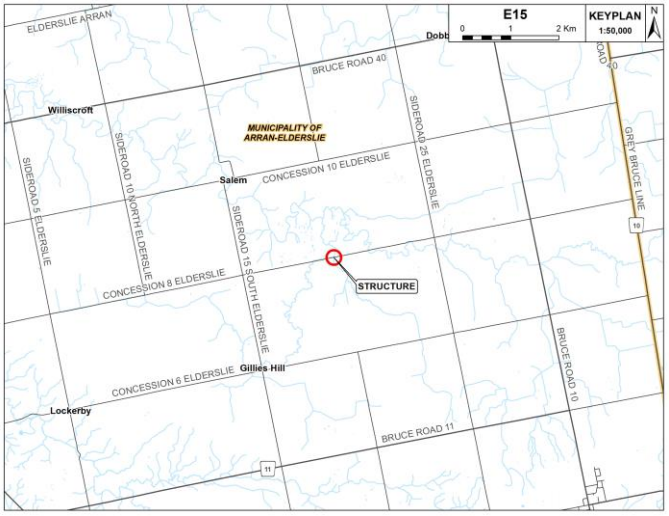
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E15

Summary Report:



2-North Elevation



Datum: NAD83 17N **Northing:** 4910660 **Easting:** 486992

Structure Name:	E15		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 37	**CRV:**	$611,100
Road Name:	Concession 8			**Inspection Date:**	2024-07-30
Structure Location:	Lot 20			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years	**Current Load Limit:**	N/A

Overall Comments: T-Beam in fair to poor condition. Repair underside of deck & girder and expose deck top to repair as required. Sign as single lane structure. Removing about 200mm gravel from the deck to avoid load limit reduction being applied on the bridge deck.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair soffit	1 to 5 yrs.	$30,000
Beams/MLE's	Reconstruct bottoms of girders	1 to 5 yrs.	$8,000
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$56,000
		Total	$94,000

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Soffit - Thick Slab	12 Bridge Surface Repair	Remove about 200mm layer of gravel from deck, keep about 300mm there.	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E15

Inventory Data:

Structure Name:	E15		
Main Hwy / Road #:		On ☑ Under ☐ Crossing Type:	Non-Navigable Waterway
Road Name:	Concession 8	Northing:	4910660
Structure Location:	Lot 20	Easting:	486992
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: / No. of Lanes:	/ 1
Current County:	Bruce	AADT: / % Trucks:	50-199 /
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Beam/Girder	Surface Type:	Gravel
Structure Type:	T-Beam	Detour Length Around Bridge:	(km)
Total Deck Length:	9.9 (m)	Fill on Structure:	0.5 (m)
Overall Str. Width:	6.4 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	63.36 (sq.m)	Direction of Structure:	East/West
Roadway Width:	5.5 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	37
Span Length(s):	9.1 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	(tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E15

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 26 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: T-Beam in fair to poor condition. Repair underside of deck & girder and expose deck top to repair as required. Sign as single lane structure. Removing about 200mm gravel from the deck to avoid load limit reduction being applied on the bridge deck.

Replacement Value:

Structure Type:	Bridge	Structure Area:	63	(sq.m)
Replacement Cost:	$ 611,100	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Decks	Patch repair soffit	1 to 5 yrs.	$30,000
Beams/MLE's	Reconstruct bottoms of girders	1 to 5 yrs.	$8,000
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total: $38,000

Associated Work Required:

Mobilize / Demobilize	Including access platform	$15,000
Approaches	Remove gravel to review condition of deck top	$5,000
Traffic Control / Detours		$5,000
Utilities		$0
Right of Way		$0
Environmental Study		$3,000
Engineering		$15,000
Other		$3,000
Contingencies		$10,000

Associated Work Sub-Total: $56,000

Total Cost: $94,000

Justification:

If repaired and gravel fill on deck kept at reasonable height, this bridge may remain sound as a single lane bridge for some time.

Maintenance Needs:

Element	Maintenance Need	Note	Period
Soffit - Thick Slab	12 Bridge Surface Repair	Remove about 200mm layer of gravel from deck, keep about 300mm there.	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E15

Element Data:						
Element Group:	Abutments				**Length:**	6.5
Element Name:	Abutment Walls				**Width:**	
Location:					**Height:**	1.8
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	23.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (23.4)		$21,060	$8,424
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	2.9
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	1.2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Retained Soil Systems				**Total Quantity:**	7 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (7)		$2,450	$980
Comments:						
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	11.9
Element Name:	Barrier/Parapet Walls				**Width:**	0.41
Location:					**Height:**	0.5
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Parapet Wall without Railing				**Total Quantity:**	67.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (67.1)		$6,710	$2,684
Comments:	Insufficient height.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	9.1
Element Name:	Girders				**Width:**	0.4
Location:					**Height:**	1.15
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Rectangular-solid				**Total Quantity:**	49.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (39.28)	20% (9.82)	$9,820	$3,142
Comments:	Longitudinal: Underside of edge beams badly spalled with exposed rebar. Crossbeams: very small amount of rebar exposed.					
Performance Deficiencies:	None					
Recommended Work:	Reconstruct bottoms of girders over 50% of length, edge beams.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	9.1
Element Name:	Soffit - Thick Slab				**Width:**	5.5
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	50.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			85% (42.58)	15% (7.52)	$17,535	$5,962
Comments:	Rebar exposed and concrete spalling off in places. Expose deck top to check its condition. May warrant a concrete overlay, reduce gravel on deck and grade to let water run off the deck surface.					
Performance Deficiencies:						
Recommended Work:	Patch repair concrete deck soffit and deck top, if required.				**Recommended Timing:**	1-5 years
Maintenance needs:	12 Bridge Surface Repair					
Maintenance work:	Remove about 200mm layer of gravel from deck, keep about 300mm				**Maintenance Priority:**	Within 1 Yr.



1-Facing West



2-North Elevation



3-Soffit



4-Soffit (Poor Concrete)



5-Crossbeams



6-Edge Beam Along North Side

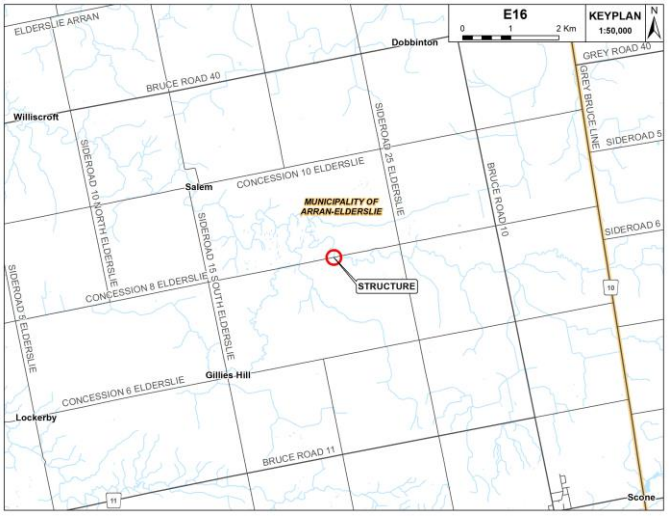
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E16

Summary Report:



2-North Elevation



Datum: NAD83 17N **Northing:** 4910805 **Easting:** 487711

Structure Name:	E16		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 26	**CRV:**	$659,600
Road Name:	Concession 8			**Inspection Date:**	2024-07-30
Structure Location:	Lot 22			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years	**Current Load Limit:**	15

Overall Comments: T-beam in poor condition. The costs to rehabilitate is about $250,000 but we're recommending replacement for about $950,000 in about 6-10 years or as soon as it deteriorates further. Current load limit, 15. Remove some gravel from deck until replaced.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace Bridge	1 to 5 yrs.	$818,000
Various	Associated Work		$132,000
		Total	$950,000

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Deck Top - Thick Slab	02 - Bridge Cleaning	Remove some gravel from deck.	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E16

Inventory Data:

Structure Name:	E16		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Concession 8	Northing:	4910805
Structure Location:	Lot 22	Easting:	487711
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Beam/Girder	Surface Type:	Gravel
Structure Type:	T-Beam	Detour Length Around Bridge:	(km)
Total Deck Length:	10.7 (m)	Fill on Structure:	0.2 (m)
Overall Str. Width:	6.4 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	68.48 (sq.m)	Direction of Structure:	East/West
Roadway Width:	5.5 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	26
Span Length(s):	9.1 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	15 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
1997		Rip rap facing of west footing	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E16

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 26 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: T-beam in poor condition. The costs to rehabilitate is about $250,000 but we're recommending replacement for about $950,000 in about 6-10 years or as soon as it deteriorates further. Current load limit, 15. Remove some gravel from deck until replaced.

Replacement Value:

Structure Type:	Bridge	Structure Area:	68	(sq.m)
Replacement Cost:	$ 659,600	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
	Replace Bridge	1 to 5 yrs.	$818,000

Repair/Rehabilitation Sub-Total:	**$818,000**

Associated Work Required:

Mobilize / Demobilize	Site access, working platform	$30,000
Approaches	Expose deck top to do concrete repairs	$5,000
Traffic Control / Detours	Road Closed	$6,000
Utilities		$0
Right of Way		$0
Environmental Study	Approvals	$5,000
Engineering		$27,000
Other	Insurance and Bonding	$9,000
Contingencies		$50,000

Associated Work Sub-Total:	**$132,000**
Total Cost:	**$950,000**

Justification:

Replacement cost about $950,000, with only 8m wide narrow deck. As this structure is in worse condition than E14 & E15 and required for farm access; considered more appropriate for replacement. Meanwhile recommend removing some gravel from deck top.

Maintenance Needs:

Element	Maintenance Need	Note	Period
Deck Top - Thick Slab	02 - Bridge Cleaning	Remove some gravel from deck.	Within 1 Yr.

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	6.4
Location:					**Height:**	2.3
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	29.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			75% (22.05)	25% (7.35)	$26,460	$7,938
Comments:	Deep spall north end of east abutment. Top 150mm of west footing is exposed. West ballast wall is poorly cracked and spalling.					
Performance Deficiencies:	None					
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	3.0
Element Name:	Wingwalls				**Width:**	
Location:	All Corners				**Height:**	1.3
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Gravity Wall				**Total Quantity:**	15.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (7.8)	50% (7.8)	$5,460	$1,092
Comments:	Cracked at abutments on north side at abutment to wingwall connection.					
Performance Deficiencies:	None					
Recommended Work:	Replace Bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	12.0
Element Name:	Barrier/Parapet Walls				**Width:**	0.4
Location:					**Height:**	0.6
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Parapet Wall without Railing				**Total Quantity:**	m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% ()	10% ()		$0
Comments:	Shorter and thicker than standard wall.					
Performance Deficiencies:						
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	5.6
Element Name:	Girders				**Width:**	0.3
Location:	Transverse				**Height:**	0.3
Material:	Cast-in-place Concrete				**Count:**	3
Element Type:	Rectangular-solid				**Total Quantity:**	15.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (9.06)	40% (6.04)	$3,020	$725
Comments:	Large amount of horizontal cracking, concrete spalling over over 40% of length.					
Performance Deficiencies:	None					
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	9.1
Element Name:	Girders				**Width:**	0.4
Location:	Longitudinal				**Height:**	0.95
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Rectangular-solid				**Total Quantity:**	41.9 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (25.14)	40% (16.76)	$8,380	$2,011
Comments:	Spalled on top and sides. Deep spall on east end of north girder.					
Performance Deficiencies:						
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	10.7
Element Name:	Deck Top - Thick Slab				**Width:**	6.4
Location:					**Height:**	
Material:					**Count:**	1
Element Type:					**Total Quantity:**	68.5 m2
Environment:	Benign				**Limited / Not Inspected:**	☑
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (41.1)	40% (27.4)	$0	$0
Comments:	Covered with gravel, rating assumed based on soffit. Remove some gravel but not all because we suspect deck top is in poor condition and gravel spreads load.					
Performance Deficiencies:						
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:	02 - Bridge Cleaning					
Maintenance work:	Remove some gravel from deck.				**Maintenance Priority:**	Within 1 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E16

Element Data:						
Element Group:	Decks				**Length:**	9.1
Element Name:	Soffit - Thick Slab				**Width:**	5.6
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	51 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			60% (30.6)	40% (20.4)	$17,850	$4,284
Comments:	Not enough cover. Exposed rebar. Costly to do overhead repairs over this large of an area.					
Performance Deficiencies:	None					
Recommended Work:	Replace bridge				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing West



2-North Elevation



3-Soffit



4-West Abutment at Northwest Corner



5-East Abutment



6-East Abutment



7-Northwest Wingwall



8-Northeast Wingwall



9-North Railing



South Elevation

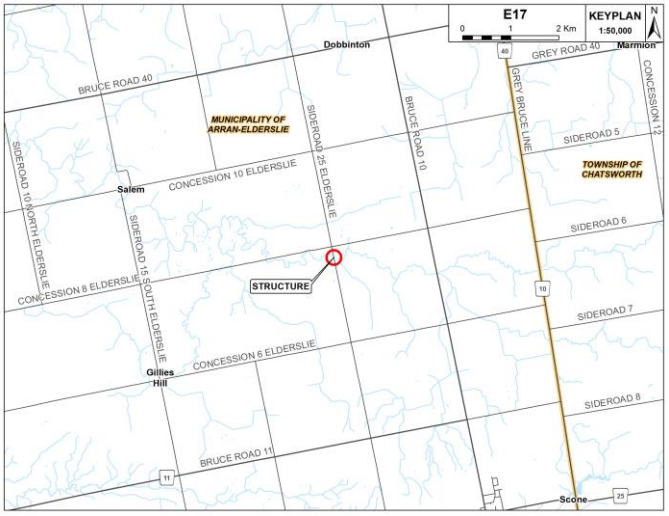
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E17

Summary Report:



2-East Elevation



Datum: NAD83 17N **Northing:** 4910852 **Easting:** 489124

Structure Name:	E17		**BMROSS File #:**	BR971	**MTO #:**
Main Hwy / Road #:			**Bridge Condition Index (BCI:)**	38	**CRV:** $1,241,600
Road Name:	Sideroad 25				**Inspection Date:** 2024-07-30
Structure Location:	Concession 8				**Next Inspection:** 2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years		**Current Load Limit:** 11
Overall Comments:	Half-through truss in poor condition. Repairs on deck top and bearings, and replacements on curbs and wingwalls recommended . Current load limit 11.In lieu of repairs, given condition of structure consider closure or replacement.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Provide supplemental supports for two end stringers	1 to 5 yrs.	$15,000
Sidewalks/curbs	Replace curb concrete	1 to 5 yrs.	$11,300
Abutments	Replace 3 wingwalls	1 to 5 yrs.	$40,000
Abutments	Patch repair under bearings	1 to 5 yrs.	$5,000
Trusses/Arches	Bottom chord: replace two angles at southeast bearing	1 to 5 yrs.	$15,000
Decks	Concrete topping overlay and repairs	1 to 5 yrs.	$20,000
			$0
Various	Associated Work		$58,000
		Total	$164,300

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E17

Inventory Data:

Structure Name:	E17		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	Sideroad 25	Northing:	4910852
Structure Location:	Concession 8	Easting:	489124
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed:	No. of Lanes: 1
Current County:	Bruce	AADT: 50-199	% Trucks:
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Concrete
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	22.9 (m)	Fill on Structure: 0	(m)
Overall Str. Width:	5.6 (m)	Skew Angle: 0	(Degrees)
Total Struct. Area:	128.24 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.6 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	38
Span Length(s):	21.3 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	BR971

Historical Data:

Year Built:	1930	Last Biennial Inspection:	2022
Current Load Limit:	11 (tonnes)	Last Evaluation:	2010
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	2010

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
1997		Wingwalls front filled	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E17

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 24 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Half-through truss in poor condition. Repairs on deck top and bearings, and replacements on curbs and wingwalls recommended . Current load limit 11.In lieu of repairs, given condition of structure consider closure or replacement.

Replacement Value:

Structure Type:	Bridge	Structure Area:	128	(sq.m)
Replacement Cost:	$ 1,241,600	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Provide supplemental supports for two end stringers	1 to 5 yrs.	$15,000
Sidewalks/curbs	Replace curb concrete	1 to 5 yrs.	$11,300
Abutments	Replace 3 wingwalls	1 to 5 yrs.	$40,000
Abutments	Patch repair under bearings	1 to 5 yrs.	$5,000
Trusses/Arches	Bottom chord: replace two angles at southeast bearing	1 to 5 yrs.	$15,000
Decks	Concrete topping overlay and repairs	1 to 5 yrs.	$20,000
			$0

Repair/Rehabilitation Sub-Total:	**$106,300**

Associated Work Required:

Mobilize / Demobilize		$15,000
Approaches		$5,000
Traffic Control / Detours		$3,000
Utilities		$0
Right of Way		$0
Environmental Study	Approvals	$3,000
Engineering		$19,000
Other	Insurance and Bonding	$3,000
Contingencies		$10,000

Associated Work Sub-Total:	**$58,000**
Total Cost:	**$164,300**

Justification:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E17

Element Data:						
Element Group:	Abutments				**Length:**	6.1
Element Name:	Abutment Walls				**Width:**	
Location:					**Height:**	2.2
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	26.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (26.8)		$24,120	$9,648
Comments:	Spall at southeast bearing.					
Performance Deficiencies:	None					
Recommended Work:	Patch repair under bearings.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	4
Element Name:	Wingwalls				**Width:**	
Location:	4 corners				**Height:**	1.9
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:					**Total Quantity:**	15.2 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		25% (3.8)	25% (3.8)	50% (7.6)	$5,320	$1,530
Comments:	Southeast wall dislocated - increased from 125mm to 250mm over the last four years (has been front filled). Northwest wall dislocated - increased from 150mm to 225mm over last four years (has been front filled).					
Performance Deficiencies:	None					
Recommended Work:	Replace 3 wingwalls unless able to tie back together.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	22.9
Element Name:	Railing Systems				**Width:**	0.1
Location:					**Height:**	1.1
Material:	Steel				**Count:**	2
Element Type:	Steel Post and Lattice				**Total Quantity:**	45.8 m
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (41.22)	10% (4.58)	$9,160	$3,298
Comments:	Several impacts and dents on SBGR, so it is doing its job.					
Performance Deficiencies:	None					
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.2
Element Name:	Stringers				**Width:**	0.12
Location:					**Height:**	0.25
Material:	Steel				**Count:**	30
Element Type:	I-type				**Total Quantity:**	30 Each
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			80% (24)	20% (6)	$0	$0
Comments:	Scale rusting at ballast walls. Couple stringer at abutments will small perforation through the web identified. Others have minor surface rust at bearing locations. One stringer at south end is badly scaled.					
Performance Deficiencies:						
Recommended Work:	Provide supplemental supports under end of weak stringers or supplemental stringers.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	22.9
Element Name:	Deck Top				**Width:**	4.5
Location:					**Height:**	0.15
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	103.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			90% (92.79)	10% (10.31)	$12,372	$4,454
Comments:	Numerous transverse cracks. Surface spalls on soffit with rebar exposed 5-10% of deck. Appears grout filler has been added to south joint (consider future repairs to seal south joint). Large popouts throughout exposed concrete deck.					
Performance Deficiencies:	None					
Recommended Work:	Roughen surface and provide thin concrete topping to protect exposed concrete deck and patch soffit. If topping too thick must check load capacity of bridge.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Sidewalks/curbs				**Length:**	22.9
Element Name:	Curbs				**Width:**	0.15
Location:					**Height:**	0.18
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:					**Total Quantity:**	15.1 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (7.55)	50% (7.55)	$604	$121
Comments:	Portion of concrete curb broken away, allowing water to run off deck onto bottom chord of truss.					
Performance Deficiencies:	None					
Recommended Work:	Replace concrete curbs.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E17

Element Data:						
Element Group:	Trusses/Arches				**Length:**	22.9
Element Name:	Bottom Chords				**Width:**	0.2
Location:					**Height:**	0.12
Material:	Steel				**Count:**	2
Element Type:	Channel				**Total Quantity:**	20.2 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (20.2)		$6,060	$2,424
Comments:	Element for all truss components. Bottom chord has scale rust and undercut at southeast bearing. Check others truss members when bearing seats are cleaned and accessible. Installation of SBGR warrant and would help protect trusses but low volume road.					
Performance Deficiencies:						
Recommended Work:	Replace two angles at southeast bearing.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing South



2-East Elevation



3-Soffit



4-Southeast Wingwall Leaning Out



5-South Joint



6-West Railing and Curb



7-East Railing and Curb



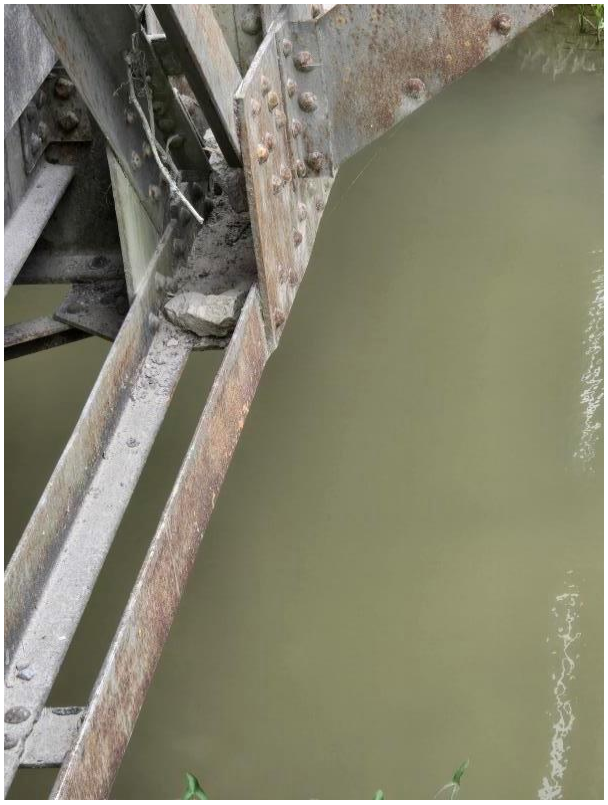
8-Bearing Seat at Southeast Corner



9-Deck Top Popout



Badly Rusted Stringer South Abutment



First Node of Truss North of Southeast Corner



Southeast Corner Bottom Chord Rusting Through



Southeast Corner Bottom Chord Rusting Through



Stringer 1 - North Abutment



Stringer 2 - North Abutment Perforation



Stringer 3 - Staining

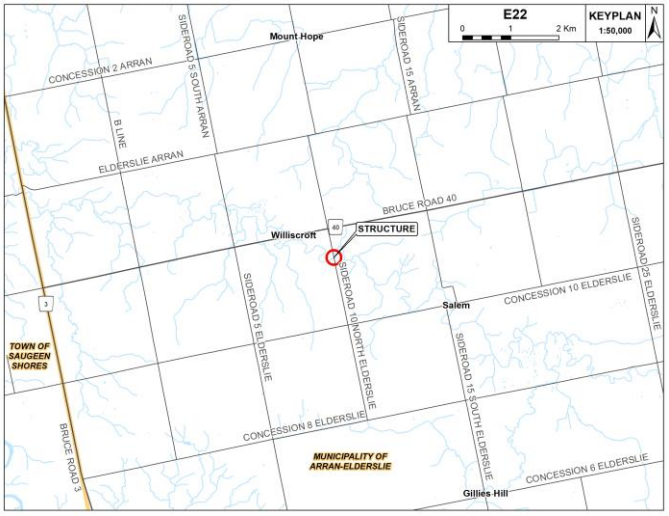
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E22

Summary Report:



2-East Elevation



Datum: NAD83 17N **Northing:** 4913269 **Easting:** 482357

Structure Name:	E22		**BMROSS File #:**	**MTO #:**	
Main Hwy / Road #:			**Bridge Condition Index (BCI:)** 40	**CRV:**	$931,200
Road Name:	Sideroad 10			**Inspection Date:**	2024-07-30
Structure Location:	Concession 12			**Next Inspection:**	2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	1-5 Years	**Current Load Limit:**	3

Overall Comments: Structure in fair condition. Repairs to stringers and bracing recommended in near future. Current load limit, 3. Suspect water flood over road south of bridge during high flows.

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Stringers: prop at abutments	1 to 5 yrs.	$10,000
Trusses/Arches	Repair damaged brace	1 to 5 yrs.	$3,500
Bracing	Tighten tie rods	1 to 5 yrs.	$3,000
Beams/MLE's	Remove gravel build up around ends of stringers, remove debris	1 to 5 yrs.	$2,000
Decks	Replace damaged boards	1 to 5 yrs.	$3,000
			$0
Various	Associated Work		$22,500
		Total	$44,000

Additional Investigations:

Maintenance Needs:

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E22

Inventory Data:

Structure Name:	E22		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type:
Road Name:	Sideroad 10	Northing:	4913269
Structure Location:	Concession 12	Easting:	482357
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: / No. of Lanes:	/ 1
Current County:	Bruce	AADT: / % Trucks:	0-49 /
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Wood
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	19.5 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	4.90 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	95.55 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.05 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	40
Span Length(s):	18.3 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	3 (tonnes)	Last Evaluation:	
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2010		Deck replaced	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E22

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Overcast

Temperature: 26 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 1-5 Years

Overall Comments: Structure in fair condition. Repairs to stringers and bracing recommended in near future. Current load limit, 3. Suspect water flood over road south of bridge during high flows.

Replacement Value:

Structure Type:	Bridge	Structure Area:	96	(sq.m)
Replacement Cost:	$ 931,200	Complexity Factor:	1	
		Price per sq. m.:	$ 9,700.00	

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Beams/MLE's	Stringers: prop at abutments	1 to 5 yrs.	$10,000
Trusses/Arches	Repair damaged brace	1 to 5 yrs.	$3,500
Bracing	Tighten tie rods	1 to 5 yrs.	$3,000
Beams/MLE's	Remove gravel build up around ends of stringers, remove debris	1 to 5 yrs.	$2,000
Decks	Replace damaged boards	1 to 5 yrs.	$3,000
			$0

Repair/Rehabilitation Sub-Total:	**$21,500**

Associated Work Required:

Mobilize / Demobilize		$5,000
Approaches		$0
Traffic Control / Detours		$3,000
Utilities		$0
Right of Way		$0
Environmental Study		$2,000
Engineering		$7,500
Other		$0
Contingencies		$5,000

Associated Work Sub-Total:	**$22,500**
Total Cost:	**$44,000**

Justification:

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	5.3
Location:					**Height:**	1.5
Material:	Cast-in-place Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	15.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		60% (9.54)	40% (6.36)		$14,310	$8,729
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	19.2
Element Name:	Railing Systems				**Width:**	0.07
Location:					**Height:**	1.1
Material:	Steel				**Count:**	2
Element Type:	3 Rail Metal Railing - Steel				**Total Quantity:**	38.4 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			50% (19.2)	50% (19.2)	$7,680	$1,536
Comments:	Two rails only. In fair condition but substandard.					
Performance Deficiencies:						
Recommended Work:	Handrail repairs.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.9
Element Name:	Floor Beams				**Width:**	0.09
Location:					**Height:**	0.18
Material:	Steel				**Count:**	24
Element Type:					**Total Quantity:**	74.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (74.1)		$31,122	$12,449
Comments:	Web perforated at south abutment on two stringers. These should be repaired in near future to maintain integrity of the deck. All stringers and cross-beams slowly deteriorating with surface rust starting in places, may need more repairs within 10 years.					
Performance Deficiencies:						
Recommended Work:	Place five post supports to prop up stringer at south abutment. Remove gravel build up around ends of stringers.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Bracing				**Length:**	
Element Name:	Bracing				**Width:**	
Location:					**Height:**	
Material:	Steel				**Count:**	8
Element Type:	Channel				**Total Quantity:**	8 Each
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
				100% (8)	$4,000	$0
Comments:	Tie rods loose and sagging.					
Performance Deficiencies:						
Recommended Work:	Tighten tie rods.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	19.2
Element Name:	Deck Top - Thin Slab				**Width:**	4.05
Location:					**Height:**	0.09
Material:	Wood				**Count:**	1
Element Type:	Laminated Wood Decking - transverse				**Total Quantity:**	77.8 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (77.8)		$9,336	$3,734
Comments:	Tireand horse hoove abrasion on wood. High flows diverted to south over road to avoid damage to structure. Gravel is penetrating end of deck, sitting around stringers causing them to rust.					
Performance Deficiencies:						
Recommended Work:	Replace damaged boards.				**Recommended Timing:**	1-5 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	19.2
Element Name:	Bottom Chords				**Width:**	0.16
Location:					**Height:**	0.09
Material:	Steel				**Count:**	2
Element Type:	T-type				**Total Quantity:**	26.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (26.1)		$7,830	$3,132
Comments:	Upstream side: lateral bracing angle truss is bent out of alignment. Monitor.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E22

Element Data:						
Element Group:	Trusses/Arches				**Length:**	19.2
Element Name:	Top Chords				**Width:**	0.32
Location:					**Height:**	0.1
Material:	Steel				**Count:**	2
Element Type:	T-type				**Total Quantity:**	39.9 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (39.9)		$11,970	$4,788
Comments:	Didn't see evidences of perforations or significant rust penetration but light rust forming over surface of steel members throughout.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing North



2-East Elevation



3-Soffit and Crossbeams



4-Stringers and Crossbeams



5-Stringers at South Abutment



6-Stringers at South Abutment-Hole Perforation-Supported on Struts



7-Struts Under Stringers at North Abutment



8-Deck Top



9-South End of Deck



Lateral Bracing



North Bearing Seats at Northeast Corner



Truss-West Side

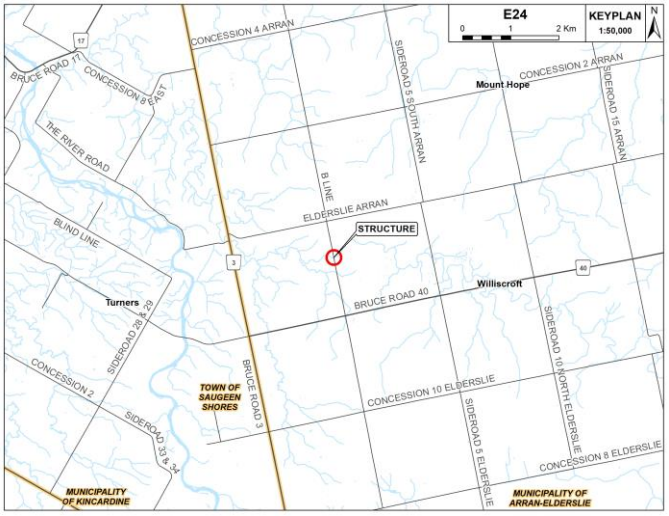
Ontario Structure Inspection Manual - Inspection Report:

Site Number: E24

Summary Report:



2-West Elevation



Datum: NAD83 17N **Northing:** 4914277 **Easting:** 478072

Structure Name:	E24		**BMROSS File #:**	BR-774	**MTO #:**
Main Hwy / Road #:			**Bridge Condition Index (BCI:)**	52	**CRV:** $1,047,600
Road Name:	B Line				**Inspection Date:** 2024-07-30
Structure Location:	Concession 14				**Next Inspection:** 2026-01-01
Condition Summary:	Repairs recommended	**Recommended Timing:**	6-10 Years		**Current Load Limit:** 10
Overall Comments:	Half-through truss in fair condition. Barrier repairs recommended. Current load limit, 10 tonne.				

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Barriers	Repair with new steel and SBGR over deck	6 to 10 yrs.	$20,000
Abutments	Concrete patch repairs for south abutment	6 to 10 yrs.	$8,000
			$0
			$0
			$0
			$0
			$0
Various	Associated Work		$0
		Total	$28,000

Additional Investigations:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Bottom Chords	18 - Other	Clean out debris from bearing seats	Within 2 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E24

Inventory Data:

Structure Name:	E24		
Main Hwy / Road #:		On ☑ Under ☐	Crossing Type: Non-Navigable Waterway
Road Name:	B Line	Northing:	4914277
Structure Location:	Concession 14	Easting:	478072
Owner(s):	Municipality of Arran-Elderslie	Heritage Designation:	Not Designated
MTO Region:	Southwestern	Road Class:	Local
MTO District:	Owen Sound	Posted Speed: / No. of Lanes:	/ 1
Current County:	Bruce	AADT: / % Trucks:	50-199 /
Geographic Twp.:	ELDERSLIE	Special Routes:	
Structure Group:	Truss	Surface Type:	Concrete
Structure Type:	Half-Through Truss	Detour Length Around Bridge:	(km)
Total Deck Length:	18.9 (m)	Fill on Structure:	0 (m)
Overall Str. Width:	5.72 (m)	Skew Angle:	0 (Degrees)
Total Struct. Area:	108.108 (sq.m)	Direction of Structure:	North/South
Roadway Width:	4.53 (m)	Min. Vert. Clearance:	(m)
Number of Spans:	1	Bridge Condition Index:	52
Span Length(s):	17.4 (m) (m) (m) (m) (m)		
MTO Number:		**BMROSS File Number:**	BR-774

Historical Data:

Year Built:	1920	Last Biennial Inspection:	2022
Current Load Limit:	10 (tonnes)	Last Evaluation:	2003
Load Limit By-Law #:		Last Enhanced Inspection:	
By-Law Expiry Date:		Enhanced Access Equipment:	2003

Rehabilitation / Investigation History:

Year	Work Type	Description	Cost
2002		Replaced deck	0
1997		Refaced southeast wingwall and rehab part of abutment wall and bearing seats	0

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E24

Field Inspection Information:

Date of Inspection: 2024-07-30 **Inspection Type:** OSIM Inspection **Next Detailed Inspection:** 2026

Inspector: Ken Logtenberg

Inspecting Firm: BM Ross & Associates Limited

Others in Party: Andrew McGarvey

Equipment Used: Hammer, Camera, Measuring Tape, Chain

Weather: Partly Cloudy

Temperature: 24 ^{O}C

Additional Investigations

Investigation Description	Note	Priority	Estimated Cost
Detailed Deck Condition or Corrosion Potential Survey		N/R	$0
Non-destructive Delamination Survey of Asphalt-Covered Deck		N/R	$0
Concrete Substructure Condition Survey		N/R	$0
Detailed Coating Condition Survey		N/R	$0
Detailed Timber Investigation		N/R	$0
Post-Tensioned Strand Investigation		N/R	$0
Underwater Investigation		N/R	$0
Fatigue Investigation		N/R	$0
Seismic Investigation		N/R	$0
Structure Evaluation		N/R	$0
Monitoring Deformations, Settlements, or Movements of Crack Widths		N/R	$0
		Total Cost:	$0

Overall Structure Notes:

Bridge Condition Summary: Repairs recommended **Recommended Timing:** 6-10 Years

Overall Comments: Half-through truss in fair condition. Barrier repairs recommended. Current load limit, 10 tonne.

Replacement Value:

Structure Type:	Bridge	Structure Area:	108 (sq.m)
Replacement Cost:	$ 1,047,600	Complexity Factor:	1
		Price per sq. m.:	$ 9,700.00

Note: Replacement cost calculation is based on the above price per square metre, the total deck or structure area for the existing structure and the chosen complexity factor. This cost may not be a suitable value when budgeting to replace a structure.

Suspected Performance Deficiencies

01 Load carrying capacity
02 Excessive deformations (deflections and rotations)
03 Continuing settlement
04 Continuing movements
05 Seized bearings
06 Bearing not uniformly loaded/unstable
07 Jammed expansion joint
08 Pedestrian/vehicular hazard
09 Rough riding surface
10 Surface ponding
11 Deck drainage
12 Slippery surfaces
13 Flooding/channel blockage
14 Undermining of foundation
15 Unstable embankments
16 Other

Maintenance Needs

01 Lift and Swing Bridge Maintenance
02 Bridge Cleaning
03 Bridge Handrail Maintenance
04 Painting Steel Bridge Structures
05 Bridge Deck Joint Repair
06 Bridge Bearing Maintenance
07 Repair to Structural Steel
08 Repair of Bridge Concrete
09 Repair of Bridge Timber
10 Bailey bridges - Maintenance
11 Animal/Pest Control
12 Bridge Surface Repair
13 Erosion Control at Bridges
14 Concrete Sealing
15 Rout and Seal
16 Bridge Deck Drainage
17 Scaling (Loose Concrete or ACR Steel)
18 Other

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E24

Repair / Rehabilitation:

Element:	Work Required	Period	Cost
Barriers	Repair with new steel and SBGR over deck	6 to 10 yrs.	$20,000
Abutments	Concrete patch repairs for south abutment	6 to 10 yrs.	$8,000
			$0
			$0
			$0
			$0
			$0

Repair/Rehabilitation Sub-Total:	**$28,000**

Associated Work Required:

Mobilize / Demobilize		$0
Approaches		$0
Traffic Control / Detours		$0
Utilities		$0
Right of Way		$0
Environmental Study		$0
Engineering		$0
Other		$0
Contingencies		$0

Associated Work Sub-Total:	**$0**
Total Cost:	**$28,000**

Justification:

Maintenance Needs:

Element	Maintenance Need	Note	Period
Bottom Chords	18 - Other	Clean out debris from bearing seats	Within 2 Yr.

Ontario Structure Inspection Manual - Inspection Report:

Site Number: E24

Element Data:						
Element Group:	Abutments				**Length:**	
Element Name:	Abutment Walls				**Width:**	6
Location:					**Height:**	2.5
Material:	Precast Concrete				**Count:**	2
Element Type:	Gravity Wall				**Total Quantity:**	30 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		50% (15)	30% (9)	20% (6)	$27,000	$13,365
Comments:	North abutment has been refaced. Efflorescence staining and cracking on south abutment.					
Performance Deficiencies:						
Recommended Work:	Concrete patch repairs for south abutment.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Abutments				**Length:**	3.2
Element Name:	Wingwalls				**Width:**	
Location:					**Height:**	2
Material:	Cast-in-place Concrete				**Count:**	4
Element Type:	Reinforced Concrete				**Total Quantity:**	12.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		50% (6.4)	25% (3.2)	25% (3.2)	$4,480	$2,128
Comments:	Efflorescence staining on wingwalls.					
Performance Deficiencies:						
Recommended Work:	Repair when repairing abutments.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Barriers				**Length:**	18.9
Element Name:	Railing Systems				**Width:**	0.1
Location:	East and West Sides				**Height:**	1.1
Material:	Steel				**Count:**	2
Element Type:	Steel Flex Beam over Other Railing				**Total Quantity:**	37.8 m
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			40% (15.12)	60% (22.68)	$7,560	$1,210
Comments:	Both rails damaged by numerous vehicle strikes.					
Performance Deficiencies:						
Recommended Work:	Repair with new steel and SBGR.				**Recommended Timing:**	6-10 years
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Beams/MLE's				**Length:**	4.6
Element Name:	Floor Beams				**Width:**	0.15
Location:					**Height:**	0.26
Material:	Steel				**Count:**	24
Element Type:	I-type				**Total Quantity:**	107.1 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (107.1)		$44,982	$17,993
Comments:	Rust coated.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	18.9
Element Name:	Deck Top - Thin Slab				**Width:**	4.9
Location:					**Height:**	
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:	Cast-in-place Concrete on Supports				**Total Quantity:**	92.6 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
	50% (46.3)	50% (46.3)			$11,112	$9,723
Comments:	High water flows go over road south of structure from time to time.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Decks				**Length:**	17.4
Element Name:	Soffit - Thin Slab				**Width:**	4.9
Location:					**Height:**	0.12
Material:	Cast-in-place Concrete				**Count:**	1
Element Type:					**Total Quantity:**	85.3 m2
Environment:	Moderate				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
	50% (42.65)	50% (42.65)			$10,236	$8,957
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	

Element Data:						
Element Group:	Trusses/Arches				**Length:**	18.9
Element Name:	Bottom Chords				**Width:**	0.2
Location:					**Height:**	0.13
Material:	Steel				**Count:**	2
Element Type:	Channel				**Total Quantity:**	17.4 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
			100% (17.4)		$5,220	$2,088
Comments:	Rusting starting to accumulate on one plate on bottom of truss, monitor others. Debris in bearing seats.					
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:	18 - Other					
Maintenance work:	Clean out debris from bearing seats				**Maintenance Priority:**	Within 2 Yr.

Element Data:						
Element Group:	Trusses/Arches				**Length:**	18.9
Element Name:	Top Chords				**Width:**	0.31
Location:					**Height:**	0.16
Material:	Steel				**Count:**	2
Element Type:	Box/Trapezoidal				**Total Quantity:**	23.8 m2
Environment:	Benign				**Limited / Not Inspected:**	☐
Protection System:	None				**BCI - Element Condition Values:**	
Condition Data:	**Excellent**	**Good**	**Fair**	**Poor**	**TEV**	**CEV**
		100% (23.8)			$7,140	$5,355
Comments:						
Performance Deficiencies:						
Recommended Work:					**Recommended Timing:**	None
Maintenance needs:						
Maintenance work:					**Maintenance Priority:**	



1-Facing South



2-West Elevation



3-Soffit and Crossbeams



4-Soffit and Crossbeams



5-Deck Top and East Railing



6-Deck Top and West Railing



7-Top of Refacing-South Abutment



8-Bearing Seat at Southeast Corner



9-East Elevation



Gusset Plate Busting



Sway Bracing on East Side-Rusting Angle



Truss at Northwest Bearing Location

APPENDIX D

CULTURAL HERITAGE EVALUATION REPORT

B.M. Ross and Associates Ltd.

Cultural Heritage Evaluation Report Arran-Elderslie Bridge Master Plan Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24 Bruce County, Ontario

Prepared by:

AECOM
410 – 250 York Street, Citi Plaza
London, ON, Canada N6A 6K2
www.aecom.com

519 673 0510 tel
519 673 5975 fax

March 2020

Project Number: 60615394

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Signatures

Report Prepared By:

DRAFT

Tara Jenkins, MA, GPCertCHS, CAHP
Cultural Heritage Specialist

Report Reviewed By:

DRAFT

Adria Grant, MA, CAHP
Ontario Dept Manager, Impact, Assessment & Permitting

Executive Summary

AECOM Canada Ltd. (AECOM) was retained by B.M. Ross and Associates Ltd. (B.M. Ross) on behalf of the Municipality of Arran-Elderslie to complete Cultural Heritage Evaluation Reports (CHERs) on bridges A5, A11, A14, E1, E4, E12, E17, E22, and E24 as part of the Bridge Infrastructure Master Plan. The purpose of the Master Plan is to identify key planning issues associated with these structures prior to taking site specific environmental assessments.

As these nine structures were constructed prior to 1956, CHERs are required to determine if the bridges retain cultural heritage value (Municipal Engineers Association 2014). The principal aims of this report are to:

- Describe the methodology that was employed and the legislative and policy context that guides heritage evaluations of bridges;
- Provide a historical overview of the design and construction of each bridge within the broader context of the surrounding township and bridge construction generally;
- Describe existing conditions and heritage integrity of each bridge; and,
- Evaluate the bridges using *Ontario Regulation 9/06 (O. Reg. 9/06)*, *Criteria for Determining Cultural Heritage Value or Interest*, of the *Ontario Heritage Act* and draw conclusions about heritage attributes of each structure.

Based on the results of archival research, an analysis of bridge design and construction in Ontario, comparative bridge analysis, field investigations completed on February 3, 2020, and application of *O. Reg. 9/06*, all nine of the bridges were determined to have cultural heritage value or interest. Therefore, the following recommendations should be considered and implemented:

1. Heritage Impact Assessments (HIAs) are required for Structures A5, A11, A14, E1, E4, E12, E17, E22 and E4 should a bridge be replaced or undergoes major rehabilitation in the future (PPS 2014). The HIAs will be completed according to the MHSTCI Ontario Heritage Tool kit (2006) and will mitigate impacts to the heritage attributes of the nine bridges identified in Section 5 of this report.

2. Consider listing the nine bridges in a heritage register maintained by Bruce County under the *Ontario Heritage* Act, Section 27, as recommended in Section 4.10.1 of the County of Bruce Official Plan.

3. This report shall be submitted to Municipality of Arran-Elderslie heritage staff, the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture, and Sport for review.

The CHERs were completed by a team of AECOM's Cultural Resource Management staff including Tara Jenkins, Emily Game (Cultural Heritage Specialists), and Adria Grant (Ontario Department Manager, Impact Assessment and Permitting).

Table of Contents

page

1. Introduction 1
1.1 Study Purpose 1
1.2 Study Method 1

2. Policy and Planning Framework 5
2.1 Ontario Environmental Assessment Act 5
2.2 Additional Guidelines 5
2.3 Bruce County Official Plan 5

3. Historical Overview 7
3.1 Indigenous Land Use 7
3.2 Bruce County- Township Survey and Euro-Canadian Settlement 8
3.2.1 Township of Arran 8
3.2.1.1 Tara and Invermay 8
3.2.2 Township of Elderslie 9
3.2.2.1 Chesley 9
3.2.2.2 Paisley 10
3.2.3 Early Bridge Construction in Ontario 13
3.2.4 History of Truss Bridges 13
3.2.5 History of Concrete Bridges 15

4. Site Description 17
4.1 General Landscape Context 17

5. Evaluation 18
5.1 Review of Existing Heritage Registers and Additional Information 18
5.2 Ontario Regulation 9/06 18
5.3 Site Evaluations of the Nine Structures 19
5.3.1 Purpose 19
5.3.2 Heritage Evaluation of Structure E1 20
5.3.3 Heritage Evaluation of Structure E4 28
5.3.4 Heritage Evaluation of Structure E12 34
5.3.5 Heritage Evaluation of Structure A14 41
5.3.6 Heritage Evaluation of Structure E17 49
5.3.7 Heritage Evaluation of Structure A5 56
5.3.8 Heritage Evaluation of Structure E22 63
5.3.9 Heritage Evaluation of Structure A11 69
5.3.11 Heritage Evaluation of Structure E24 76

6. Conclusions and Recommendations 83
6.1 Conclusions 83
6.2 Recommendations 83

7. Bibliography 84

List of Figures

Figure 1: Location of the Nine Structures, Municipality of Arran-Elderslie 3
Figure 2: Aerial Photograph of the Location of the Nine Structures, Municipality of Arran-Elderslie 4
Figure 3: Nine Structures on the 1880 Illustrated Historical Atlas Map 11
Figure 4: Nine Structures on the 1946 NTS Map 12
Figure 5: Buildings on S. Cummer's Property in 1880 (H. Belden & Co. 1880) 42

List of Tables

Table 1: Inventory of pony truss bridges in the Municipality of Arran-Elderslie 14
Table 2: Inventory of earth filled concrete arch bridge in the Municipality of Arran-Elderslie 16
Table 3: Summary of the Nine Structures 17
Table 4: Results of Consultation for the Municipality of Arran-Elderslie Bridge Master Plan 18
Table 5: Ontario Regulation 9/06 Evaluation for Structure E1 25
Table 6: Ontario Regulation 9/06 Evaluation for Structure E4 32
Table 7: Ontario Regulation 9/06 Evaluation for Structure E12 39
Table 8: Ontario Regulation 9/06 Evaluation for Structure A14 47
Table 9: Ontario Regulation 9/06 Evaluation for Structure E17 53
Table 10: Ontario Regulation 9/06 Evaluation for Structure A5 61
Table 11: Ontario Regulation 9/06 Evaluation for Structure E22 67
Table 12: Ontario Regulation 9/06 Evaluation for Structure A11 73
Table 13: Ontario Regulation 9/06 Evaluation for Structure E24 80

Appendices

Appendix A Select Design Drawings of Structure E1
Appendix B Select Design Drawings of Structure E4
Appendix C Select Design Drawings of Structure E12
Appendix D Rehabilitation Drawing of Structure A14
Appendix E Abutment Drawing of Structure E11
Appendix F Select Design Drawings of Structure E22
Appendix G Select Design Drawings of Structure A11

1. Introduction

1.1 Study Purpose

AECOM Canada Ltd. (AECOM) was retained by B.M. Ross and Associates Ltd. (B.M. Ross) on behalf of the Municipality of Arran-Elderslie to complete Cultural Heritage Evaluation Reports (CHERs) on bridges A5, A11, A14, E1, E4, E12, E17, E22, and E24 as part of the Bridge Infrastructure Master Plan. The purpose of the Master Plan is to identify key planning issues associated with these structures prior to taking site specific environmental assessments.

As these nine structures were constructed prior to 1956, CHERs are required to determine if the bridges retain cultural heritage value (Municipal Engineers Association 2014). The principal aims of this report are to:

- Describe the methodology that was employed and the legislative and policy context that guides heritage evaluations of bridges;
- Provide a historical overview of the design and construction of each bridge within the broader context of the surrounding township and bridge construction generally;
- Describe existing conditions and heritage integrity of each bridge; and,
- Evaluate the bridges using *O. Reg. 9/06*, *Criteria for Determining Cultural Heritage Value or Interest*, of the *Ontario Heritage Act* and draw conclusions about heritage attributes of each structure.

1.2 Study Method

The scope of a CHER is guided by the Ministry of Heritage, Sport, Tourism, and Culture Industries' (MHSTCI) *Ontario Heritage Tool Kit* (2006). Generally, CHERs include the following components (MHSTCI 2006):

- A general description of the history of a study area as well as a detailed historical summary of property ownership and building(s) development;
- A description of the cultural heritage landscape and built heritage resources;
- A site analysis including representative photographs of the structure, and character-defining details;
- A cultural heritage resource evaluation guided by the *Ontario Heritage Act* criteria;
- A summary of heritage attributes;
- Historical mapping and photographs; and,
- A location plan.

Using background information and data collected during the site analysis, conducted February 3, 2020, the property is evaluated using criteria contained within O. Reg.9/06 of the *Ontario Heritage Act*. The criteria are grouped into the following categories which determine the cultural heritage value or interest of a potential heritage resource in a municipality:

i) Design/Physical Value;
ii) Historical/Associative Value; and,
iii) Contextual Value.

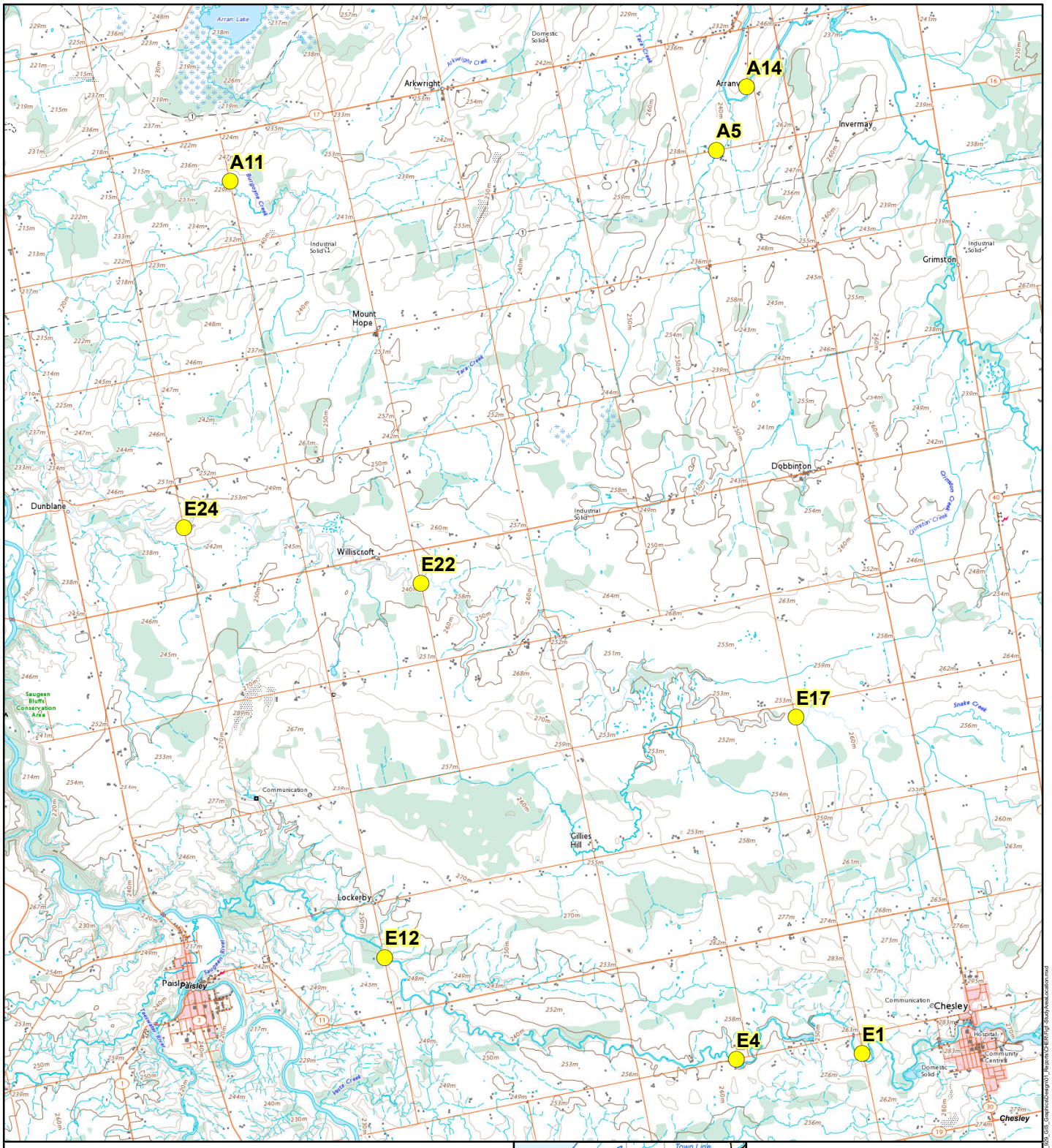
Should the structure meet one or more of the above-mentioned criteria, a Heritage Impact Assessment (HIA) is required.

When evaluating the cultural heritage significance of a subject bridge, the *Ontario Heritage Bridge Guidelines for Provincially Owned Bridges* (OHGB) (MTO 2008) and the *Ontario Heritage Bridge Program* (MHSTCI 1991) are consulted as points of reference.

The OHBG provides rationale for the protection and preservation of heritage bridges and is described as follows (MTO 2008:5-6):

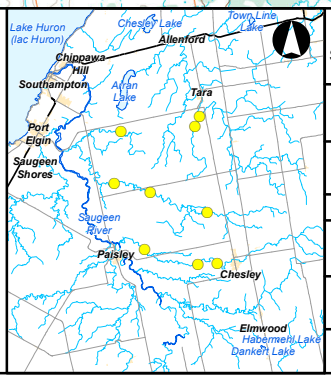
> *Bridges are important parts of our engineering and architectural heritage. Perhaps more than any other type of structure built by man, they exhibit major historical change and innovation in the development and use of materials, in design, and in construction methods. They can be viewed as important elements and make a positive contribution to their surroundings. In some cases, they are rare survivors of an important bridge type or are revered because of their age, historical associations or other publicly perceived values.*

The CHERs were completed by a team of AECOM's Cultural Resource Management staff including Tara Jenkins, Emily Game (Cultural Heritage Specialists), and Adria Grant (Ontario Department Manager, Impact Assessment and Permitting).



Legend

- Structure Location



Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Huron County, Ontario

Location of Study Area

February 2020	1:100,000	Datum: NAD 83 UTM17 Source: http://wms.ess-ws.nrcan.gc.ca/wms/toporama_en
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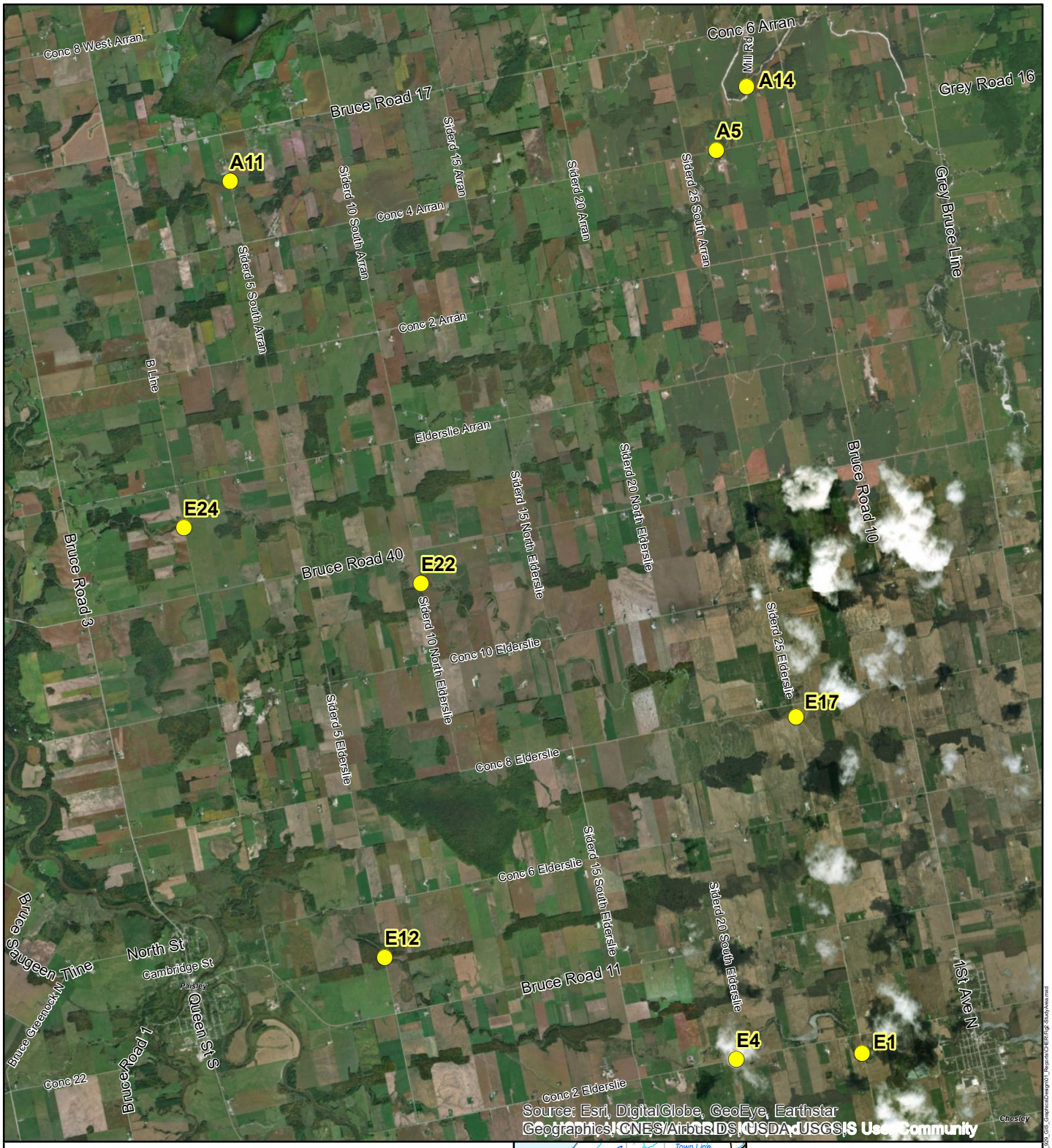
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Figure 1

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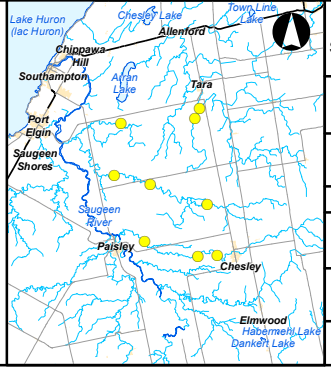
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Legend

- Structure Location



Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Huron County, Ontario

Study Area in Detail

February 2020	1:100,000	Datum: NAD 83 UTM17 Source: LIO 2019
P#: 60615394	V#:	

AECOM

Figure 2

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2. Policy and Planning Framework

2.1 Ontario Environmental Assessment Act

This report has been produced to satisfy the cultural heritage reporting requirements typically undertaken as part of the Municipal Environmental Assessment process in Ontario. Pursuant to the *Environmental Assessment Act* (R.S.O. 1990, Chapter E.18), applicable infrastructure improvements and development projects are subject to appropriate studies to evaluate and assess the potential related impacts of a project on the social, economic, or cultural environment, i.e. the cultural heritage of an area. Infrastructure improvements projects have the potential to impact cultural heritage resources in various ways including, but not limited to:

- Loss or disruption of resources through removal or demolition;
- Disruption of resources by introducing physical, visual, audible, or atmospheric elements that are not in keeping with the resources and their contextual surroundings.

2.2 Additional Guidelines

A 40-year-old threshold is used as a guiding principle when considering cultural heritage resources in the context of improvements to specified areas. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this threshold provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than 40 years old, this does not preclude the resource from retaining heritage value.

The analysis used throughout the cultural heritage resource assessment process addresses cultural heritage resources under various pieces of legislation and their supporting guidelines:

- *Environmental Assessment Act* (R.S.O. 1990, Chapter E.18)
    - *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (MCC 1992)
    - *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (MCR 1980)
    - *Municipal Heritage Bridges: Cultural, Heritage and Archaeological Resources Assessment Checklist* (Municipal Engineers Association 2014)
- *Planning Act* (R.S.O. 1990, Chapter P.13)
    - *Heritage Resources in the Land Use Planning Process*, 2014 Provincial Policy Statement
- *Ontario Heritage Act* (R.S.O. 1990, Chapter O.18) and a number of guidelines and reference documents prepared by the MHSTCI:
    - *Ontario Heritage Tool Kit* (MHSTCI 2006)
    - *Screening for Impacts to Built Heritage and Cultural Heritage Landscapes (November 2010)*

2.3 Bruce County Official Plan

The Official Plan for Bruce County is a policy document, adopted in accordance with the provisions of the *Planning Act*. The following objectives provide a county planning context that addresses heritage conservation and its relation to this bridge project:

> *4.10.1 Objectives*
> *1. Encourage the conservation of land, buildings and sites of historic, architectural and archaeological value.*

2. County Council encourages the identification, acquisition, restoration and conservation of the historical, cultural, architectural and archaeological assets of the County.

3. Historical Overview

A review of available primary and secondary source material was undertaken to produce a contextual overview of the study area. Historically, the subject bridges are located in the Geographic Townships of Arran and Elderslie, in Bruce County.

3.1 Indigenous Land Use

Algonquian-speaking Odawa groups maintained a close relationship with the Iroquoian speaking Petun peoples living along the southern shore of Nottawasaga Bay (Fox 1990:461). The Ojibwa (a.k.a. the “Chippewa”, who called themselves “Anishnabe”), who are also Algonquian speakers, lived in the region extending from the Georgian Bay area to the north shore of Lake Superior prior to European contact (Schmalz 1977). Both the Odawa and Ojibwa were disrupted and displaced by Iroquois hostilities in the 1650s (Schmalz 1977) but regrouped by the last quarter of the seventeenth century (Ferris 1989) and returned to their homeland. The 1690s witnessed significant battles between the Iroquois and Anishnabe Three Fires Confederacy (Ottawa, Ojibway, Pottawatomi), with the result being that Ojibway groups took control over Bruce County lands (Wilson McArthur 2005:49) and held them until the negotiation of Crown transfers a century later.

Schmalz (1977:1) also describes the Ojibwa (including Mississauga, Potawatomi, Ottawa and Caughnawaga) who settled in Saugeen Township. The Chippewas of Saugeen First Nation and the Chippewas of Nawash First Nation share the same traditional territories in southwestern Ontario. They were a part of the ancient Three Fires Confederacy of Ojibwa, Odawa, and Pottawatomi. Throughout the eighteenth century the Saugeen Territory was inhabited by several generations of Ojibwa whose immediate territory was threatened neither by war nor by European settlers.

The (Saugeen) Ojibwa surrendered portions of Grey and Wellington Counties in 1818 (McMullen 1997:28). This was done with the understanding that they would have continued use of Bruce County and that they would receive annuities for the lands surrendered. Further land was surrendered in the area with the establishment of the Huron Tract in 1825, later to be followed by the surrender of Bruce County to the British through the Treaty of Manitowaning in 1836 (Lee 2004:21; Robertson 1906:11). The surrender of Bruce County did not include the Bruce Peninsula, known as the Saugeen Peninsula by the resident Ojibwa. The Neyaashiinigmiing Indian Reserve Number 27 on the southeast side of the Bruce Peninsula (Nawash Ojibwa) and the Saugeen Indian Reserve Number 29 above Southampton (Saugeen Ojibwa) were established in 1854 (Chippewas of Nawash 2010).

Some accounts suggest that the first Europeans to traverse through Bruce County were French explorer Samuel de Champlain and Jesuit missionaries in the seventeenth century. It is reported that the first Euro-Canadian settlers to establish homes in Bruce County were William Withers and Allan Cameron (Robertson 1906:429). Early on, the focal point for both residence and industry was the Lake Huron shoreline. The mouth of the Penetangore River was an attractive locale for docking and shipping.

Historic Saugeen Metis

The Historic Saugeen Métis are descendants of the Métis who traded at Southampton (Saugeen). Pierre Piché was considered the first Métis in the area in 1816. The Ojibwa invited Piché to share the resources within the Saugeen territory. The Historic Saugeen Métis are descended from unions between European traders and indigenous women. The Lake Huron watershed Métis “lived, fished, hunted, trapped and harvested the lands and waters of the Bruce Peninsula, the Lake Huron proper shoreline and its watershed”. (http://saugeenmetis.com/about/). These are

considered the traditional Métis territory. The contemporary Métis community extends for 275 kms of Lake Huron shoreline from Tobermory to south of Goderich, and includes the counties of Bruce, Grey and Huron (http://saugeenmetis.com/about/).

3.2 Bruce County- Township Survey and Euro-Canadian Settlement

In 1847, the government requested a road be opened from Simcoe County to Penetangore (Kincardine). Allan Park Brough surveyed the land from Durham and westward to Lake Huron. Two concessions north and south of this Durham Road were offered as free 50-acre land grants to encourage settlement in this last wild region, referred to as the "Queen's Bush" in Canada West. James Bruce, Earl of Elgin and Kincardine, was Governor General of Canada during the time of the survey, and his surname became the moniker for the County (Robertson 1988:39). The first permanent Euro-Canadian settler was Captain John Spence, setting up a log house at the mouth of the Saugeen River in 1848 (Robertson 1988:27). In May of 1849, the district of Huron in the Queen's Bush was divided into three counties: Huron, Perth, and Bruce. Brant and Kincardine townships were being surveyed in 1850, while efforts were made to log and open the Durham Road (Robertson 1988:48-51). The following year, as additional townships were ordered surveyed, so too was the town plot of Southampton, as it was expected to hold the county seat.

The census of 1851 reported that there were no more than 499 families living in Bruce County, many of whom lived in temporary shanties. These shanties were typical dwellings for early settlers while their land was cleared and were often a stipulation of the land grant process. The population of the county grew quickly into the 1860s, which was facilitated by the construction of a series of stone roads that provided access between the various settlements within the County.

3.2.1 Township of Arran

Arran township is situated in the middle of Bruce County. Arran township is located between Amabel Township to the north and Elderslie Township to the south. Arran Township is named after the Island of Arran at the mouth of the River Clyde in Scotland. Henry Boyle settled in the township in 1850. He opened a log tavern in the wilderness to accommodate the incoming land seekers. George Gould surveyed the township in 1851 for the government. Early pioneer J.W. Linton, together with Gould, selected to settle on land in present-day Invermay. The opening of the Saugeen and Owen Sound Road through the centre of Arran in 1852 made parts of the township accessible to settlers and the population of the township began to grow (Mika and Mika 1977:86).

Until 1853, Arran was part of the United Townships in Bruce County. It became the senior township in the municipality of the United Townships of Arran and Elderslie. During 1856 however, Arran was a separate municipality. In 1857, it entered a union with Amabel Township. In 1861, it again became a separate municipality. The first post office was named Arran after the township and was opened by George Gould in 1853. Arran Lake which outlets into the Sauble River covers 968 acres of the area. The land suited for agriculture but turned to cattle farms (Mika and Mika 1977:86). In 1880, Arran's town hall was located in Arkwright, a postal village near the centre of the township (H. Belden & Co. 1880). Arran's communities include, Allenford, Elsinore, Invermay, Arkwright, Mount Hope, and Burgoyne. The only incorporated village is Tara. The population in 1975 was around 1,529 (Mika and Mika 1977:86).

3.2.1.1 Tara and Invermay

Tara is located approximately 26 kilometres southwest of Owen Sound on the Sauble River. In 1980, the village had 682 inhabitants (H. Belden & Co. 1880). Richard Berford and John Hamilton came to Arran Township in 1851 settling in the vicinity of Tara. It was surveyed into village lots in the late 1850s. John Hamilton erected a log building and offered accommodation to travellers and land seekers. H.W.M Richards built a sawmill at the

settlement in 1855. Gerolamy's foundry and agricultural implement works opened in late 1850s. The post office opened in 1862 under the name "Eblana" (H. Belden & Co. 1880). The name was then changed to Tara after an Irish Town. Tara was incorporated as a village in 1881, the year the railway arrived (Mika and Mika 1983:484-484). The village is noted as being situated on one street, the old Owen Sound stage road, which ran along the Sauble River and the whole length of the 7 and 8 Concessions (H. Belden & Co. 1880).

Situated just south of the village of Tara on the Sauble River, Invermay was the habitation of George Gould in Arran Township. He built a log house at this location as the headquarters for the surveying party while laying out Arran Township (H. Belden & Co. 1880). Invermay was surveyed into lots in 1855. Soon after Luke Gardner built a sawmill. A grist mill was built in 1857. The post office opened in 1857 under the name Arran. The named changed to Invermay in 1859. In 1865, the population of Invermay was 250 and it had two stores, two tanneries, two churches, one grist mill, and two sawmills. Located one mile from Tara caused intense rivalry between the two villages (Mika and Mika 1983:484-484).

By 1880, the villages of Tara and Invermay had grown to one, but each still was a distinct post village ((H. Belden & Co. 1880). At that time, Tara and Invermay contained four hotels, six general stores, groceries, hardware, tin, stove, drug, book, cabinet, shoe, and harness stores, two flouring and grist mills, a sawmill, two planing mills, a woolen factory, two cabinet factories, three carriage and four blacksmiths, one grain-cradle factory, and a large foundry and a fanning mill factory.

3.2.2 Township of Elderslie

Elderslie Township is named in honour of Scotland's patriot, Sir William Wallace, Knight of Elderslie. The first pioneer settler was Simon Orchard who came with his family on a raft down the Saugeen River from Walkerton in 1851. He settled on the site of the present village of Paisley. The township was surveyed in 1851 and the lands were offered for sale in 1852. In 1854, Elderslie was united with Arran Township for municipal purposes, but the union dissolved in 1856. The first school opened in the township in 1855 at Lockerby. By 1858, the township had eight school houses. A township hall was built in 1875 at Gillies Hill, situated at the centre of the township. Communities in Elderslie included Dobbinton, Gillies Hill, Lockerby, Scone, Vesta, and Williscroft. Paisley is the only incorporated village and Chesley, is considered a flourishing town (Mika and Mika 1977:646). A large swamp once covered a large area of the township but was reduced to 1,000 acres. The township is considered an agricultural township. In 1977, the population of Elderslie Township was around 1,230 people (Mika and Mika 1977:646). Today, the number of farms has decreased, and mixed-use farming has changed to cattle raising.

3.2.2.1 Chesley

Chesley is located on the North Saugeen River, located along the Canadian National Railroad about 25 kilometres north of Walkerton. Most of the land in the vicinity of Chesley was settled by Scottish families by 1854. Chesley formed on the McDonald land which was purchased from Adam Scott Elliot in 1858. A.S. Elliot is considered the founder of Chesley. He operated a sawmill and grist mill on the river. In 1868, A.S. Elliot's son purchased land from his father and surveyed land into village lots. That year the post office opened under the name Chesley after Solomon Chesley, an official in England. Prior to that, the community had been referred to as Sconeville (Mika and Mika 1977:412-414).

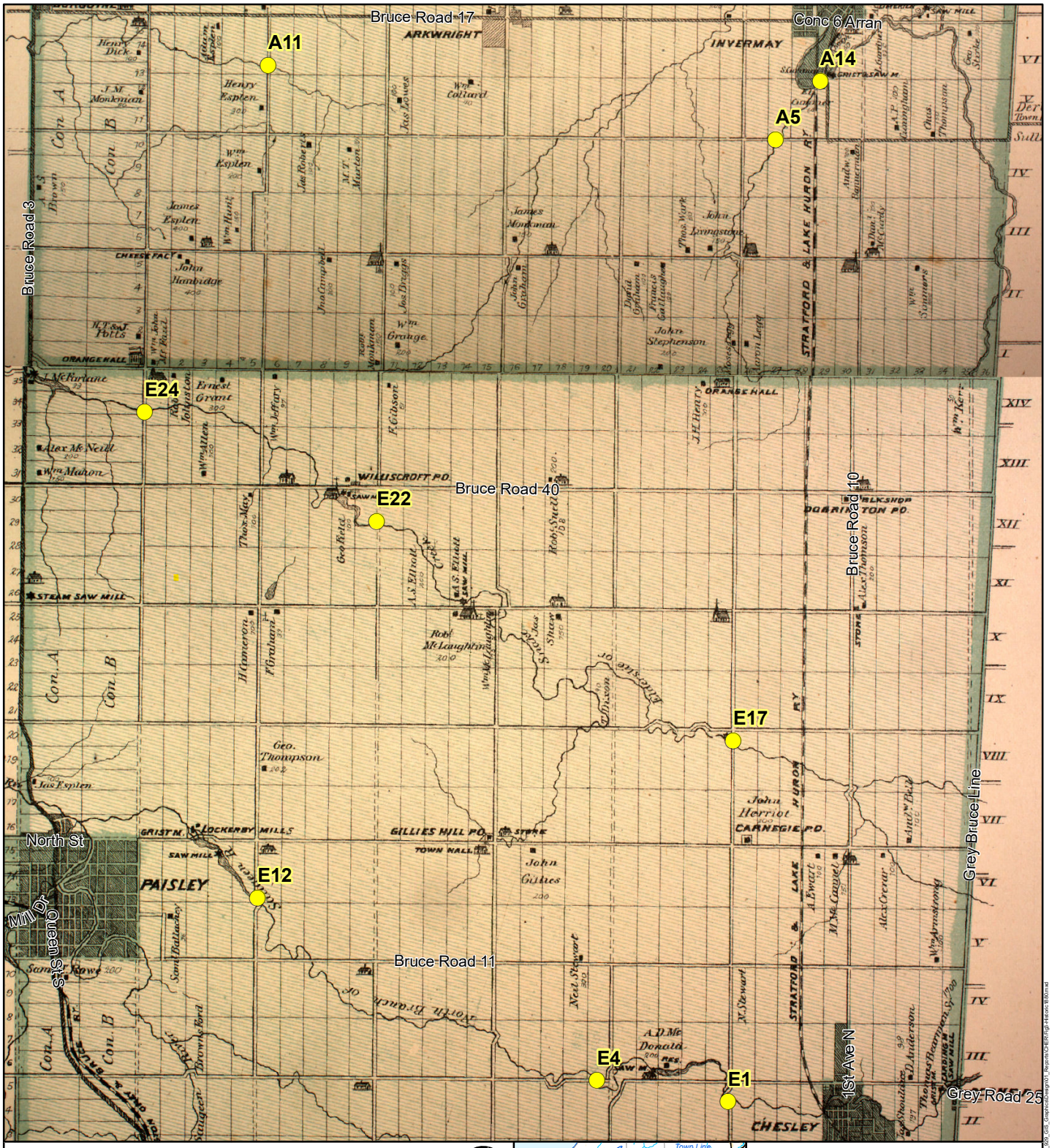
By 1875 Chesley was a thriving centre with an oatmeal and flour mill, a cabinet and shingle factory, three general stores, two blacksmiths, two wagon and two cooper shops, a shoe shop, a tannery, a lime kiln, two hotels, a pottery, a brickyard, a sash and door factory and woollen mill. The first schoolhouse was built in 1876. In 1879, the population was 905 and that year it was incorporated as a village. The railway came to the village in 1881. In June 1888, there was a fire that took many homes and businesses on Main Street. The Krug Brother's furniture factory opened in 1886 (Mika and Mika 1977:412-414). The population of Chesley in 1879 was 907 people (Belden 1880). The location of the settlement had great water powering value. In 1880, there were three hotels, three liveries, a

large number of mercantile houses, a large foundry, a steam cabinet factory, two planing mills, four carriage shops and six blacksmiths shops (H. Belden & Co. 1880).

3.2.2.2 Paisley

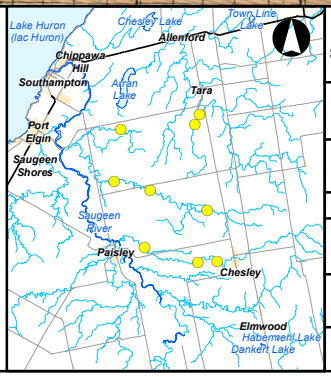
The village was named after a town near Glasgow, Scotland. In 1850-51, Simon Orchard moved his family on a raft from Walkerton down the Saugeen River in search of a new homestead. He settled at the junction of the Saugeen River and Teeswater River. In 1852, John Valentine opened a sawmill supplying settlers with building materials. Samuel Rowe, brother-in-law to Orchard, erected a log house in 1852 which also served as a tavern and a meeting house for various dominations. In 1872, the Great Western Railway arrived, and Paisley experienced a rapid expansion. In 1873, it was incorporated as a village. A town hall was built in 1876. Because four streams meet near Paisley, bridges are an integral part of the village scene. Six are within the boundary and three nearby. Simon Orchard built a bridge across Teeswater in 1851. The next spring it washed away so Orchard and his brother-in-law trained a dog to swim across the river and take small articles back and forth until the bridge was repaired (Mika and Mika 1983:157-158).

By the late 19th century, Paisley was a busy manufacturing place of reapers and mowers, fanning mills, sawmills, two woolen mills, two flour mills, two sash and door factories, a cheese factory, a pump factory, and a tannery cooperage. There were shops and hotels, liveries, two telegraph offices and a bank. The surrounding farm land around Paisley is its economical mainstay (Mika and Mika 1983:157-158).



Legend

- Structure Location



Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Huron County, Ontario

Study Area, 1880

February 2020	1:95,000	Datum: NAD 83 UTM17 Source: LIO 2019, Bruce Supplement to Illustrated Atlas of the Dominion of Canada. Toronto: H Belden and Co., 1880
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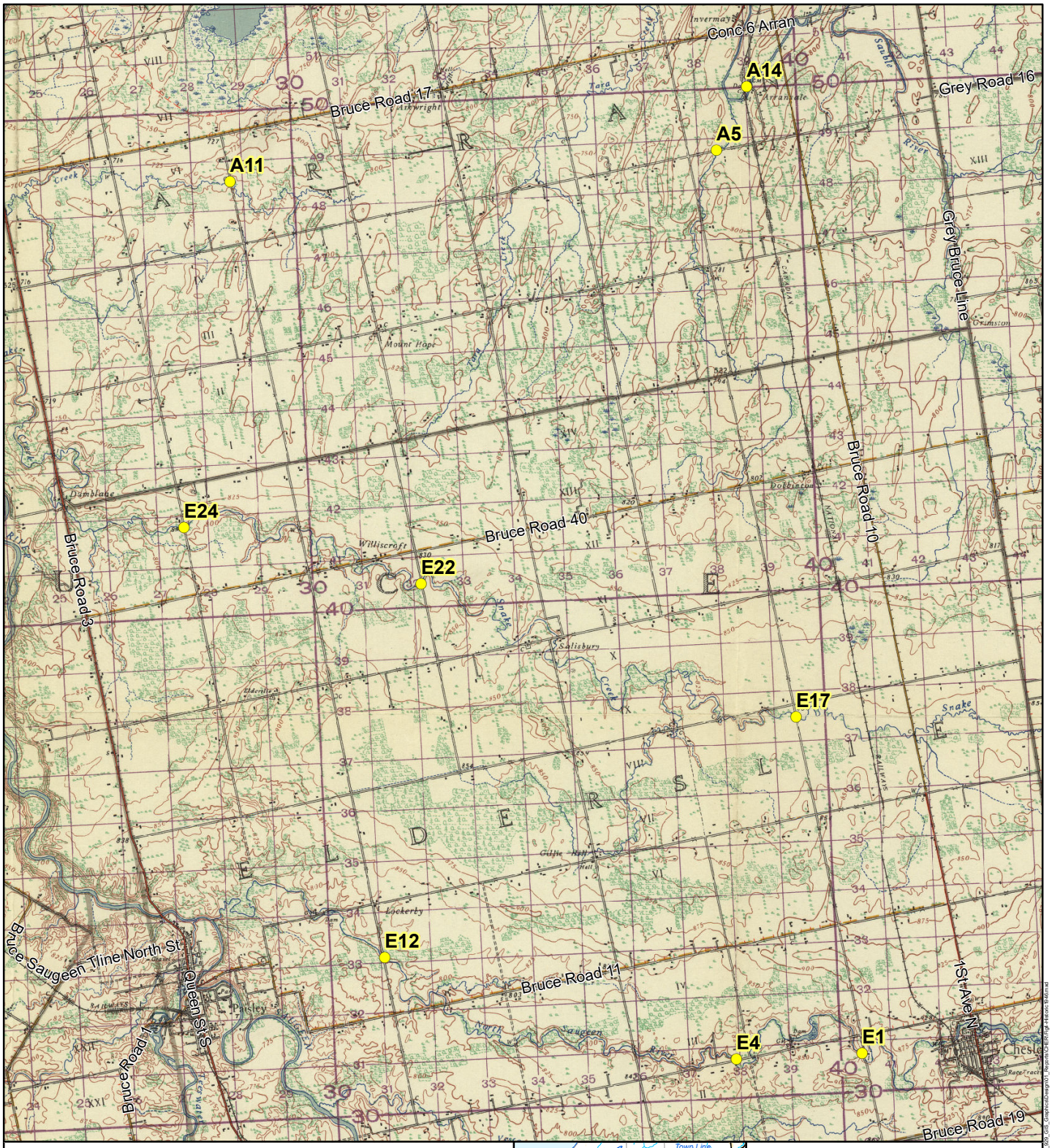
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Figure 3

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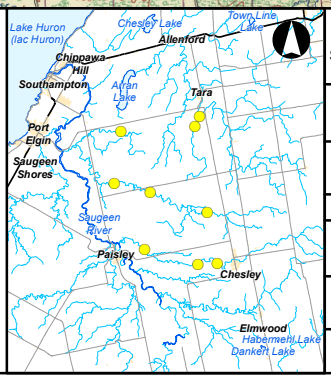
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Legend

- Structure Location



Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Huron County, Ontario

Study Area, 1946

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Figure 3

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3.2.3 Early Bridge Construction in Ontario

Bridges were a necessity from the earliest days of road construction, and were important to economic and social life, especially as mills were situated along rivers. Settlements sprang up where the mills were serviced by bridges. Construction of the railway in the 1850s made it necessary to have reliable bridges able to withstand the weight of locomotives. In addition, good road bridges were required so farmers could transport their produce to local railway stations (PHCS 2004b). Most road bridge designs that evolved were based on principles derived from railroad construction. In Ontario, the timber bridge dominated the landscape in rural areas from 1780 to 1880 and persisted into the early 20th century (Cuming 1983: 38).

Short spans were beam structures, and longer spans employed simple trusses, such as King and Queen Post timber trusses. Stone and wrought iron materials were also employed, but due to higher costs and a lack of skilled craftsmen such structures were generally restricted to market towns (TRCA 2011). By the 1890s, steel and concrete were becoming the materials of choice when constructing bridges given that both were less expensive and more durable than their wood and wrought iron predecessors (TRCA 2011). Steel truss structures were very common by 1900, as were steel girder bridges. After the First World War, the increase in personal vehicles meant that stronger bridges were necessary. The Pratt truss and the Warren truss dominated the early 20th century and were typically used for spans up to 400 feet (Comp and Jackson 1977). The use of concrete in bridge construction was introduced at the beginning of the 20th century, and by the 1930s, it was challenging steel as the primary bridge construction material in Ontario (TRCA 2011).

3.2.4 History of Truss Bridges

Truss bridges come in a variety of designs, shapes and sizes. They consist of an assembly of triangles and are commonly made from a series of straight steels bars. Truss bridges may be considered historic bridges due to the "period" of their construction most often at the turn of the 20th century (PHCS 2007).

The Pratt truss was first developed in 1844 under patent of Thomas and Caleb Pratt. The Pratt truss was the reverse design from the Howe truss, patented by William Howe in 1840. The Pratt has diagonals and verticals in tension. They were initially manufactured as a combination of wood and iron but were later constructed as iron only. The Pratt type successfully survived the transition to iron construction and the second transition to steel. The Pratt trusses were prevalent from the 1840s through to the 20th century. The Pratt truss inspired a large number of variations and modified subtypes during the 19th and early 20th centuries. One sub-type was the Parker "camelback" truss.

The camelback truss, also referred to as the polygonal-chord truss, is a modified version of the Pratt truss by Charles H. Parker. The camelback truss was developed in a series of patents Parker filed between 1868 and 1871. Characterized by Pratt design, it is different in that its bottom chord has a curved top with five different slopes that are not parallel to the top chord like the Pratt truss. This design allowed for less material used while maintaining the same strength. However, the camelback truss was more complicated to build than the Pratt as the web members have different lengths for each panel (PHCS 2007). Because trusses were generally priced on the basis of their superstructure steel weight, the lighter overall weight of a camelback truss more than offset the slight increase in fabricating costs in spans greater than 160 feet. In the highly competitive bridge industry, this economy equated directly with profit, and pinned Parkers superseded Pratts for long-span applications after the turn of the 20th century (ASI 2005). The camelback truss was a popular bridge type from the late 19th to the mid-20th century (PHCS 2007) and is commonly referred to as a Pratt camelback through truss.

Inexpensive steel bridges proliferated rapidly after 1900 in Ontario and such designs were commonly used into the 1930s (Cuming 1983; PHCS 2007). Requirements for stronger and larger bridges led to the development of subsidiary ties and struts within each unit or panel of the Pratt Truss (Cuming 1983). The Warren truss, designed and patented by two British engineers in 1848, moved towards using steel as opposed to wrought iron. The Warren

truss original design illustrates a series of equilateral triangles. Later modifications included subdivision by verticals or addition of alternate diagonals (PHCS 2007).

A truss bridge can have the deck on top, in the middle or at the bottom of the truss. If the sides of the truss extend above the roadbed but are not connected, it is a called a pony truss or half-through truss (Comp and Jackson 1977). Bruce County has an impressive and unusually large surviving population of truss bridges with heritage value, nearly all of them with riveted connections (historicbridges.org). A type of half-through truss, the Warren pony truss, was easy to erect, comparatively inexpensive, and was readily available (http:///www.historicplaces.ca). Many were constructed in rural areas of Ontario crossing streams and creeks (Cuming 1983). The Warren pony truss is lightweight and is capable of crossing rivers where large spans were needed (http:///www.historicplaces.ca). However, the majority of these rural truss bridges were single lane which has led to municipalities upgrading to two lane bridges.

Due to the demand of steel trusses, several specialized bridge companies came into existence including Hamilton Bridge Works, Sarnia Bridge Company, and the Dominion Bridge Company. In Ontario, many of the surviving metal truss bridges were built by the Hamilton Bridge Company, but many by unknown builders. As such, it is noteworthy if a bridge is found to be built by a specialized bridge company or, even rarer, a local builder such as the Dickson Bridge Works Co. Limited of Campbellford, Ont. (historicbridges.org). The Dickson Bridge Works Co. Limited were known to use both American steel (Carnegie) and British steel (Sinningrove) (historicbridges.org).

3.2.5 Comparative Geographic and Historic Context of Truss Bridges in the Municipality of Arran-Elderslie and Ontario

Structures E1, E4, E17, A14, E24, E22, and E12 are documented as pony trusses belonging to a group of trusses built in the early to mid-20th century in Ontario. Unfortunately, there are no reliable statistics available for the survival of various bridge types in Ontario or in the rest of Canada. The OSIM Inventory of Bridges owned by the Municipality of Arran-Elderslie was reviewed. The Bridge Inventory for the Municipality indicates that there are eight pony trusses of the total of 63 bridges. The following table, Table 1, lists the half through trusses in the municipality:

Table 1: Inventory of pony truss bridges in the Municipality of Arran-Elderslie

Structure No.	Structure Name	Road Name	Year of Construction	Length	Description
A14	Arranvale Bridge	Mill Road	1920	27.3 m	single span, 1 lane
E22	--	Sideroad 10	1920	18.3 m	single span, 1 lane
E24	--	B Line	1920	17.4 m	single span, 1 lane
E4	Allen's Bridge	Concession 2	1920	21.9 m	single span, 1 lane
E12	Pearce's Bridge	Sideroad 5	1930	27.1 m	single span, 1 lane
E17	--	Sideroad 25	1930	21.3 m	single span, 1 lane
E1	Preibe's Bridge	Sideroad 25	1938	23.2 m	single span, 1 lane
--	Young Bridge North	Sideroad 15	1939	21.3 m	single span, 1 lane

Therefore, in the Municipality of the Arran-Elderslie, the pony trusses represent a group of bridges built in the 1920s and 1930s. These bridges are not included on a municipal heritage register or designated under Part IV of the OHA and are not protected in a municipal heritage easement. None of the bridges have been identified as an Ontario Heritage Bridge.

A search of historicbridges.org for metal pony truss bridges in Ontario resulted in 135 one span metal pony rivet-connected bridges. Of that, 122 are one span pony truss bridges and 102 were determined Warren pony trusses. Only two of the historicbridges.org truss bridges on the inventory were determined Pratt pony trusses. There are 15

pony trusses documented in Bruce County on the historicbridge.org inventory. However, the website excludes Structures E22, E4, and E17, thus illustrating the inventory of historic pony trusses is incomplete.

The MTO Bridge Inventory for the West Region was also consulted for comparison of steel truss bridges outside of the Municipality of Arran-Elderslie. Of the 457 MTO bridges on the inventory, four are listed as steel truss bridges and are owned and maintained by the Province. Two of the MTO truss bridges are pony truss bridges; the one-span two-lane Saugeen River Bridge South built in 1953, and the three-span two-lane Ausable River Bridge built in 1963.



Photograph 1: **Steel Bridge (E4) across the Sauble River, north of 2nd Concession, Sideroad of Arran Township, circa.1966 (Courtesy of the Bruce County Museum, Online Collections)**



Photograph 2: Bridge across Sauble River proceeding north on Grey Bruce Line (County Line), Arran Township, circa.1966 (Courtesy of the Bruce County Museum, Online Collections)

3.2.6 History of Concrete Bridges

In 1899, A.W. Campbell advocated for concrete to provide an inexpensive durable arch span (Cuming 1983). At first, concrete bridges in Ontario were built in the simple arch form. These early concrete arch bridges were mass concrete but quickly engineers mastered the material and reinforced the concrete with iron or steel (Cuming 1983). There were advantages of concrete over steel as it was inexpensive using local materials and labour, and it

reduced maintenance on the bridge. The 1920s saw a boom of concrete bridge building with concrete girders being used to support short spans (Cuming 1983). Between 1905 and 1919 the earth filled arch bridge was most popular in Ontario. Most of the early activity in concrete bridge construction in Ontario focused on the earth-filled, solid spandrel arch form. The first arches were semicircular in shape while later developments used an elliptical form to achieve longer spans. The popularity of solid spandrel bridges appears to decline after 1919, although they continued to be built in small numbers into the 1930s. Many of these early 20th century earth-filled concrete arches have been removed from the Province's roads because they are too narrow to meet modern traffic needs. As a result, solid spandrel concrete arch bridges such as these that remain in active use are considered rare survivors (GRCA 2013).

In the 1930s, a new type of concrete bridge was introduced, the rigid frame (Cuming 1983). The rigid frame bridge style was introduced in 1931 and gained favour for use as a highway overpass and offered simplicity passing over creeks and streams (TRCA 2011). Concrete now challenged steel and was the primary building material. Reinforced concrete replaced mass concrete for walls, abutments, piers and footings (TRCA 2011). In the 1940s, the use of concrete columns, single piers and pre-cast, pre-stressed concrete bridge forms make an appearance in Ontario (Cuming 1983). By then, construction trended toward pre-casting concrete components off-site rather than casting the concrete in place. Today, concrete is the primary bridge building material on Ontario roads (TRCA 2011).

3.2.7 Comparative Geographic and Historic Context of Earth Filled Concrete Arch Bridges in the Municipality of Arran-Elderslie and Ontario

Structures A5 and A11 are documented as earth-filled concrete deck arch bridges. Unfortunately, there are no reliable statistics available for the survival of various bridge types in Ontario or in the rest of Canada. The OSIM Inventory of Bridges owned by the Municipality of Arran-Elderslie was reviewed. The Bridge Inventory for the Municipality indicates that there are eight pony trusses of the total of 63 bridges. The following table, Table 1, lists the half through trusses in the municipality:

Table 2: Inventory of earth filled concrete arch bridge in the Municipality of Arran-Elderslie

Structure No.	Structure Name	Road Name	Year of Construction	Length	Description
A5	Hunt's Bridge	Mill Road	1920	27.3 m	single span, 1 lane
A11	Wilson's Bridge	Sideroad 10	1920	18.3 m	single span, 1 lane

A search of historicbridges.org for one span "concrete closed spandrel deck arch" in Ontario resulted in 34 of that type. There are none of this type of bridge listed in Bruce County. Structures A5 and A11 are not on the historicbridges.org inventory, thus illustrating the inventory of concrete closed spandrel deck arch bridges is incomplete.

The MTO Bridge Inventory for the West Region was also consulted for comparison of earth filled concrete arch bridges outside of the Municipality of Arran-Elderslie. Of the 457 MTO bridges on the inventory, there are no earth filled concrete arch bridges listed.

Therefore, the earth-filled concrete deck arch bridges in the Municipality of Arran-Elderslie are rare survivors of its type in Ontario, and given these are the only two bridges of its type in Bruce County, gives these bridges a fair amount of cultural heritage significance.

4. Site Description

4.1 General Landscape Context

A field review was undertaken by Tara Jenkins, Cultural Heritage Specialist with AECOM on February 3, 2020 to conduct photographic documentation of the bridge crossings and to collect data relevant for completing a heritage evaluation of each structure. The field review was conducted from the existing rights-of-way. Results of the field review and bridge inspection reports received from the client were then utilized to describe the existing conditions of the bridge crossings. This section provides a general description of the bridges.

The nine bridges in this study are all single lane bridges with roadway widths less than 5.2 m. The structures cross navigable and non-navigable waterways primarily all set in a rural context in the Municipality of Arran-Elderslie. For steel truss bridges A14, E1, E12, E22, and E24, the locations of these bridges in general are in lower traffic areas and they cross rivers at the base of hills. Steel truss bridges E4 and E17 are located in a broader rural landscape where traffic is heavier and generally exhibit more prominent visual features since they are surrounded by flat open agricultural fields. Bridges A5 and A11, the earth filled concrete arch bridges, are almost invisible in the landscape apart from their railings.

Table 3: Summary of the Nine Structures

Bridge ID	Bridge Name	Bridge Type/Year Built[1]	River Crossing	Location
E1	Priebe's Bridge	Half-Through Truss/1938	North Saugeen River	Sideroad 25, south of Concession 2
E4	Allens Bridge (Allans Bridge)	Half-Through Truss/1920	North Saugeen River	Concession 2, west of Sideroad 20, Lot 20
E17	-	Half-Through Truss/1930	Snake Creek	Sideroad 25, Concession 8
A5	Hunt's Bridge	Earth Filled Concrete Arch/c. 1910	Tributary of Sauble River	Concession 4, Lot 27
A14	Arranvale Bridge	Half-Through Truss/1920	Sauble River	Mill Road, Lot 29
A11	Wilson Bridge	Earth Filled Concrete Arch/c. 1910	Burgoyne Creek	Sideroad 5 South, Concession 6
E24	-	Half-Through Truss/1920	Snake Creek	B Line, Concession 14
E22	-	Half-Through Truss/1920	Snake Creek	Sideroad 10, Concession 12
E12	Pearces Bridge	Half-Through Truss/1930	North Saugeen River	Sideroad 5, North of Bruce Road 11, Concession 6

[1] Year built based on Inspection Reports (B.M. Ross 2016)

5. Evaluation

5.1 Review of Existing Heritage Registers and Additional Information

As a part of the evaluation undertaken for this CHER, AECOM reviewed municipal, provincial, and federal heritage registers and inventories including:

- Bruce County *Official Plan*;
- Registered historic sites in Bruce County;
- Ontario Heritage Bridge List (MTO 2008);
- Ontario Heritage Trust's online inventory of buildings, museums, and easement properties;
- *Canadian Register of Historic Places;* and,
- *Parks Canada, Directory of Federal Heritage Designations*.

Currently none of the bridges are listed on any of the above-noted registers and are not listed or designated under the *Ontario Heritage Act* or on the Ontario Heritage Bridge List.

The following stakeholders were contacted with inquiries regarding the heritage status and for information concerning the nine structures:

Table 4: Results of Consultation for the Municipality of Arran-Elderslie Bridge Master Plan

Contact	Organization	Date(s) of Communications	Description of Information Received
Kelly Vader, Project Manager	B. M. Ross and Associates Limited	January 30, 2020	Response received. Provided bridge Inspection Forms for all structures and any other technical drawings on file. Verified that the Municipality does not have historic files on these bridges.
Sean Morris, Structural Technician	Ministry of Transportation, Bridge Office, Bridge Management	February 12 and 28, 2020	Response received. Structural drawings received for bridges A11, A14, E1, E4, E12, E17, and E22.
Archive Staff	Bruce County Museum and Archives	February 3, 2020	Response received. Staff does not have a bridge file of these bridges with architectural or technical drawings. Provided the website link to the Bruce County digital archives.

5.2 Ontario Regulation 9/06

Ontario Regulation 9/06 provides criteria for determining cultural heritage value or interest. If a property meets one or more of the following criteria it may be designated under Section 29, Part IV of the *Ontario Heritage Act*. The criteria for determining cultural heritage value under *Ontario Regulation 9/06* are outlined below:

1) The property has ***design or physical value*** because it:

- Is a rare, unique, representative or early example of a style, type, expression, material or construction method;
- Displays a high degree of craftsmanship or artistic merit; or,

- Demonstrates a high degree of technical or scientific achievement.

2) The property has ***historic or associative value*** because it:

- Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community;
- Yields, or has the potential to yield information that contributes to an understanding of a community or culture; or,
- Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.

3) The property has ***contextual value*** because it:

- Is important in defining, maintaining, or supporting the character of an area;
- Is physically, functionally, visually, or historically linked to its surroundings; or,
- Is a landmark.

The application of the criteria for the evaluation of the nine structures are provided below in Section 5.3.

5.3 Site Evaluations of the Nine Structures

5.3.1 Purpose

This following section provides a general description of each of the nine bridges and associated cultural features. The field review, bridge inspection reports, and original structural drawings received from the client were utilized to describe the existing conditions of each bridge crossing. Each bridge is evaluated against the criteria set out in *Ontario Regulation 9/06*. Within the Municipal EA process, *Ontario Regulation 9/06* is the prevailing evaluation tool when determining if a heritage resource. An evaluation table and a statement of cultural heritage value or interest is provided for each bridge.

5.3.2 Heritage Evaluation of Structure E1

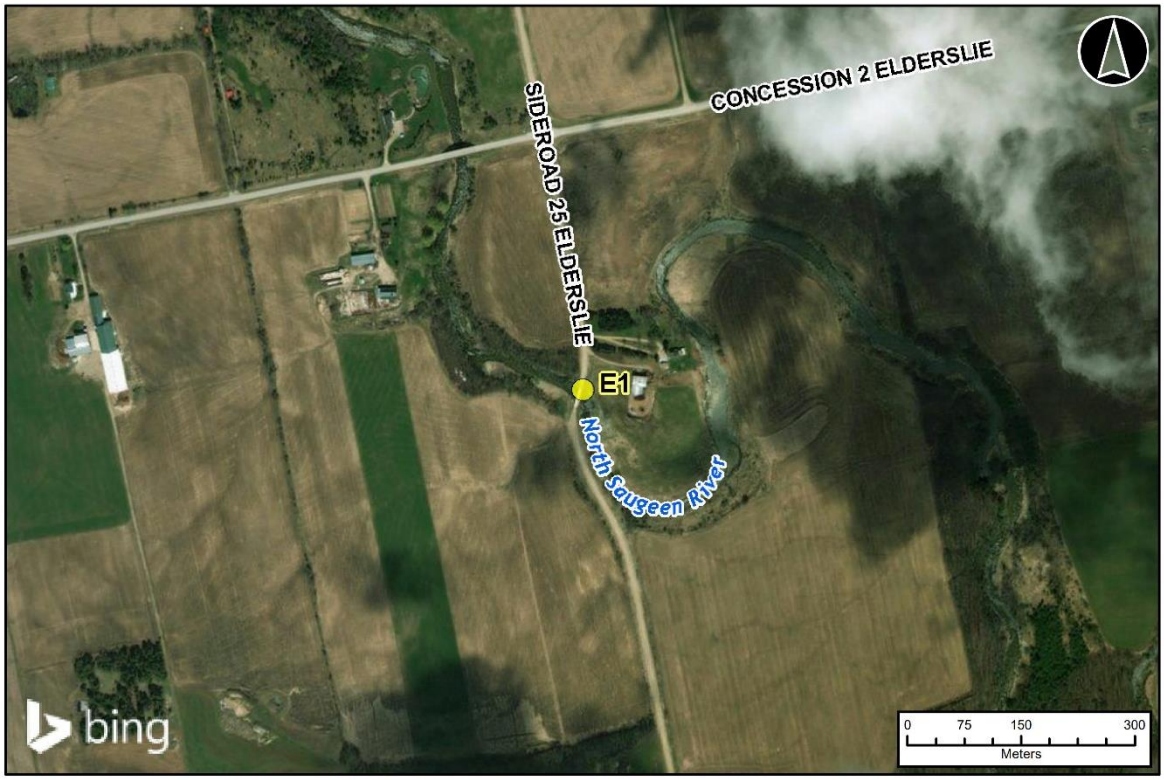


Figure 5: Location of Structure E1 on current aerial photography

Design or Physical Value of Structure E1

Structure E1 carries a single lane of Sideroad 25 Elderslie in a north-south direction over the North Saugeen River in the Municipality of Arran-Elderslie. This bridge is commonly referred to as Priebe's Bridge. The origin for the bridge name has not been identified.

Structure E1 is a steel five-panel rivet-connected Warren pony truss bridge documented as built in 1938[2] (Photograph 5: , B.M. Ross 2016a). The single span truss includes steel end posts, diagonals, top and bottom cords (steel T-beams), and outriggers, which are connected at back to back angles riveted to flat steel gusset plates at each connection (Photograph 6:). The five panels in each truss and the vertical members and outrigger struts dividing each panel are supported by the steel floor I-beams which are rivetted to the bottom chord. The bridge deck surface is concrete and includes a concrete curb which sits on the concrete soffit, also supported by the floor beams and steel stringers. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. Guard rails extend past the truss at each approach. Presently the bridge posts a 10-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

According to Nathan Holth of historicbridges.org:

> *This bridge is a Warren pony truss of relatively lightweight construction. It has a very unusual detail in that on each of the two truss lines, short sections of channel are riveted to the top of the top chord at two connection points. This appears to be an original detail designed to provide additional strength where engineers felt it was needed. It may be further evidence that this bridge is a lightweight bridge that attempted to make a very economical use of materials.*

[2] MTO files for Structure E1 demonstrate the bridge was moved to this location from a location unknown. Therefore, this bridge pre-dates 1938.

According to the Ontario Structure Inspection Manual (OSIM)- Inspection Form (B.M. Ross 2016a), the bridge has a total deck length of 25.1 m, an overall structure width of 5.4 m, a roadway length of 4.5 m, and a span length of 23.2 m. The bridge has undergone previous rehabilitation work including railing replacement (date unknown), and in 2002, some stringers were replaced or repaired, bearing seats repaired, and a bottom chord replaced.

The original design drawings for Structure E1, referred to as Priebe's Bridge, were provided by Ministry of Transportation (hereafter 'MTO') for this CHER (MTO 2-141). The plans indicate that an old timber bridge (75 feet long) with a concrete pier were to be replaced by Structure E1; a "second hand reconditioned steel superstructure supplied by the Ontario Bridge Company on concrete abutments". The repurposed superstructure was measured at 80 feet long with a wooden floor. The diagram shows that the repurposed bridge would be installed at slightly a different alignment than the timber bridge. The drawings dated May 21, 1938, are designed by R.C. McKnight, Township Engineer for the abutments and wingwalls (Appendix A). The unusual short sections of channel riveted to the top chord, noted by historicbridges.org, is likely a result of adapting Structure E1 to this site during it relocation in 1938. These drawings also indicate the Structure E1 was built prior to 1938.

Historical or Associative Value of Structure E1

Structure E1 is a representative and increasingly rare example of a single lane, one span, pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

There is a plaque located on the northwest end of the truss web (Photograph 8:). The plaque indicates the bridge was built by Dickson Bridge Works Company Limited of Campbellford, Ontario. Dickson Bridge Works Co. Limited was listed in the Canadian Trade Index in 1920-1921 as iron and steel bridge builders for railways and highways (Canadian Manufacturers Association, Incorporated 1920-1921).

Many smaller metal truss bridges were built by the well-known prolific Hamilton Bridge Company, while many other trusses were constructed by unknown builders. Bridge plaques are found only primarily on early truss bridges (historicbridges.org). It is noteworthy that Structure E1 was built by Dickson Bridge Works, a smaller local bridge builder. There are two other bridges documented by historicbridges.org in Ontario as being built by Dickson Bridge Works Co. Limited: The Keene Station Bridge, a Warren pony truss built in 1925 in Peterborough County, and the Wight Island Bridge, a Warren through truss built in 1912 in Northumberland County.

Contextual Value of Structure E1

Structure E1 carries a single lane of Sideroad 25 Elderslie in a north-south direction over the North Saugeen River in the Municipality of Arran-Elderslie. Atop the winding incline to the bridge, single lane signs are posted, however the bridge cannot be seen unless the bridge is approached from the bottom of the valley. Directly to the east of the bridge is a farmstead, including a large barn with a fieldstone foundation. The bridge is a part of a picturesque rural landscape view within the North Saugeen river valley.

The bridge is located in the former Township of Elderslie, just west of the settlement of Chesley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the jog in Sideroad 25, at the location of the current bridge. The concession road is shown as carrying over the river which suggests that the road was opened and there was an earlier bridge built at this location. The 1938 plans for the relocation of the superstructure to this site does verify that there was an earlier timber bridge. The plans show that the road and bridge location had to be adjusted to fit the new bridge. In 1946, the NTS Map (Figure 4) shows the crossing as an iron bridge, which is presumed to be the study bridge. Therefore, the site of Structure E1 may represent a crossing of the North Saugeen River that has existed for over 100 years.



Photograph 3: Distant view of Structure E1 on Sideroad 25, before the jog, looking north (AECOM 2020)



Photograph 4: View of Structure E1 on Sideroad 25, downslope, looking north (AECOM 2020)



Photograph 5: Portal view of Structure E1, looking north (AECOM 2020)



Photograph 6: Top Cord Connections of Structure E1 (AECOM 2020)



Photograph 7: View of Outriggers on the east elevation of Structure E1 (AECOM 2020)



Photograph 8: Photograph of historic plaque on Structure E1 (historicbridge.org)



Photograph 9: Photograph of channel riveted to top chord of Structure E1 (historicbridges.org)

Table 5: Ontario Regulation 9/06 Evaluation for Structure E1

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E1, known as Priebe's Bridge, is a representative example of an early/mid-20th century lightweight one span, single lane, steel five-panel Warren pony truss bridge. The bridge was moved to the site in 1938 (original construction date unknown). The use of rivetted steel connections and outriggers are indicative of the early/mid 20th century and are technological rare survivors in Ontario. The bridge features an unusual channel rivetted to the top chord above two connection points on each truss, likely due to its relocation. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E1 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E1 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		

Criteria	Meets Criteria (Yes/No)	Rationale
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E1 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Sideroad 25, a historic thoroughfare, and the North Saugeen River. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E1 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	Yes	Structure E1 reflects the work of the Dickson Bridge Works Co. Limited of Campbellford, Ontario, in Northumberland County. As builders of iron and steel bridges in the early/mid 20th century, the bridge represents the work of this local builder. In addition, the Ontario Bridge Company, active through the 20th century, supplied the bridge for its relocation in 1938.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure E1 is located within a valley associated with the North Saugeen River. It is almost invisible in the landscape on approach until one travels within the valley. Therefore, it is not significantly important in defining, maintaining, or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	This bridge is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	While the half-through truss is visibly appealing to observers, Structure E1 it is not considered a defining element to the rural setting or a waypoint or gateway along Sideroad 25. As such, the subject bridge does not meet this criterion.

The above evaluation confirms that Structure E1 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical and historical/associative value, making it a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure E1

Structure E1, also known as Priebe's Bridge, is a single-span lightweight steel five-panel rivet-connected Warren pony truss bridge with cast-in-place concrete abutments that carries a single lane of Sideroad 25 Elderslie over the North Saugeen River, just east of Chelsey in the Municipality of Arran-Elderslie, Bruce County. The bridge was relocated from an unknown location in 1938 replacing a timber bridge. The bridge design of E1 and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of

its era, however being a steel truss with outriggers and with its unique construction details such as its steel riveted connections and the non-traditional steel channels on the top chord, it is considered a rare survivor in Ontario. The northwest end of the top chord has a builder's plaque, indicating that the bridge was built by a smaller local bridge building company, the Dickson Bridge Works Co. Limited of Campbellford Ontario. These bridge plaques are found only on early truss bridges. The Ontario Bridge Company, active throughout the 20th century, assisted in the relocation efforts of this bridge to this site in 1938.

Heritage Attributes of Structure E1

The following are the heritage attributes of Structure E1:

- Steel single span Warren pony truss configuration with five panels;
- Single-lane construction;
- Rivet connections;
- Outriggers; and,
- Builder plaque.

5.3.3 Heritage Evaluation of Structure E4



Figure 6: Location of Structure E4 on current aerial photography

Design or Physical Value of Structure E4

Structure E4 carries a single lane of Concession 2 Elderslie in an east-west direction over the North Saugeen River in the Municipality of Arran-Elderslie. The bridge crossing is known as Allens (or Allans) Bridge. The origin for the bridge name has not been identified.

Structure E4 is a steel five-panel rivet-connected Warren pony truss bridge documented as built in 1920[3] (Photograph 11**:** , B.M. Ross 2016b). The single span truss includes steel end posts, diagonals, verticals, top and bottom cords (steel T-beams), and outriggers which are constructed at back to back angles riveted between two flat steel gusset plates at each connection (Photograph 12). The five panels in each truss and the vertical members and outrigger struts dividing each panel are supported by the steel floor I-beams which are rivetted to the bottom chord. The bridge deck surface is concrete and includes a concrete curb which sits on the concrete soffit, also supported by the floor beams and steel stringers. There are two visible expansion joints at either end of the span (not original in the bridge design). The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. The bridge retains its original steel post and lattice style railings. Guard rails extend past the truss at each approach. Presently the bridge posts a 18/29/36-Tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

According to the Ontario Structure Inspection Manual (OSIM)- Inspection Form (B.M. Ross 2016b), the bridge has a total deck length of 22.7 m, an overall structure width of 6.4 m, a roadway length of 5.2 m, and a span length of 21.9 m. The bridge has undergone previous rehabilitation work including deck replacement, truss repairs, and installation of expansion joints in 1991. A drawing of the truss from the 1991 repairs is located in Appendix B of this report.

[3] Revised construction date to 1930 as indicated by the MTO file design drawings.

The original design drawings for Structure E4 were provided by MTO (2-138) for this CHER. The design specifies that the plans are for a new bridge at the crossing known as “Allens Bridge”. The design plans indicate that Structure E4 is a replacement of an earlier crossing. The Steel Plan was drawn in April 1930 by Fred B. James A.M.E.I.C., County Engineer, of Walkerton (Appendix B). The design drawings include detail of the lattice handrail, truss construction, and the concrete abutment plans. Other drawings of the truss were prepared by Sarnia Bridge Company Limited, a prominent structural steel fabricating company, noting Fred. B. James as the engineer. The Sarnia Bridge Company drawings name the bridge as “Allans Bridge”. Therefore, Structure E4 was built by Sarnia Bridge Company.

Historical or Associative Value of Structure E4

Structure E4 is a representative and increasingly rare example of a single lane, one span, pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

Structure E4 was built by the Sarnia Bridge Company with design by Fred B. James, the County Engineer. The Sarnia Bridge Company also built the seven-panel rivet-connected Pratt through truss named Big Irwin Bridge, also in the Municipality Arran-Elderslie (historicbridges.org). The company specialized in fabricating steel for bridges, scaffolding, and joists. The company was associated with the construction of the Cull Drain Bridge (1910) and the Blue Water Bridge (1938), both located in Sarnia. The Sarnia Bridge Company was bought by Anthes-Imperial Limited in 1958 (Egan 2016).

Contextual Value of Structure E4

Structure E4 carries a single lane of Concession 2 Elderslie in an east-west direction over the North Saugeen River in the Municipality of Arran-Elderslie. The bridge is situated on a relatively flat concession road within a rural agricultural context. There are single lane signs posted at a distance from the bridge. Directly to the west of the bridge is a farmstead, including a two-storey rusticated concrete block house with a wood portico. The bridge is a part of a picturesque rural landscape view.

The bridge is located in the former Township of Elderslie, just west of the settlement of Chesley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates Concession 2 Elderslie crossing a watercourse at the location of the current bridge. The concession road is shown as carrying over the river which suggests that the road was opened and there was an earlier bridge built at this location. The 1930 plan of the bridge indicates that Structure E4 replaced a previous crossing named Allens Bridge, however a review of historical mapping and archival records has not confirmed what type of bridge was previously located at this site. In 1946, the NTS Map (Figure 4) shows the crossing as an iron bridge which is presumed to be the subject bridge. Photograph 1 (above) shows the bridge in 1966. The photograph shows the approaches have been modified since 1966, likely due to road widening. Therefore, the site of Structure E4 may represent a crossing of the North Saugeen River that has existed for over 100 years.



Photograph 10: Distant view of Bridge E4 on Concession 2, looking west (AECOM 2020)



Photograph 11: Portal view of Structure E4, looking west (AECOM 2020)



Photograph 12: Top Cord Connections of Structure E4 (AECOM 2020)



Photograph 13: Structure E4 and its approach, looking east (AECOM 2020)

Table 6: Ontario Regulation 9/06 Evaluation for Structure E4

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E4 is a representative example of an early/mid 20th century one span, single lane, steel five-panel Warren pony truss bridge (built in 1930). The use of rivetted steel connections and outriggers is indicative of the early/mid 20th century and is a rare survivor in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E4 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E4 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E4 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Concession 2 Elderslie, a historic thoroughfare, and the North Saugeen River. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E4 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	Yes	Structure E4 reflects the work of Fred B. James, A.M.E.I.C., the County Engineer, Walkerton. E4 was built by the prominent bridge building, the Sarnia Bridge Co. Limited, under the direction of Fred B. James.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure E4 is located along Concession 2 Elderslie that crosses the North Saugeen River. From a distance, the bridge is almost invisible in the landscape until approached. Therefore, it is not significantly important in defining, maintaining, or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure E4 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.

Criteria	Meets Criteria (Yes/No)	Rationale
iii) Is a landmark.	No	While the half-through truss is visibly appealing to observers, Structure E4 it is not considered a defining element to the rural setting or a waypoint or gateway along Concession 2 Elderslie. As such, the subject bridge does not meet this criterion.

The above evaluation confirms that Structure E4 meets at least one of the criteria set out in *Ontario Regulation 9/06* of the *Ontario Heritage Act.* The bridge was determined to have design/physical and historical/associative value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value of Interest of Structure E4

Structure E4, Allens Bridge, is a single-span single-lane steel Warren pony truss bridge that carries Concession 2 Elderslie over the North Saugeen River, just east of Chesley, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1930, the bridge design and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers and with its unique construction details such as its steel riveted connections, it is considered a rare survivor in Ontario. Structure E4 reflects the work of Fred B. James, A.M.E.I.C., County Engineer, Walkerton and was built by the prominent bridge building company, the Sarnia Bridge Co. Limited, under the direction of Fred B. James.

Heritage Attributes of Structure E4

The following are the heritage attributes of Structure E4:

- Steel single span Warren pony truss configuration with five panels;
- Single-lane construction;
- Post and lattice railing system;
- Outriggers; and,
- Rivet connections.

5.3.4 Heritage Evaluation of Structure E12



Figure 7: Location of Structure E12 on current aerial photography

Design or Physical Value of Structure E12

Structure E12 carries a single lane[4] of Sideroad 5 Elderslie in a north-south direction over the North Saugeen River in the Municipality of Arran-Elderslie. The bridge crossing is known as Pearces Bridge. The origin for the bridge name has not been identified. A plaque, once affixed on the southeast truss member of this bridge, is missing.

Structure E12 is a five-panel rivet-connected steel Pratt pony truss bridge documented as built in 1930[5] (Photograph 15**:** , B.M. Ross 2016c). The single span truss includes steel end posts, diagonals, steel top and bottom cords, and outriggers (acting as the verticals), which are constructed at angles riveted between the top and bottom chord, in absence of steel gusset plates for connection (Photograph 16**:**). The light-weight diagonal members angle toward the centre and bottom of the bridge. The five panels in each truss and the outrigger struts dividing each panel are supported by the steel floor I-beams which are riveted to the bottom chord. The bridge deck surface is wood which sits on the wood soffit, also supported by the floor beams and steel stringers. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. The bridge has not retained its original steel railings. Guard rails extend past the truss at each approach. Presently the bridge posts an 8-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

According to Nathan Holth of historicbridges.org:

> *This bridge is a lightweight pony truss with members and chord composed largely of angles and no box beams or channels present in the design. Bridges of this design tend to be older and/or were built on roads which would carry less and lighter traffic. The bridge is a traditionally composed example of its type with no unusual or unique details noted. The lightweight*

[4] Inspection report states the bridge is two lanes, however there are posted “one lane” sign.
[5] The MTO file design drawings by the Ontario Bridge Co. indicate the bridge was built in 1932.

design does suggest it is an earlier generation riveted truss bridge. This example retains good historic integrity, although one outrigger was badly damaged by a collision and the plaque is missing. Sideroad 5 is an otherwise straight road, but it curves suddenly so as to cross the river at an economic angle, which was a typical practice during the period when the bridge was built. On busier high speed roads these sudden curves are often condemned by traffic engineers as a safety hazard. On a quiet, rural gravel sideroad, these curves are a welcome change that conceal this bridge until the curve is rounded, with the bridge popping up, a pleasant surprise for those who may have not expected to find it.

According to the OSIM Inspection Form (BM Ross 2016c), the bridge has a total deck length of 29.3 m, an overall structure width of 5.7 m, a roadway length of 4.8 m, and a span length of 27.1 m. The bridge has undergone previous rehabilitation work including the south abutment repaired in 1971, some stringers replaced in 2002, and the deck and some stringers replaced in 2008. In addition, steel flex beam type guard rails were constructed along the span of the bridge. The original railing was replaced by 2011 captured by photo documentation taken by Nathan Holth, historicbridge.org.

The original design drawings for E12 were provided by MTO for this CHER (MTO 2-132). The truss is drawn by the Ontario Bridge Company, Toronto, dated May 14, 1932 (Appendix C). The Ontario Bridge Company was a Canadian company of particular importance for its truss bridges. The cross section illustrates the bridge as a five-panel structure with outriggers. The MTO documents indicate that there was a wooden bridge at the location prior to Structure E12. A drawing by G.E. Stephenson, County Engineer, June 15, 1927 provides a design for the south abutment presumably in preparation for the new bridge. The plans indicate that the new bridge requires a change in the grade of the road.

Historical or Associative Value of Structure E12

Structure E12 is a representative and increasingly rare example of a single lane, one span, pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

Structure E12, was built by the Ontario Bridge Company, Toronto, Ontario a prominent truss building company in the 20th century, who built two other pony truss bridges in the Municipality of Arran-Elderslie; Youngs Bridge North, built 1939, and Youngs Bridge South, built 1939. The Ontario Bridge Company also assisted in the movement of Structure E1, located on Sideroad 25 Elderslie in 1938. In addition, historicbridges.org documents six additional Warren pony truss bridges built by the Ontario Bridge Company outside of the Municipality of Arran-Elderslie in Ontario:

- Anderson Bridge, Ottawa, metal five panel rivet-connected Warren pony truss, one span, built 1947
- Bannerman Bridge, South Bruce, Bruce County, metal six panel rivet-connected Warren pony truss, one span, built 1939
- Conley Bridge, Ottawa, metal four panel rivet-connected Warren pony truss, one span, built 1947
- McQuarrie Bridge, Grey County, metal six panel rivet-connected Warren pony truss, one span, built 1947
- Wallace Avenue Foot Bridge, Toronto, metal seven panel rivet-connected Warren pony truss, three span, built 1947
- Woodlawn Bridge, Haldimand County, metal six panel rivet-connected Warren pony truss, one span, built 1929

Therefore, Structure E12 belongs to a small group of Warren pony truss bridges still extant that are known to have been built by the Ontario Bridge Company in Ontario.

Contextual Value of Structure E12

Structure E12 carries a single lane of Sideroad 5 Elderslie in a north-south direction over the North Saugeen River in the Municipality of Arran-Elderslie. The bridge is situated on a curve over the river crossing just west of the village of Paisley. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Elderslie, just east of the settlement of Paisley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the jog in Sideroad 5 Elderslie at the location of the current bridge. The concession road is shown as carrying over the river which suggests that the road was opened and there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type bridge, if any, was extant on the site. In 1946, the NTS Map (Figure 4) shows the crossing as an iron bridge which is presumed to be the study bridge. Therefore, the site of Structure E12 may represent a crossing of the North Saugeen River that has existed for over 100 years.



Photograph 14: Distant view of Structure E12 on Sideroad 5, looking south (AECOM 2020)



Photograph 15: Portal view of Structure E12, looking south (AECOM 2020)



Photograph 16: Top Cord Connections of Structure E12 (AECOM 2020)



Photograph 17: Structure E12 and its approach, looking north (AECOM 2020)

Table 7: Ontario Regulation 9/06 Evaluation for Structure E12

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E12 is a representative example of a lightweight early/mid 20th century one span, single lane, steel five-panel Pratt pony truss bridge (built in 1932). The use of rivetted steel connections and outriggers is indicative of the early/mid 20th century and are rare survivors in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E12 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E12 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E12 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Sideroad 5, a historic thoroughfare, and the North Saugeen River. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E12 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	Yes	The steel superstructure was designed and built by the Ontario Bridge Company, a prominent 20th century Canadian company in steel truss bridge building, as indicated by the truss plans in drawn in 1932. In addition, the bridge abutments were designed by G.E. Stephenson, the County Engineer.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure E12 is located on Sideroad 5 Elderslie at the base of a hill, within the valley of the North Saugeen River. It is almost invisible in the landscape on approach until cresting the hill on either side of Sideroad 5 Elderslie. Therefore, it is not significantly important in defining, maintaining, or supporting the character of the area. The subject bridge does not meet this criterion.

Criteria	Meets Criteria (Yes/No)	Rationale
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure E12 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	While the half-through truss is visibly appealing to observers, Structure E12 it is not considered a defining element to the rural setting or a waypoint or gateway along Sideroad 5. As such, the subject bridge does not meet this criterion.

The above evaluation confirms that Structure E12 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical and historical/associative value and therefore is considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure E12

Structure E12, Pearce's Bridge, is a single-lane five panel steel Pratt pony truss bridge that carries a single lane of Sideroad 5 over the North Saugeen River, just east of the village of Paisley, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1932, the bridge design and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers and steel riveted connections, it is considered a rare survivor in Ontario. The structure was designed and built by the Ontario Bridge Company, a prominent Canadian company in steel truss bridge building. The bridge abutments were designed by G.E. Stephenson, the County Engineer.

Heritage Attributes of Structure E12

The following are the heritage attributes of Structure E12:

- Steel single span Pratt pony truss configuration with five panels;
- Timber deck
- Single-lane construction;
- Outriggers; and,
- Rivet connections.

5.3.5 Heritage Evaluation of Structure A14

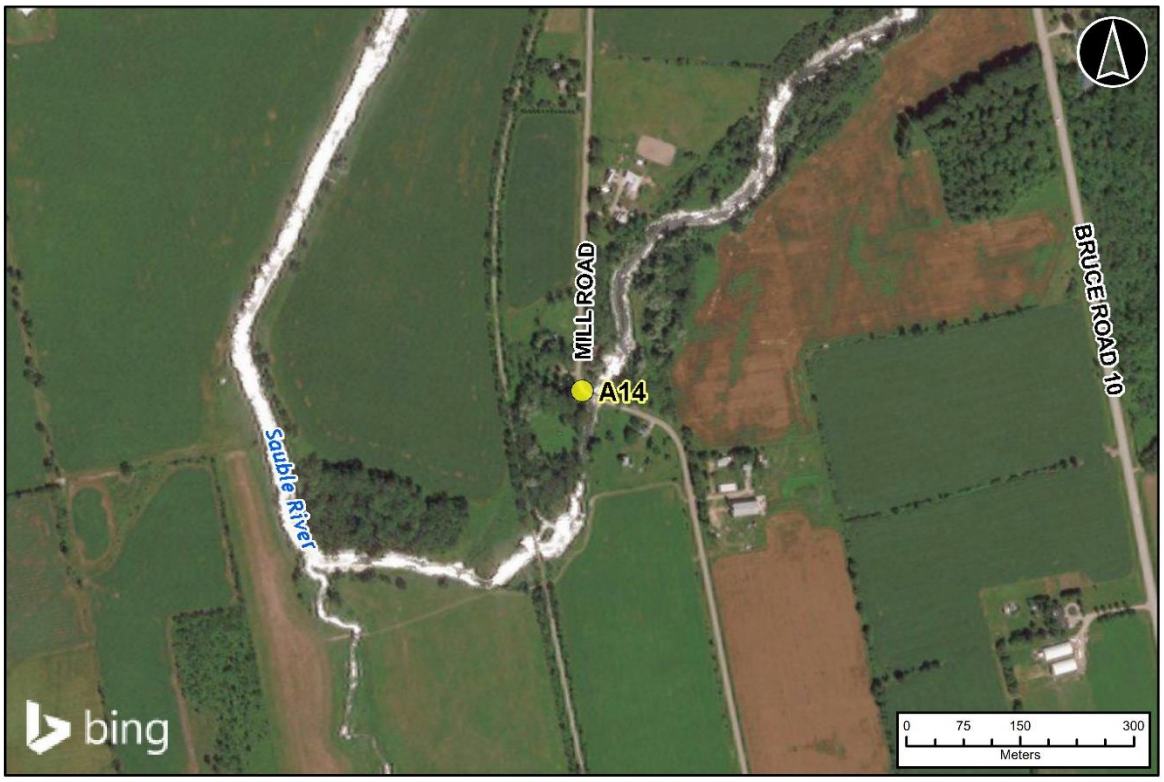


Figure 8: Location of Structure A14 on current aerial photography

Design or Physical Value of Structure A14

Structure A14 carries a single lane of Mill Road in a north-south direction over the Sauble River in the Municipality of Arran-Elderslie. This bridge is commonly referred to as Arranvale Bridge- a bridge name associated with its connection to the Arran Vale Mills (Section 5.3.11.3).

Structure A14 is a six-panel steel rivet-connected Warren pony truss bridge documented as built in 1920 (Photograph 20: B.M. Ross 2016d). The single span truss includes steel end posts, diagonals, verticals, top and bottom cords (steel T-beams), which are constructed at back to back angles riveted between two flat steel gusset plates at each connection (Photograph 21:). The seven panels in each truss and the steel T-beam vertical members dividing each panel are supported by the steel floor I-beams which are riveted to the bottom chord. The bridge deck top is wood with an asphalt wearing surface which sits on the wood soffit, also supported by the floor beams and steel stringers. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. The bridge has not retained its original steel railings. Guard rails extend past the truss at each approach. Presently the bridge posts a 14-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

According to Nathan Holth of historicbridges.org:

> *The traditional scene of a mill with a metal truss bridge next to it would have been a common scene a long time ago but today rare. Unknown reason for date memorial plaque.*

The original design drawings for A14 were not available when this CHER was completed. According to the OSIM - Inspection Form (BM Ross 2016d), the bridge has a total deck length of 27.9 m, an overall structure width of 5.45 m, a roadway length of 4.7 m, and a span length of 27.3 m. The bridge has undergone previous rehabilitation work

including a recent deck, joints, and an asphalt wearing surface. In addition, there are steel flex beam type guard rails along the span of the bridge. Rehabilitation drawings from MTO (MTO 2-42) date to 1967 and 1991 (Appendix D).

Historical or Associative Value of Structure A14

Structure A14 is a representative and increasingly rare example of a pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

The bridge contains a plaque on the northeast truss end. The plaque indicates the bridge was named the Stan Dolphin Memorial Bridge (Photograph 22:). No information on this name could be gleaned at the time of this report.

Contextual Value of Structure A14

Structure A14 carries a single lane of Mill Road in a north-south direction over the Sauble River in the Municipality of Arran-Elderslie. The bridge is situated on a curve over the river crossing in the former settlement of Arranvale in the former Township of Arran. The location of the bridge is historically linked to the mill site, seen from the north side of the bridge.

Structure A14 may represent a crossing of the Sauble that has existed for over 100 years. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the sharp curve of Mill Road, at the location of the current bridge. The road is shown as carrying over the river which suggests that the road was opened and there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type of bridge, if any, was extant on the site. On the 1880 map, just north of the location of the bridge, is a grist and saw mill. In addition, to the south of the bridge was a house owned by Eli Cummer and at the west end of the bridge was a house owned by S. Cummer. S. Cummer was a Proprietor of the saw and grist mills (Figure 9; H. Belden & Co. 1880). The saw and grist mills, situated about a half mile south of Invermay post-office, bore the name of “Arran Vale Mills”. Luke Gardner built the sawmill in 1855 and grist-mill 1857 to help make Invermay a business centre (Mika and Mika). Therefore, the Structure A14 acts as a gateway into the settlement of Invermay and is considered as part of the 19th century mill site.

In 1946, the NTS Map (Figure 4) shows A14 as located within the settlement area of Arranvale. The crossing as an iron bridge, which is presumed to be the study bridge. Just upstream from the bridge there is the grist mill with a concrete dam. The remnants of that industry are still visible from the bridge, looking north.

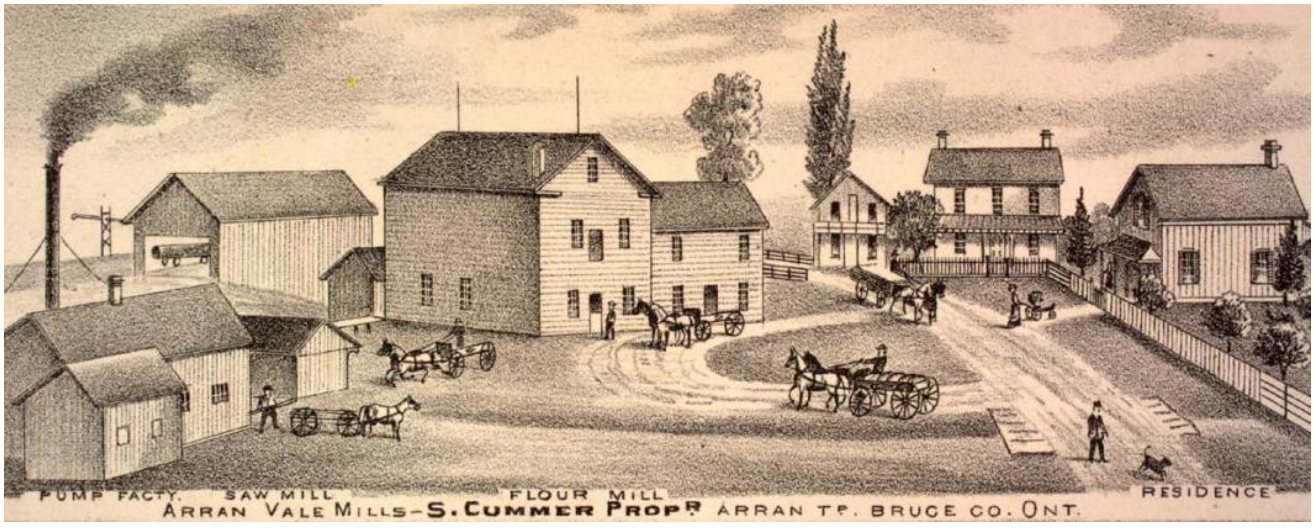


Figure 9: Buildings on S. Cummer’s Property in 1880 (H. Belden & Co. 1880)



Photograph 18: Mill Road, the curve before the bridge, looking west (AECOM 2020)



Photograph 19: Distant view of A14, looking west (AECOM 2020)



Photograph 20: Portal view of Structure A14, looking west (AECOM 2020)



Photograph 21: Top Cord Connections of Structure A14 and view of mill buildings, looking north (AECOM 2020)



Photograph 22: Bridge Plaque on Structure A14 (AECOM 2020)



Photograph 23: Structure A14 and its approach, looking southeast (AECOM 2020)



Photograph 24: View of mill buildings and dam from A14, looking north (AECOM 2020)



Photograph 25: Mill structures on Mill Road near A14, looking east (AECOM 2020)

Table 8: Ontario Regulation 9/06 Evaluation for Structure A14

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure A14 is a representative example of an early/mid 20th century one span, single lane, steel six-panel Warren pony truss bridge (built in 1920). The use of rivetted steel connections is indicative of the early/mid 20th century and is a rare survivor in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, A14 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure A14 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	Yes	Structure A14 was constructed in association with the settlement of Invermay which maintains a rural character to the present. The structure maintains a direct connection with Mill Road, a historic thoroughfare, and the Sauble River. The bridge crossing on Mill Road is associated with the historic mill site, Arran Vale Mills (saw and grist mill), that had been established at that location since the 1850s.
ii) Yields or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure A14 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure A14 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	Yes	Structure A14 is located on a curve on Mill Road which crosses the Sauble River. It is almost invisible in the landscape on approach until one travels the curve and approaches the bridge. However, the bridge location is considered an integral heritage feature in the cultural heritage landscape of the mid-19th century mill site. The bridge/mill scene was once a common scene in Ontario but is now rare. Therefore, the bridge crossing is important in maintaining and supporting the character of the area.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure A14 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.

Criteria	Meets Criteria (Yes/No)	Rationale
iii) Is a landmark.	Yes	The half-through truss is visibly appealing to observers and forms a part of the 19th century mill site landscape. In addition, Structure A14 acts as a gateway along Mill Road for entrance into the settlement of Invermay.

The above evaluation confirms that Structure A14 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical and contextual value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure A14

Structure A14, also known as the Arranvale Bridge and Stan Dolphin Memorial Bridge, is a single-lane six panel steel Warren pony truss bridge that carries a single lane of Sideroad 5 Elderslie over the Sauble River, just south of Tara, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1920, the bridge design and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers and steel riveted connections, it is considered a rare survivor in Ontario. The truss bridge is an integral heritage element in the cultural heritage landscape of the historical mill site of Arran Vale Mills which forms a historical scene, once common across Ontario, but is considered a rare scene today. The builder/architect of the bridge is currently unknown.

Heritage Attributes of Structure A14

The following are the heritage attributes of Structure A14:

- Steel single span Warren pony truss configuration with six panels;
- Single-lane construction;
- Rivet connections; and,
- Location on Mill Road, spanning the Sauble River.

5.3.6 Heritage Evaluation of Structure E17



Figure 10: Location of Structure E17 on current aerial photography

Design or Physical Value of Structure E17

Structure E17 is a five-panel rivet-connected Warren pony truss bridge documented as built in 1930 (Photograph 27: , B.M. Ross 2016e). The single span truss includes steel end posts, diagonals, steel top and bottom cords, and outriggers, which are constructed at angles riveted between the top and bottom chord, between two flat steel gusset plates at each connection (Photograph 28:). The five panels in each truss and the vertical outrigger struts dividing each panel are supported by the steel floor I-beams which are riveted to the bottom chord. The bridge deck top surface is cast-in-place concrete which sits on the concrete soffit, also supported by the floor beams and steel stringers. The deck includes cast-in-place concrete curbs. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. The bridge approaches are relatively flat. The bridge has retained its original steel post and lattice style railings. Guard rails extend past the truss at each approach. Presently the bridge posts a 11-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

The original design drawings of the truss for Structure E17 were not available when this CHER was completed. However, a drawing by G.E. Stephenson, County Engineer, Walkerton, June 20, 1927 provides a plan of abutments presumably in preparation for a new bridge at the location of Structure E17. The distance between the abutments is shown as 70 feet (21.3 m) which is the length of Structure E17. Therefore, the plans drawn only for the abutments may indicate that E17 was a repurposed bridge from another location (Appendix E).

According to the OSIM - Inspection Form (BM Ross 2016e), the bridge has a total deck length of 22.9 m, an overall structure width of 5.6 m, a roadway length of 4.6 m, and a span length of 21.3 m. The bridge has undergone previous rehabilitation work, including 1997 when the wingwalls fronts were filled.

Historical or Associative Value of Structure E17

Structure E17 is a representative and increasingly rare example of a pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

The absence of bridge drawings of the superstructure and the drawings of the bridge abutments drawn by G.E. Stephenson, the County Engineer, suggests this bridge was relocated to this site. The builder of the bridge is unknown.

Contextual Value of Structure E17

Structure E17 carries a single lane of Sideroad 25 Elderslie in a north-south direction over Snake Creek in the Municipality of Arran-Elderslie. The bridge is situated on a straight road over the water crossing just north of Chesley. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Elderslie, just north of the settlement of Chesley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the jog in Sideroad 25 Elderslie at the location of the current bridge. The concession road is shown as carrying over the creek which suggests that the road was opened and there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type of bridge, if any, was extant on the site. In addition, the 1880 map shows a mill directly adjacent on the west side of the bridge, at the southwest corner of Sideroad 25 Elderslie and Concession 8 Elderslie. In 1946, the NTS map (Figure 4) shows the bridge at the location of E17, but not the bridge type. The site of the former mill is not shown on the 1946 NTS map indicating the mill was no longer extant. Therefore, Structure E17 may represent a crossing of Snake Creek that has existed for over 100 years.



Photograph 26: Distant view of Bridge E17 on Sideroad 25, looking north (AECOM 2020)



Photograph 27: Portal view of Structure E17, looking north (AECOM 2020)



Photograph 28: Top Cord Connections and Lattice Railing of Structure E17 (AECOM 2020)



Photograph 29: Structure E17 and its approach, looking south (AECOM 2020)



Photograph 30: View of Structure E17 from Concession Road 8 Elderslie, looking southwest (AECOM 2020)

Table 9: Ontario Regulation 9/06 Evaluation for Structure E17

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E17 is a representative example of an early/mid 20th century one span, single lane, steel five-panel Warren pony truss bridge (built 1930). The use of rivetted steel connections and outriggers is indicative of the early/mid 20th century and are rare survivors in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E17 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E17 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		

Criteria	Meets Criteria (Yes/No)	Rationale
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E17 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Sideroad 25 Elderslie, a historic thoroughfare, and Snake Creek. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E17 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure E17 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	Yes	Structure E17 is located on Sideroad 25 Elderslie crossing Snake Creek. Located in a flat landscape consisting of agricultural fields, it is a visible feature from a distance, from the well-travelled Concession Road 8 Elderslie. Therefore, Structure E17 defines, maintains and supports the rural nature of the road.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure E17 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	Yes	The half-through truss, Structure E17, is visibly appealing to observers, and is considered a defining element to the rural setting along Sideroad 25 Elderslie, as it is seen from Concession Road 8 Elderslie.

The above evaluation confirms that Structure E17 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical and contextual value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure E17

Structure E17 is a single-lane five-panel steel Warren pony truss bridge that carries a single lane of Sideroad 25 Elderslie over Snake Creek, north of Chelsey, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1930, the bridge design and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers it is considered a rare survivor in Ontario. The builder/architect of the bridge is currently unknown.

Heritage Attributes of Structure E17

The following are the heritage attributes of Structure E17:

- Steel single-span Warren pony truss configuration with five panels;
- Single-lane construction;
- Post and lattice railing system;
- Rivet connections;
- Outriggers; and,
- Location on Sideroad 25 Elderslie, spanning Snake River.

5.3.7 Heritage Evaluation of Structure A5

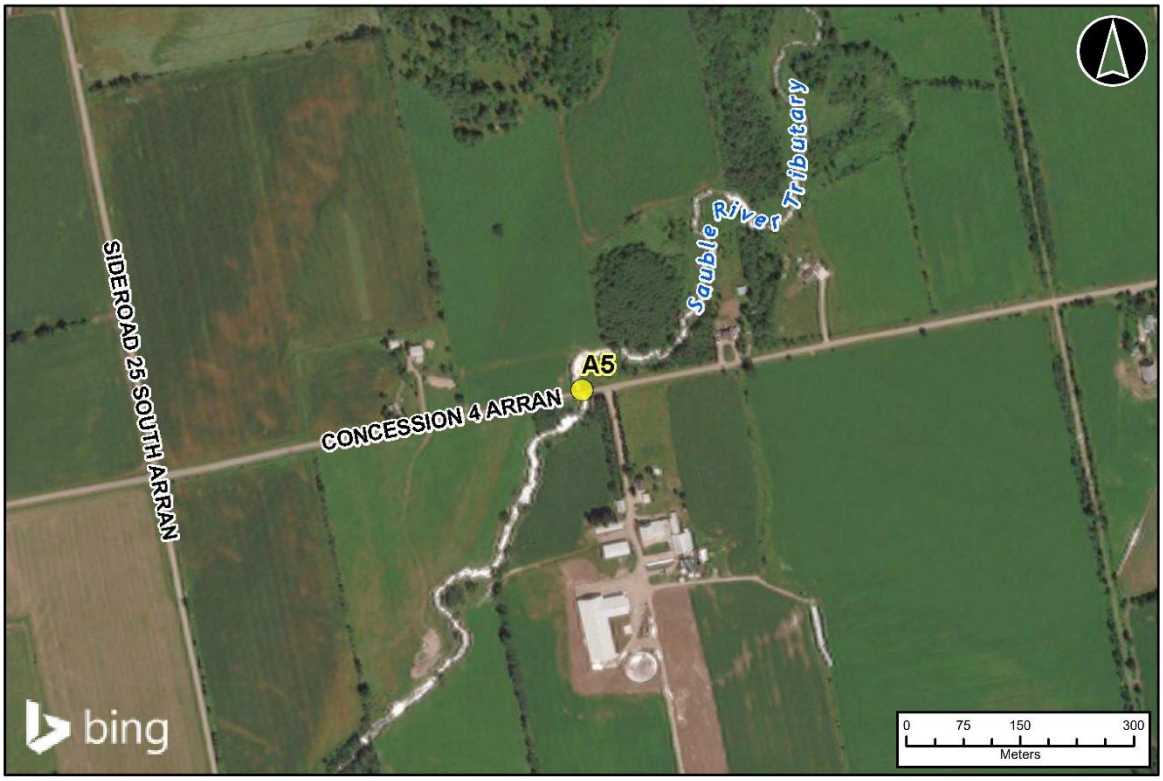


Figure 11: Location of Structure A5 on current aerial photography

Design or Physical Value of Structure A5

Structure A5 carries a single lane of Concession Road 4 Arran in an east/west direction over a tributary of the Sauble River in the Municipality of Arran-Elderslie. The bridge crossing is known as Hunt's Bridge. The origin for the bridge name has not been identified.

Structure A5 is a single span, earth-filled solid concrete spandrel deck arch bridge, built around 1910 (Photograph 32, B.M. Ross 2016f). In general, the bridge consists of a curved, elliptical shaped concrete arch slab with vertical walls (spandrels) cast on top of the slab that forms the sides of the bridge. The solid cast-in-place concrete spandrel walls contain the earth filled core used to build up the structure to the road deck. The area between the walls and top of the arch was filled with granular material and the roadbed was placed on the fill. The earth fill was typically earth, rocks, and or other types of fill. The thin board finish is still visible in the concrete (Photograph 35). Structure A5 is a good example of functional engineering design expressing the transfer of loads through the arch to the abutments. The original parapet or railing has been replaced with a precast concrete parapet wall (Photograph 36). The bridge has a 9-tonne posted bridge load. The wearing surface of the deck is gravel.

The original design drawings for A5 were not available when this CHER was completed. According to the OSIM - Inspection Form (BM Ross 2016f), the bridge has a total deck length of 14.7 m, an overall structure width of 4.9 m, a roadway length of 4.1 m, and a span length of 12.3 m. The bridge has undergone previous rehabilitation work in 2008 including new parapets and guardrail, both precast concrete.

Historical or Associative Value of Structure A5

Structure A5 is an early and rare survivor of its bridge type. The builder of the bridge is unknown at the time of the report.

Contextual Value of Structure A5

Structure A5 carries a single lane of Concession Road 4 Arran in an east/west direction over a tributary of the Sauble River in the Municipality of Arran-Elderslie. The bridge is situated on a straight road over the water crossing just south of the Town of Tara. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Arran. Structure A5 may represent a river crossing that has existed for over 100 years. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the location of the bridge along a concession road as surveyed and open for use. The concession road is shown as carrying over the creek which suggests that the road was opened and there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type of bridge, if any, was extant on the site. In addition, the 1880 map shows a farmhouse owned by William Holmes on the north side of Concession Road 4. In 1946, the NTS map (Figure 4) shows the bridge at the location of A5, but not the bridge type.



Photograph 31: Distant view of Structure A5 on Con.4 Arran, looking west (AECOM 2020)



Photograph 32: Portal view of Structure A5, looking west (AECOM 2020)



Photograph 33: Parapet Wall on south elevation Structure A5 (AECOM 2020)



Photograph 34: Structure A5 and its approach, looking east (AECOM 2020)



Photograph 35: South elevation of A5 (Courtesy of B.M. Ross 2012)



Photograph 36: South elevation of A5 prior to installation of the new parapet wall (Courtesy of B.M. Ross 2008)

Table 10: Ontario Regulation 9/06 Evaluation for Structure A5

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure A5 is an early and rare example of a one span, single lane, earth-filled solid concrete spandrel deck arch bridge built approximately 1910.
ii) Displays a high degree of craftsmanship or artistic merit.	Yes	Structure A5, is a representative example of an increasingly rare style and is a good example of functional engineering design expressing the transfer of loads through the arch to the abutments. Therefore, the bridge does display a significant degree of craftsmanship.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure A5 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure A5 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Concession Road 4 Arran, a historic thoroughfare, and a tributary of the Sauble River. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure A5 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure A5 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure A5 is located on Concession Road 4 Arran crossing a tributary of the Sauble River. Even though the bridge is located in a flat landscape consisting of agricultural fields, it is almost invisible apart from its parapet railing. Therefore, A5 is not important in defining, maintaining or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure A5 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	Structure A5 is not considered a defining element to the rural setting or a waypoint or gateway along Concession Road 4 Arran. The subject bridge does not meet this criterion.

The above evaluation confirms that Structure A5 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure A5

Structure A5, Hunt's Bridge, is a single span earth-filled solid concrete spandrel deck arch bridge built approximately 1910. The bridge that carries a single lane of Concession Road 4 Arran over a tributary of the Sauble River, south of Tara, in the Municipality of Arran-Elderslie, Bruce County. The bridge design and style of construction are representative of the early 20th century for small span concrete arches. Structure A5 is a good example of functional engineering design expressing the transfer of loads through the arch to the abutments, indicating a significant degree of craftmanship. The current bridge, as a solid spandrel arch, was built in a design type typical of its era, however many of these type bridges were removed in the early 20th century and those that remain in active use are considered rare survivors in Ontario. The builder/architect of the bridge is currently unknown.

Heritage Attributes of Structure A5

The following are the heritage attributes of Structure A5:

- Single-span earth-filled solid concrete spandrel deck arch bridge;
- Solid concrete spandrel walls containing earth filled core; and,
- Single-lane construction.

5.3.8 Heritage Evaluation of Structure E22

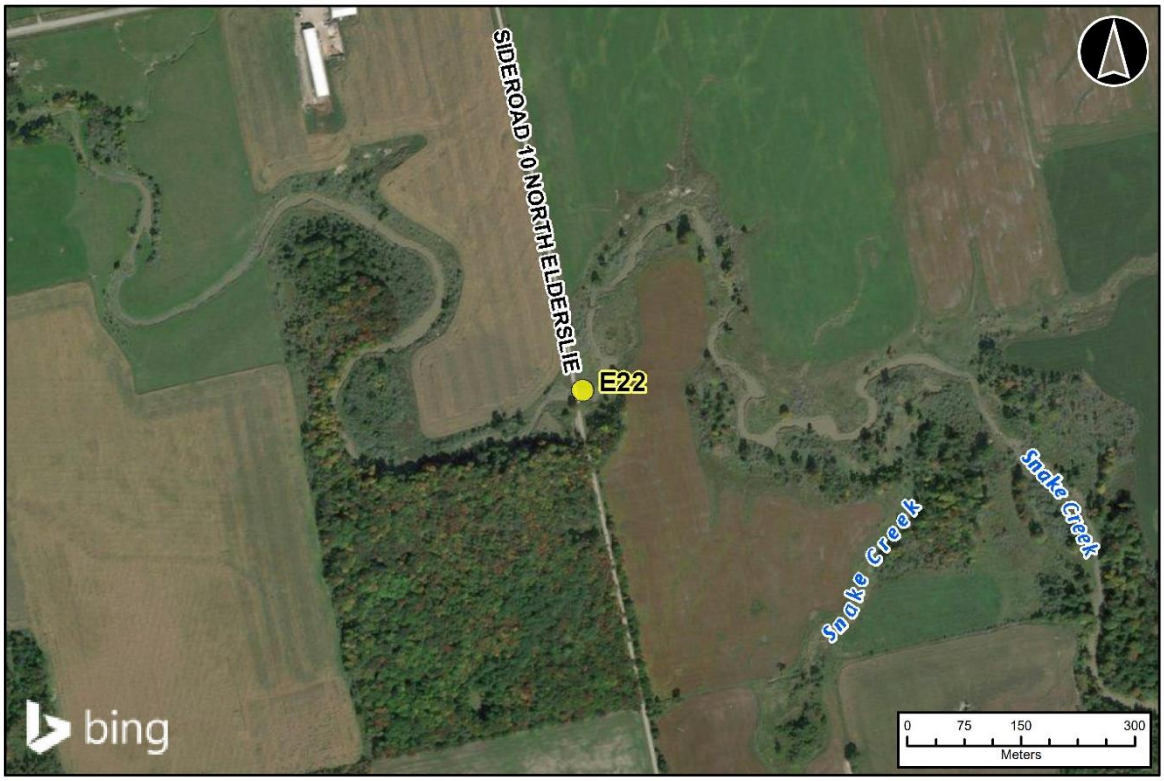


Figure 12: Location of Structure E22 on current aerial photography

Design or Physical Value of Structure E22

Structure E22 carries a single lane of Sideroad 10 Elderslie in a north-south direction over Snake Creek in the Municipality of Arran-Elderslie. Structure E22 is a four-panel rivet-connected Warren pony truss bridge documented as built in 1920 (Photograph 38, B.M. Ross 2016g). The single span truss includes steel end posts, diagonals, verticals, top and bottom cords (steel T-beams), and outriggers, which are constructed at back to back angles riveted to flat steel gusset plates at each connection (Photograph 39). The four panels in each truss and the vertical members and outrigger struts dividing each panel are supported by the steel floor I-beams which are rivetted to the bottom chord. The bridge deck surface is wood which sits on the wood soffit, also supported by the floor beams and steel stringers (Photograph 40). The bridge features its original steel two rail railings. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. There are no guard rails that extend past the truss at each approach. Presently the bridge posts a 3-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

Design drawings for Structure E22 were provided by MTO for this CHER (MTO 2-77: Appendix F). The drawing, by Ontario Bridge Company, Toronto, was completed on May 21, 1942. This drawing shows that a “proposed bridge” on Sideroad 10 Elderslie incorporates a four panel truss span from the Department of Highways near Goderich on Highway 21 (to be repaired, cleaned and painted) and a new floor and abutments to be installed at the location of E22 (MTO 2-77). The design drawings are for the abutments. These plans indicate there was a previous crossing since it shows the location of the “present” and the proposed abutments. The current truss, Structure E22, was relocated to its present location in 1942.

According to the OSIM - Inspection Form (BM Ross 2016g), the bridge has a total deck length of 19.5 m, an overall structure width of 4.9 m, a roadway length of 4.05 m, and a span length of 18.3 m. The bridge has undergone previous rehabilitation work including deck replacement in 2010.

Historical or Associative Value of Structure E22

Structure E22 is a representative and increasingly rare example of a pony truss bridge from a group of eight bridges of this type that were built in the 1920s and 1930s, located in the Municipality of Arran-Elderslie.

The builder of the bridge is unknown; however, the Ontario Bridge Company, Toronto, a prominent truss building company in the 20th century, was involved in its relocation from Goderich to its current site on Sideroad 10 Elderslie. In addition, the Ontario Bridge Company design the abutments to the bridge.

Contextual Value of Structure E22

Structure E22 carries a single lane of Sideroad 10 Elderslie in a north-south direction over Snake Creek in the Municipality of Arran-Elderslie. The road is not maintained in the winter. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Elderslie, just northeast of the settlement of Paisley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates Sideroad 10 Elderslie just east of a saw mill, as well as a church and post office of Williscroft P.O. The concession road is shown as carrying over the creek which supports the plan drawings from 1942 that there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type of bridge was extant prior to E22. In 1946, the NTS map (Figure 4) shows the bridge at the location of E22, but not the bridge type. Therefore, Structure E22 may represent a crossing of Snake Creek that has existed for over 100 years.



Photograph 37: Distant view of Bridge E22 on Sideroad 10, looking south (AECOM 2020)



Photograph 38: Portal view of Structure E22, looking north (AECOM 2020)



Photograph 39: Top Cord Connections and Railing of Structure E22 (AECOM 2020)



Photograph 40: View of Structure E22 wood deck and railing (AECOM 2020)



Photograph 41: View of Structure E22, looking south (AECOM 2020)

Table 11: Ontario Regulation 9/06 Evaluation for Structure E22

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E22 is a representative example of an early/mid 20th century one span, single lane, steel four-panel Warren pony truss bridge (built 1920). The use of rivetted steel connections and outriggers is indicative of the early/mid 20th century and are rare survivors in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E22 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E22 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E22 was constructed in a rural area that maintains its character to the present. The structure maintains a connection with Sideroad 10 Elderslie, a historic thoroughfare, and Snake Creek. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.

Criteria	Meets Criteria (Yes/No)	Rationale
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E22 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure E22 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure E22 is located on Sideroad 10 Elderslie crossing Snake Creek. Located at the base of a hill surrounded in a rural landscape. The bridge is not a visible feature from a distance. Therefore, Structure E22 is not important in defining, maintaining, or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure E22 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	The half-through truss is visibly appealing to observers, Structure E22 is not considered a defining element to the rural setting or a waypoint or gateway along Sideroad 10 Elderslie. The subject bridge does not meet this criterion.

The above evaluation confirms that Structure E22 meets at least one of the criteria set out in *Ontario Regulation 9/06* of the *Ontario Heritage Act.* The bridge was determined to have design/physical value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure E22

Structure E22 is a single-lane five-panel steel Warren pony truss bridge that carries a single lane of Sideroad 10 Elderslie over Snake Creek, northeast of Paisley, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1920, the bridge design and style of construction are representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers it is considered a rare survivor in Ontario. The builder/architect of the bridge is currently unknown, however documentation suggests the truss bridge was moved from Highway 21, near Goderich, to its current location in 1942 by the Ontario Bridge Company, a prominent truss building company in the 20th century.

Heritage Attributes of Structure E22

The following are the heritage attributes of Structure E22:

- Steel single-span Warren pony truss configuration with four panels;
- Single-lane construction;
- Original two rail railing system;
- Timber deck;
- Outriggers; and,
- Rivet connections.

5.3.9 Heritage Evaluation of Structure A11

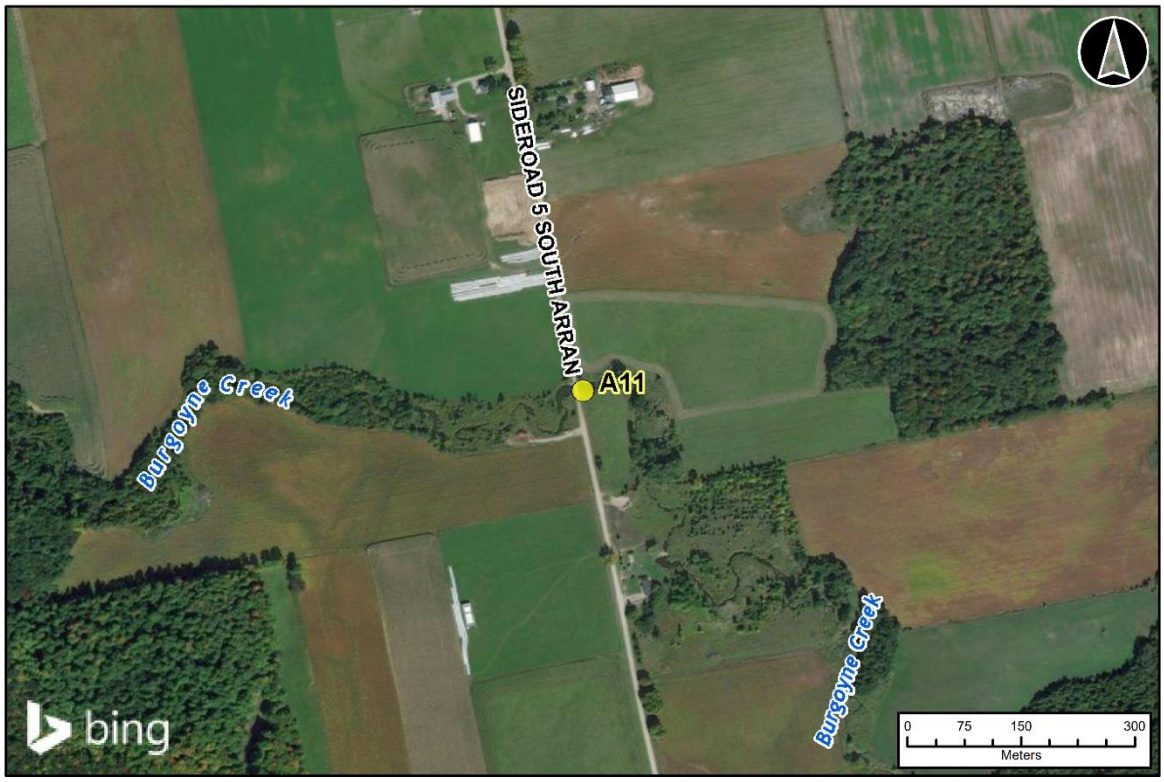


Figure 13: Location of Structure A11 on current aerial photography

Design or Physical Value of Structure A11

Structure A11 carries a single lane of Sideroad 5 Arran in a north-south direction over Burgoyne Creek in the Municipality of Arran-Elderslie. The bridge crossing is known as Wilson's Bridge. The origin for the bridge name has not been identified.

Structure A11 is a single span earth-filled solid concrete spandrel deck arch bridge, built in 1910[6] (Photograph 43, B.M. Ross 2016h). In general, the bridge consists of a curved, elliptical shaped concrete arch slab with vertical walls (spandrels) cast on top of the slab that forms the sides of the bridge. The solid cast-in-place concrete spandrel walls contain the earth filled core used to build up the structure to the road deck. The area between the walls and top of the arch was filled with granular material and the roadbed placed on the fill. The earth fill was typically earth, rocks, and or other types of fill. The thin board finish is still visible in the concrete. A11 is a good example of functional engineering design expressing the transfer of loads through the arch to the abutments. The original parapet or railing has been replaced with a steel flex beam railing on wood post system (Photograph 44). The bridge has a 12-Tonne posted bridge load. The wearing surface of the deck is gravel.

According to the OSIM - Inspection Form (B.M. Ross 2016h), the bridge has a total deck length of 9 m, an overall structure width of 5.8 m, a roadway length of 4.9 m, and a span length of 7 m. The bridge has undergone previous rehabilitation work in 2008 including new parapets and guardrail, both precast concrete.

The original design drawing for A11 was provided by MTO for this CHER (MTO 2-28; Appendix G). The plans show the original concrete railing system. The plan for the "Arch Bridge" was drawn by R. McDowall, the Township Engineer, dated April 26, 1922.

[6] *The design plans indicate that the bridge was built in 1922*

Historical or Associative Value of Structure A11

A11 is a rare example of an earth-filled solid concrete spandrel deck arch bridge built in the 1920s. The bridge was designed by R. McDowall, the Township Engineer.

Contextual Value of Structure A11

Structure A11 carries a single lane of Sideroad 5 Arran in a north-south direction over Burgoyne Creek in the Municipality of Arran-Elderslie. The bridge is situated on a straight road over the water crossing, near the historic settlement of Burgoyne. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Arran. Structure A11 may represent a river crossing that has existed for over 100 years. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates the location of the bridge along a concession road that was surveyed and open for use. The concession road is shown as carrying over the creek which suggests that the road was opened and there was an earlier bridge built at this location. However, a review of historical mapping and archival records has not confirmed what type of bridge, if any, was extant on the site. In 1946, the NTS map (Figure 4) shows the bridge at the location of A11 as a concrete bridge.



Photograph 42: Distant view of Structure A11 on Sideroad 5 Arran, looking south (AECOM 2020)



Photograph 43: Portal view of Structure A11, looking south (AECOM 2020)



Photograph 44: Railing on west elevation of Structure A11 (AECOM 2020)



Photograph 45: Structure A11 and its approach, looking north (AECOM 2020)



Photograph 46: East elevation of A11 (Courtesy of B.M. Ross 2012)



Photograph 47: Soffit of A11 (Courtesy of B.M. Ross 2012)

Table 12: Ontario Regulation 9/06 Evaluation for Structure A11

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure A11 is a rare example of a one span, single lane, earth-filled solid concrete spandrel deck arch bridge built in 1922.

Criteria	Meets Criteria (Yes/No)	Rationale
ii) Displays a high degree of craftsmanship or artistic merit.	Yes	Structure A11 is a representative example of an increasingly rare style and is a good example of functional engineering design expressing the transfer of loads through the arch to the abutments. Therefore, the bridge does display a significant degree of craftsmanship.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure A11 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure A11 was constructed in a rural area that maintains its character to the present. The structure maintains a direct connection with Sideroad 5 Arran, a historic thoroughfare, and Burgoyne Creek. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure A11 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure A11 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure A11 is located on Sideroad 5 Arran crossing Burgoyne Creek. Even though the bridge is located in a flat landscape consisting of agricultural fields, it is almost invisible apart from its parapet railing. Therefore, A11 is not important in defining, maintaining or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure A11 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	Structure A11 is not considered a defining element to the rural setting or a waypoint or gateway along Sideroad 5 Arran. The subject bridge does not meet this criterion.

The above evaluation confirms that Structure A11 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

5.3.10 Statement of Cultural Heritage Value or Interest of Structure A11

Structure A11, Wilson's Bridge, is a single span earth-filled solid concrete spandrel deck arch bridge built in 1922. The bridge that carries a single lane of Sideroad 5 Arran over Burgoyne Creek, north of Paisley, in the Municipality of Arran-Elderslie, Bruce County. The bridge design and style of construction are representative of the early/mid-20th century for small span concrete arches. This bridge was filled with earth, rocks and or other fill types, and the spandrel wall served as retaining walls. The current bridge, as a solid spandrel arch, was built in a design type typical of its era, however many of these type bridges were removed in the early 20th century and those that remain in active use are considered rare survivors in Ontario. The bridge was designed by the Township Engineer, R. McDowall, however the builder of the bridge is currently unknown.

Heritage Attributes of Structure A11

The following are the heritage attributes of Structure A11:

- Single-span earth-filled solid concrete spandrel deck arch;
- Solid concrete spandrel walls containing earth filled core; and,
- Single-lane construction.

5.3.11 Heritage Evaluation of Structure E24



Figure 14: Location of Structure E24 on current aerial photography

Design or Physical Value of Structure E24

Structure E24 carries a single lane of B Line in a north-south direction over Snake Creek in the Municipality of Arran-Elderslie. Structure E24 is a four-panel rivet-connected Warren pony truss bridge documented as built in 1920 (Photograph 49, B.M. Ross 2016i). The single span truss which includes steel end posts, diagonals, verticals, top and bottom cords (steel box/trapezoidal), and outriggers, which are constructed at back to back angles riveted between steel gusset plates at each connection (Photograph 50). The four panels in each truss and the vertical members and outrigger struts dividing each panel are supported by the steel floor I-beams which are rivetted to the bottom chord. The bridge deck surface is cast-in-place concrete which sits on the concrete soffit, also supported by the floor beams and steel stringers. The bridge features its original steel two rail railings. The bridge sits on cast-in-place concrete abutments with cast-in-place concrete wingwalls. Both approaches to the bridge slightly incline as one approaches the truss. Steel flex beam guard rails extend past the truss at each approach. Presently the bridge posts a 10-tonne limit. The bridge is travelled by horse and carriage and vehicular traffic.

According to Nathan Holth of historicbridges.org:

> *B Line Bridge: Metal 4 Panel Rivet-Connected Warren Pony Truss, Fixed, Builder/Contractor unknown. One span, over snake creek. Noted for its lack of alteration, original lattice railings.*

The original design drawings for E24 were not available when this CHER was completed. According to the OSIM - Inspection Form (B.M. Ross 2016i), the bridge has a total deck length of 18.9 m, an overall structure width of 5.72 m, a roadway length of 4.53 m, and a span length of 17.4 m. The bridge has undergone previous rehabilitation work including a refaced southeast wingwall and rehabilitation of part of the abutment wall and bearing seats in 1997 and replaced deck in 2002.

Historical or Associative Value of Structure E24

Structure E24 is a representative and increasingly rare example of a pony truss bridge from a group of eight bridges of this type built in the 1920s and 1930s, in the Municipality of Arran-Elderslie. The builder of the bridge is unknown at the time of the report.

Contextual Value of Structure E24

Structure E24 carries a single lane of B Line in a north-south direction over Snake Creek in the Municipality of Arran-Elderslie. There are single lane signs posted at a distance from the bridge.

The bridge is located in the former Township of Elderslie, just northeast of the settlement of Paisley. The 1880 Illustrated Historical Atlas map (Figure 3) illustrates B Line just east of a sawmill. The concession road is shown as carrying over the waterway which suggests there was a previous crossing at the location of E24. However, a review of historical mapping and archival records has not confirmed what type of bridge was extant prior to E24. In 1946, the NTS map (Figure 4) shows the bridge at the location of E24 as an iron bridge, presumably the subject bridge. In addition, directly northwest of the bridge, the 1946 NTS map shows a saw mill. Therefore, Structure E24 may represent a crossing of Snake Creek that has existed for over 100 years.



Photograph 48: Distant view of Bridge E24 on B Line, looking south (AECOM 2020)



Photograph 49: Portal view of Structure E24, looking south (AECOM 2020)



Photograph 50: Top Cord Connections and Lattice Railing of Structure E24 (AECOM 2020)



Photograph 51: View of the wingwalls of Structure E24, looking southwest (AECOM 2020)



Photograph 52: View of Structure E24, looking north (AECOM 2020)

Table 13: Ontario Regulation 9/06 Evaluation for Structure E24

Criteria	Meets Criteria (Yes/No)	Rationale
1) The property has *design or physical value* because it:		
i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method.	Yes	Structure E24 is a representative example of an early/mid 20th century one span, single lane, steel four-panel Warren pony truss bridge (built in 1920). The use of rivetted steel connections and outriggers is indicative of the early/mid 20th century and are rare survivors in Ontario today. The bridge overall is considered a rare survivor in Bruce County due to widespread replacement as a result of age.
ii) Displays a high degree of craftsmanship or artistic merit.	No	Although a representative example of an increasingly rare style, E24 does not display a high degree of craftsmanship or artistic merit. The subject bridge does not meet this criterion.
iii) Demonstrates a high degree of technical or scientific achievement.	No	Structure E24 does not demonstrate a high degree of technical achievement or scientific achievement. The subject bridge does not meet this criterion.
2) The property has *historic value or associate value* because it:		

Criteria	Meets Criteria (Yes/No)	Rationale
i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community.	No	Structure E24 was constructed in a rural area that maintains its character to the present. The structure maintains a connection with B Line, a historic thoroughfare, and Snake Creek. However, the bridge itself does not have any direct associations with a theme, event, belief, person, activity, organization or institution that is significant to the Municipality of Arran-Elderslie. The subject bridge does not meet this criterion.
ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture.	No	Structure E24 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.	No	Structure E24 does not demonstrate or reflect the work, or ideas of an architect, builder, designer, or theorist who is significant to a community. The subject bridge does not meet this criterion.
3) The property has *contextual value* because it:		
i) Is important in defining, maintaining or supporting the character of an area.	No	Structure E22 is located on B Line crossing Snake Creek. Located at the base of a hill surrounded in a rural landscape. The bridge is not a visible feature from a distance. Therefore, Structure E24 is not important in defining, maintaining, or supporting the character of the area. The subject bridge does not meet this criterion.
ii) Is physically, functionally, visually or historically linked to its surroundings.	No	Structure E24 is not considered to have the potential to yield information that contributes to an understanding of a community or culture. The subject bridge does not meet this criterion.
iii) Is a landmark.	No	The half-through truss is visibly appealing to observers, Structure E24 is not considered a defining element to the rural setting or a waypoint or gateway along B Line road.

The above evaluation confirms that Structure E24 meets at least one of the criteria set out in Ontario Regulation 9/06 of the *Ontario Heritage Act.* The bridge was determined to have design/physical and contextual value and is therefore considered a *Municipal Heritage Property*. The following Statement of Cultural Heritage Value was prepared for the bridge:

Statement of Cultural Heritage Value or Interest of Structure E24

Structure E24 is a single-lane five-panel steel Warren pony truss bridge that carries a single lane of B Line over Snake Creek, north of Paisley, in the Municipality of Arran-Elderslie, Bruce County. Constructed in 1920, the bridge design and style of construction is representative of the early/mid-20th century. The current bridge was built in a design type typical of its era, however being a steel truss with outriggers it is considered a rare survivor in Ontario. The builder/architect of the bridge is currently unknown.

Heritage Attributes of Structure E24

The following are the heritage attributes of Structure E24:

- Steel single-span Warren pony truss configuration with four panels;

- Single-lane construction;
- Post and lattice rail railing system;
- Rivet connections; and,
- Outriggers

6. Conclusions and Recommendations

6.1 Conclusions

The evaluation of the nine structures in this report for the Bridge Infrastructure Master Plan will enable the Municipality of Arran-Elderslie to evaluate the cultural heritage impacts of bridge replacement or rehabilitation. This is a proactive approach which will enable the Municipality to use best-practice methods in bridge conservation. The inventory of this study was limited to nine bridges, all owned by the Municipality and all older than 40 years of age. Seven of the bridges are steel Warren pony half through trusses, while the other two are earth filled concrete arch bridges, all located in a rural setting.

Key finding:

- All nine of the structures demonstrate cultural heritage value or interest when evaluated using Ontario Regulation 9/06 of the *Ontario Heritage Act,* as a result, all nine bridges are considered Municipal Heritage Properties.

6.2 Recommendations

Based on the results of archival research, an analysis of bridge design and construction in Ontario, comparative bridge analysis, field investigations and application of *Ontario Regulation 9/06*, all nine of the bridges were determined to have cultural heritage value or interest. Therefore, the following recommendations should be considered and implemented:

1. Heritage Impact Assessments (HIAs) are required for Structures A5, A11, A14, E1, E4, E12, E17, E22 and E4 should a bridge be replaced or undergoes major rehabilitation in the future (PPS 2014). The HIAs will be completed according to the MHSTCI Ontario Heritage Tool kit (2006) and will mitigate impacts to the heritage attributes of the nine bridges identified in Section 5 of this report.

2. Consider listing the nine bridges in a heritage register maintained by Bruce County under the *Ontario Heritage* Act, Section 27, as recommended in Section 4.10.1 of the County of Bruce Official Plan.

3. This report shall be submitted to Municipality of Arran-Elderslie heritage staff, the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI), formerly the Ministry of Tourism, Culture, and Sport for review.

7. Bibliography

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2016c Ontario Structure Inspection Manual- *Inspection Report: Site Number E12*. On file with B.M. Ross.
2016d Ontario Structure Inspection Manual- *Inspection Report: Site Number A14*. On file with B.M. Ross.
2016e Ontario Structure Inspection Manual- *Inspection Report: Site Number E17*. On file with B.M. Ross.
2016f Ontario Structure Inspection Manual- *Inspection Report: Site Number A5*. On file with B.M. Ross.
2016g Ontario Structure Inspection Manual- *Inspection Report: Site Number E22*. On file with B.M. Ross.
2016h Ontario Structure Inspection Manual- *Inspection Report: Site Number A11*. On file with B.M. Ross.
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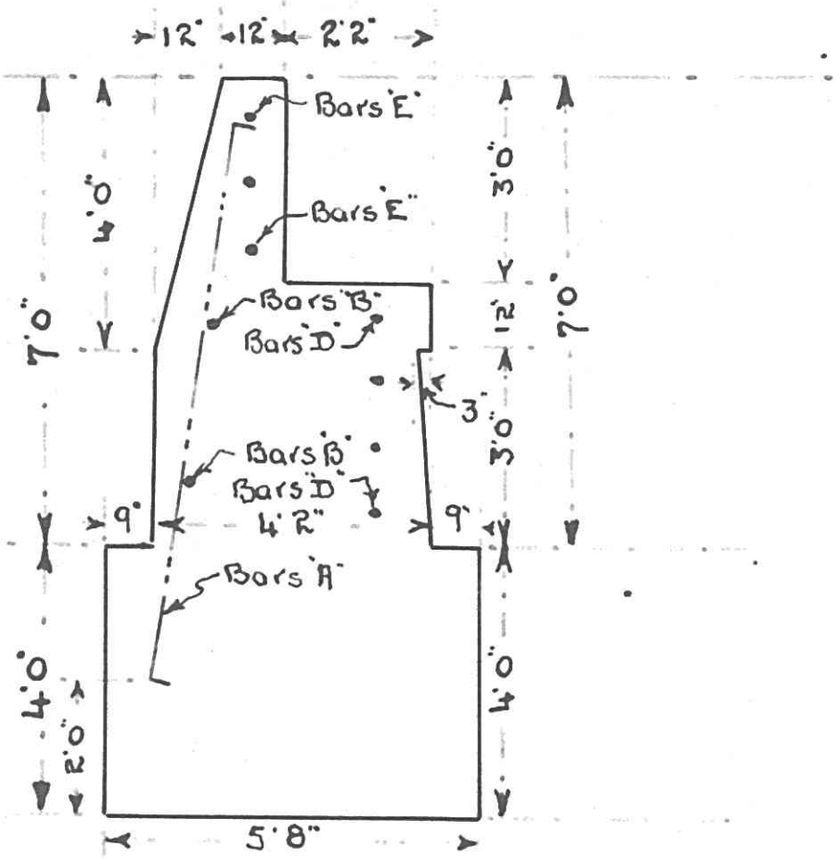
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AECOM

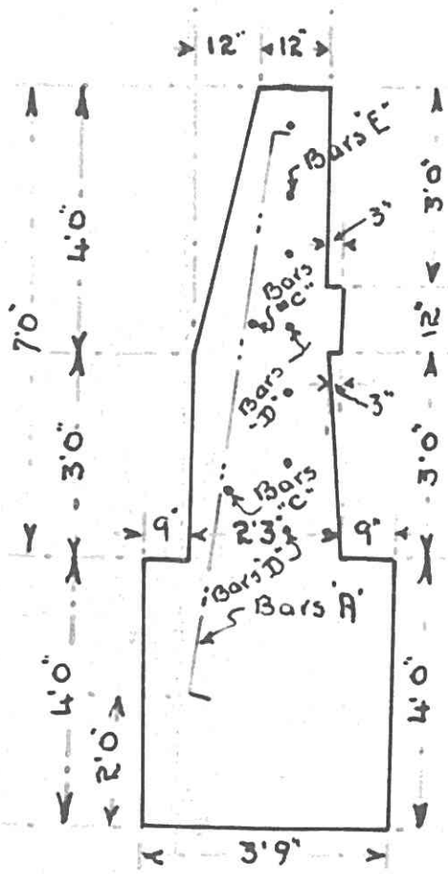
Appendix A

Select Design Drawings for Structure E1

B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario



Cross Section Abutment.



End View Wing Wall.

Depth of foundation subject to revision by the Engineer.

Ballast wall not to be poured until after Steel superstructure is erected.

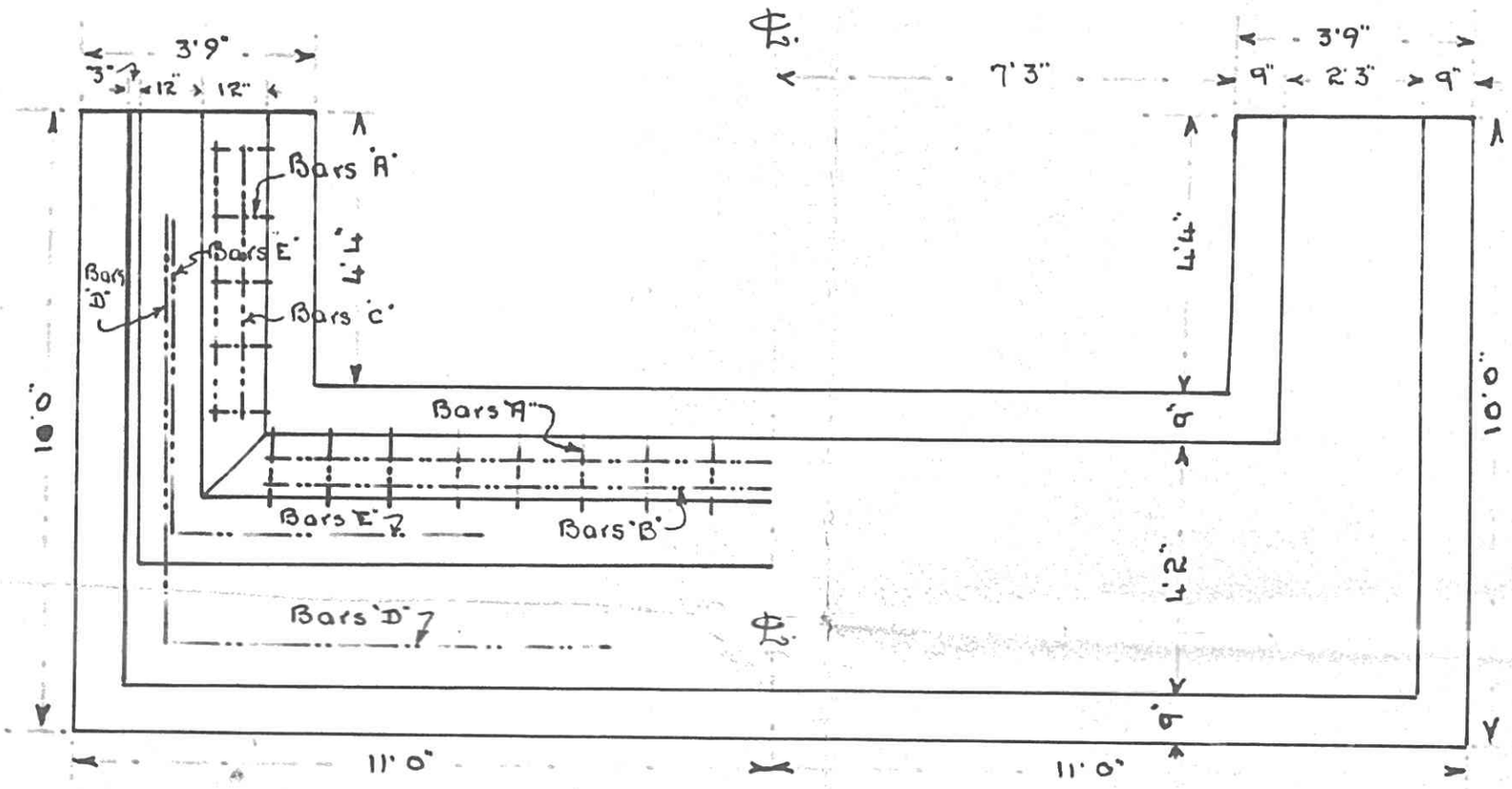
Drain pipes - 2" in diameter are to be put in each corner of each abutment at top of footings or at such elevation as the Engineer may direct.

Aggregate for concrete must be screened. re-proportioned and thoroughly washed before being used.

General Specifications for Highway Bridges Ontario - 1935, are to govern all work under this Contract in so far as they apply to this contract.

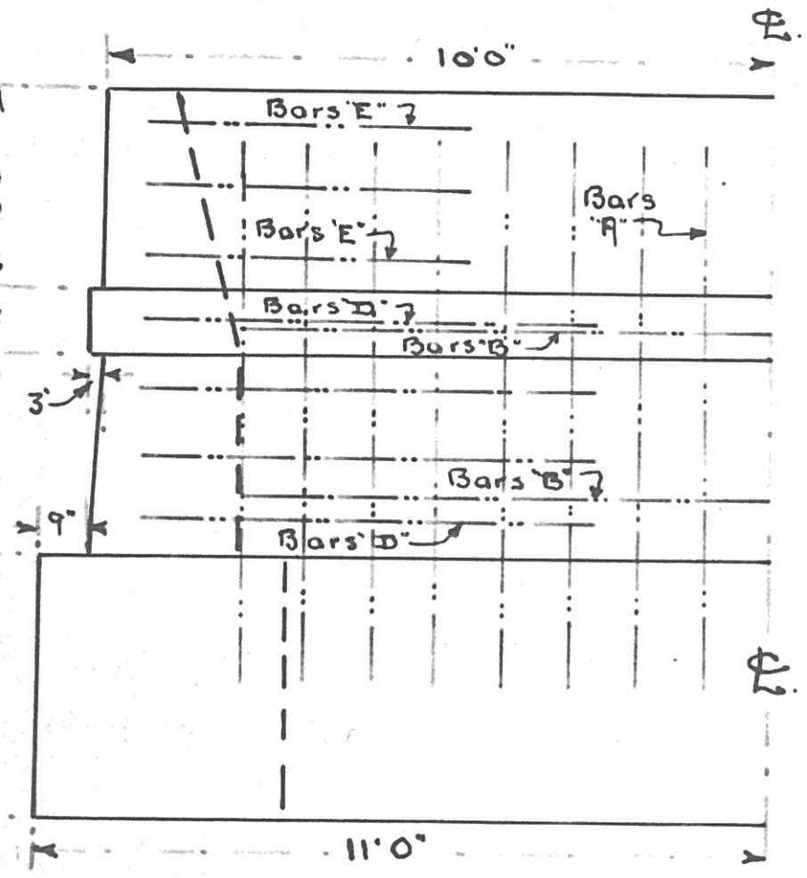
Proportions for concrete are 1 cement to 2¼ fine aggregate to 3¾ coarse aggregate.

Bars 'A' - ½"Φ - 12"c to c.
Bars 'B' - ½"Φ - 2'6" c to c.
Bars 'C' - ½"Φ - 2'6" c to c.
Bars 'D' - 5/8"Φ - 12" c to c.
Bars 'E' - 5/8"Φ - 12" c to c.
Overall length of steel - 80'0".
Clear Span (just below coping) - 76'1"
Span inside to inside of footings - 74'7".

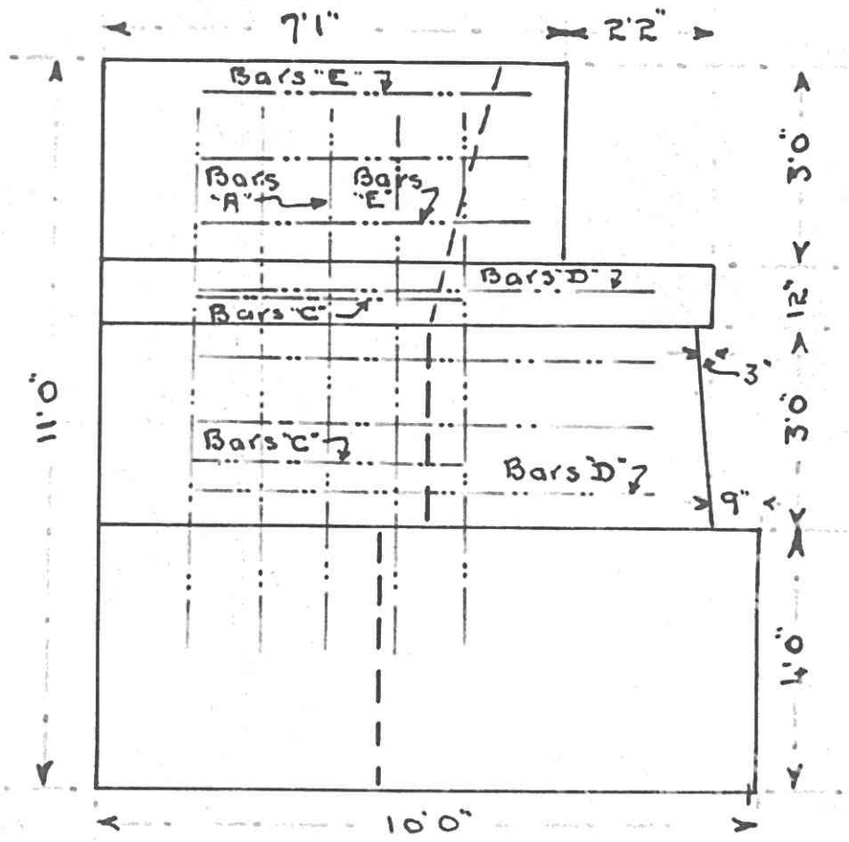


Half Top Plan.

Half Ground Plan.



Half Front Elevation Abutment.



Side Elevation Wing Wall.

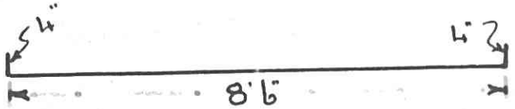
Estimated quantities:-
Concrete in place - 87.5 cu yd.
Cement - 132 barrels.
Sand - 41 cu.yd.
Stone - 70 cu.yd.
Reinforcement - 754 pounds.
Excavation - 45 cu.yd.

Priebe's Bridge.
Opposite Lot 25 - Con. 2.
Elderslie Township.
Bruce County.
Scale - 3/8 Inch = 1 Foot.
May 21st 1938.

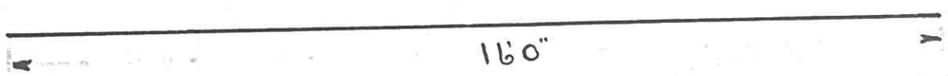
R.C. McKnight
Engineer.

2-41

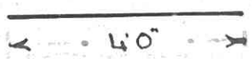
Drawing Number 241 A



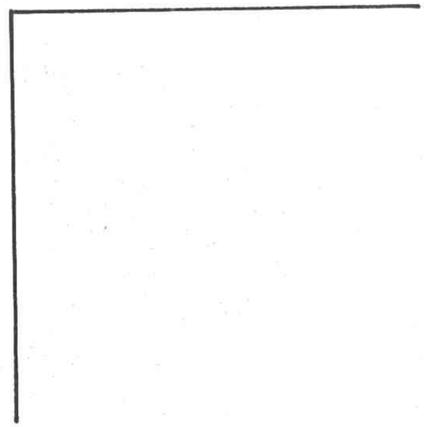
Bars "A" - 12" Φ - 54 bars.



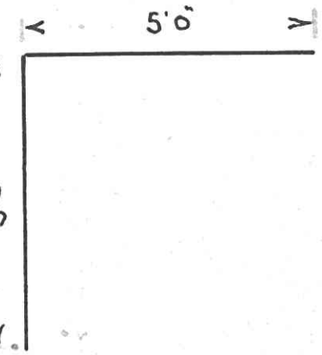
Bars "B" - 12" Φ - 4 bars.



Bars "C" - 12" Φ - 8 bars.



Bars "D" - 5/8" Φ - 16 bars.



Bars "E" - 5/8" Φ - 12 bars.

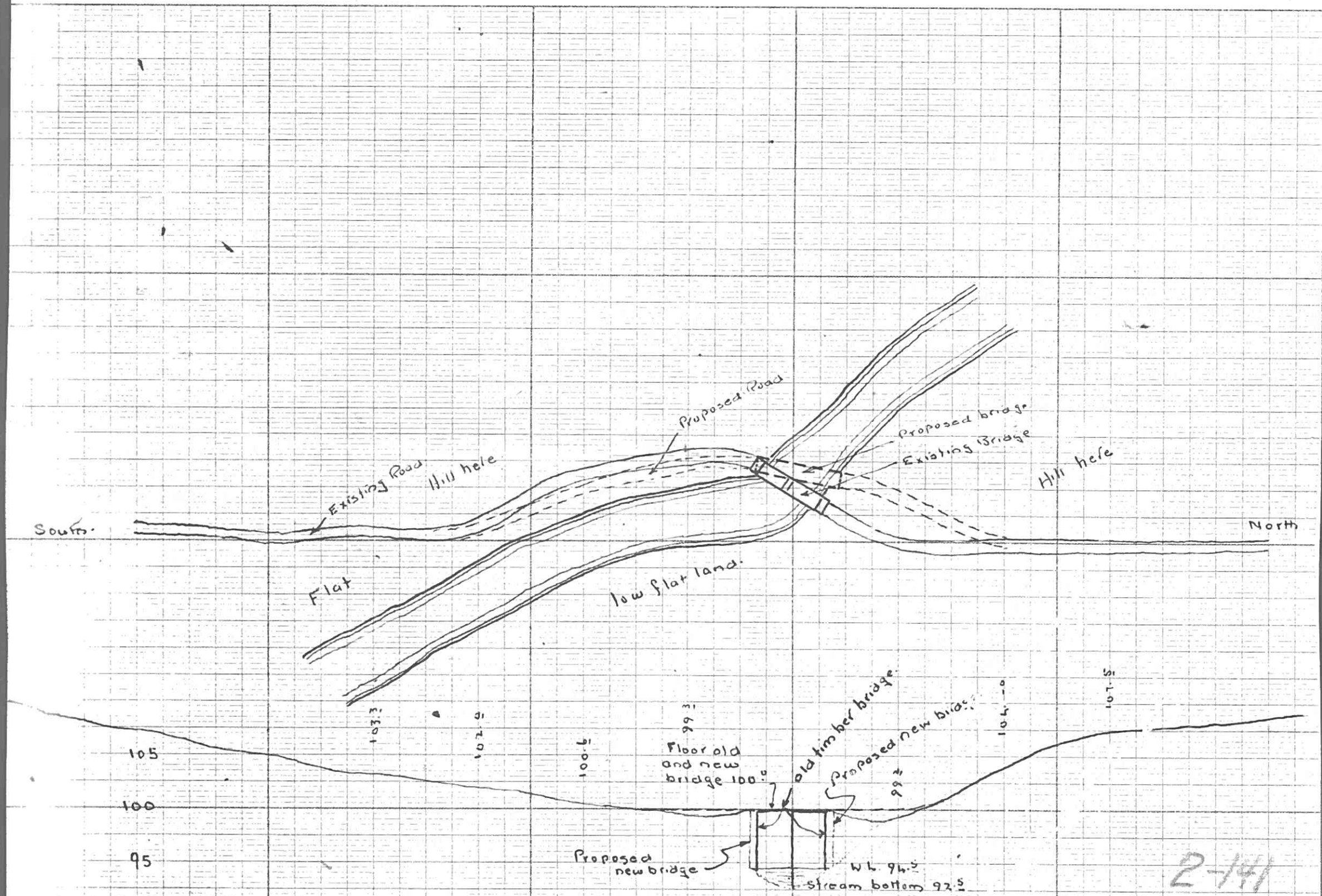
2-141

Each set of bars is to be, seperately and securely tied together and tagged with its proper letter for shipping.

Total Weight of Steel - 754 pounds

Priebe's Bridge.
Elderslie Township
Bruce County.

Drawing Number 201-B.



2-41

Old bridge is timber about 75' between abutments with centre pier

Proposed bridge is a second hand re-conditioned steel superstructure supplied by Ontario Bridge Co. on concrete abutments. Superstructure is 80' long overall. with 16' Roadway to carry a wooden floor.

Plan and Profile of Vicinity of Priebe's Bridge opposite Lot 25. Con 2. Elderslie Township. Bruce Co.
Scales- 1 inch = 100'; Vertical- 1 inch = 10 Feet.

May 27th 1938

T.C. McKeough
Engineer.

716-3

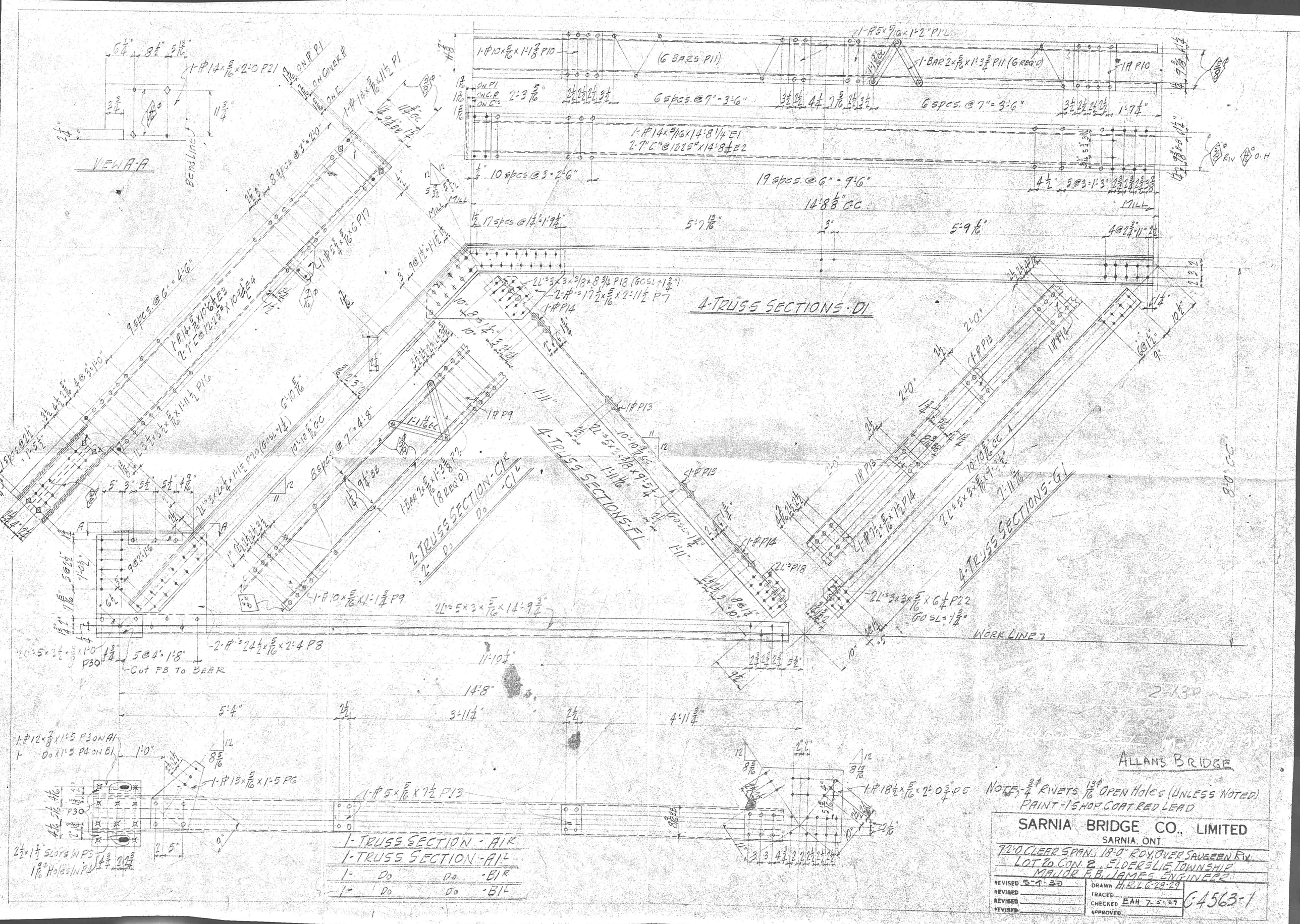
Drawing Number 201C.

AECOM

Appendix B

Select Design Drawings for Structure E4

B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario


VIEW A-A
4-TRUSS SECTIONS-D1
4-TRUSS SECTIONS-F1
4-TRUSS SECTIONS-G1
2-TRUSS SECTION-C1R
2-TRUSS SECTION-C1L
1-TRUSS SECTION-A1R
1-TRUSS SECTION-A1L
WORK LINE 3
BCWLine
MILL
ON P1
ON CONC. P
ON E.
1-PL 14 x 5/16 x 2'-0 P21
1-PL 14 x 5/16 x 1 1/2 P1
1-PL 10 x 5/16 x 1-1 3/8 P10
(6 BARS P11)
1-BAR 2 x 5/16 x 1'-3 3/4 P11 (6 REQ'D)
1-PL 5 x 9/16 x 1'-2 P12
1A P10
1-PL 14 x 5/16 x 14'-8 1/4 E1
2-7" C" @ 12.25# x 14'-8 1/2 E2
2-7" C" @ 12.25# x 10'-6 1/2 E3
2-7" C" @ 12.25# x 10'-6 1/2 E4
2L 3 x 3 x 5/16 x 14'-9 3/4
2L 3 x 3 x 5/16 x 6 1/4 P12
2L 3 x 3 x 3/8 x 8 3/4 P18 (GOSL=1 3/4")
2-PL 17 1/2 x 5/16 x 2'-11 1/2 P7
1-PL P14
1-PL P15
1-PL P13
1-PL P9
1-PL 13 x 5/16 x 1'-5 P6
1-PL 5 x 5/16 x 7 1/2 P13
1-PL 18 1/2 x 5/16 x 2'-0 3/4 P5
1-PL 12 x 7/8 x 1'-5 P3 ON A1
1- Do x 1'-5 P4 ON B1
2 1/2 x 1 1/2 SLOTS IN P3
1 9/16" HOLES IN P4
2L 3 x 2 1/2 x 1/4 x 1'-11 1/2 P10 (GOSL=1/4)
1-BAR 2 1/2 x 5/16 x 1'-3 3/8 P2 (8 REQ'D)
1-PL 10 x 5/16 x 1 1/2 P9
2-PL 5 x 2 1/2 x 5/16 x 2'-4 P8
2L 5 x 3 1/2 x 5/16 x 1'-0 P30
5@4"=1'-8"
Cut P8 To BEAR
6 SPCS. @ 7" = 3'-6"
19 SPCS. @ 6" = 9'-6"
14'-8 1/8" C-C
17 SPCS. @ 1/2" = 1'-8 1/2"
10 SPCS. @ 3" = 2'-6"
5'-7 13/16"
5'-9 1/16"
4@2 3/4"=11"
2'-3 5/16"
9 SPCS. @ 6" = 4'-6"
8 SPCS. @ 3" = 2'-0"
8 SPCS. @ 7" = 4'-8"
5'-4"
3'-11 1/4"
4'-11 3/4"
14'-8"
11'-10 1/4"
8'-0"
2'-0"
10'-10 5/16" C-C
1-11"
1-11 1/16" C-C
1'-0"
8 5/16
8 15/16
12
11
ALLANS BRIDGE
NOTE-3/4" RIVETS 13/16" OPEN HOLES (UNLESS NOTED)
PAINT-1 SHOP COAT RED LEAD
SARNIA BRIDGE CO., LIMITED
SARNIA, ONT.
72'-0 CLEAR SPAN - 18'-0" RDY. OVER SAUGEEN RIV.
LOT 20 CON. 2 ELDERSLIE TOWNSHIP
MAJOR F.B. JAMES, ENGINEER
REVISED 5-1-30
DRAWN H.R.L. 6-29-29
TRACED
CHECKED E.A.H. 7-5-29
APPROVED
C4563-1

ALLAN'S BRIDGE

RIVETS $\frac{3}{4}$" ϕ OPEN HOLES $\frac{13}{16}$" EXCEPT AS NOTED
PAINT — ONE SHOP COAT RED LEAD

SARNIA BRIDGE CO., LIMITED
SARNIA ONT.

92'-0 CLEAR SPAN 18'-0 ROADWAY OVER SAUGEEN R.
LOT 20, CON. 2, ELDERSLIE TOWNSHIP.
MAJOR F.B. JAMES, ENGINEER.

REVISED 5-9-30	DRAWN EAH 6-27-29	C-4563-2
REVISED	TRACED	
REVISED	CHECKED WLS 7-4-29	
REVISED	APPROVED	

23 Spaces @ 6" = 11'-6"

1-ℝ 14 × $\frac{3}{8}$ × 29-$7\frac{1}{4}$ E1

7 ALT. SPACES @ 7" = 4'-1"

1-ℝ 10 × $\frac{5}{16}$ × 1-$2\frac{1}{2}$ P2

1-ℝ 5 × $\frac{5}{16}$ × 1-2 P3

1-BAR 2 × $\frac{5}{16}$ × 1-$3\frac{1}{2}$ PZ #1
7 REQ'D.

1-BAR P2 #1 7 REQD.

1-ℝ P3

2-ℝ 18 × $\frac{5}{16}$ × 2-$6\frac{1}{2}$ P1

2-TRUSS SECTION A2
(2-L 7" @ 12.25# × 29'-7$\frac{1}{4}$")

2-L 3 × $2\frac{1}{2}$ × $\frac{5}{16}$ × $\frac{7}{8}$ P9

1-ℝ $7\frac{1}{2}$ × $\frac{5}{16}$ × $8\frac{1}{4}$ P8 BENT 5$\frac{9}{16}$"

1-ℝ 5 × $\frac{5}{16}$ × $8\frac{1}{4}$ P10

FOR DETAIL SEE A4 L SHEET #4

SECTION A2 SYM. ABOUT ℄

2-ℝ 14 × $\frac{5}{16}$ × 2-0 P4

TRUSS SECTION D2 (4 REQ'D)
2-L 3 × $2\frac{1}{2}$ × $\frac{5}{16}$ × 9'-4$\frac{1}{2}$" BACK TO BACK

TRUSS SECTION E2
2-L 4 × 3 × $\frac{5}{16}$

2-ℝ 21 × $\frac{5}{16}$ × 3-0 E2

2-ℝ 20$\frac{1}{2}$ × $\frac{5}{16}$ × 3'-0" P7

TRUSS SECTION C2 (4 REQ'D)
2-L 6 × 4 × $\frac{1}{2}$ × 14-7$\frac{5}{8}$"

2-TRUSS SECTION B2
(2-L 6 × 3$\frac{1}{2}$ × $\frac{5}{8}$ × 15-3$\frac{1}{2}$)

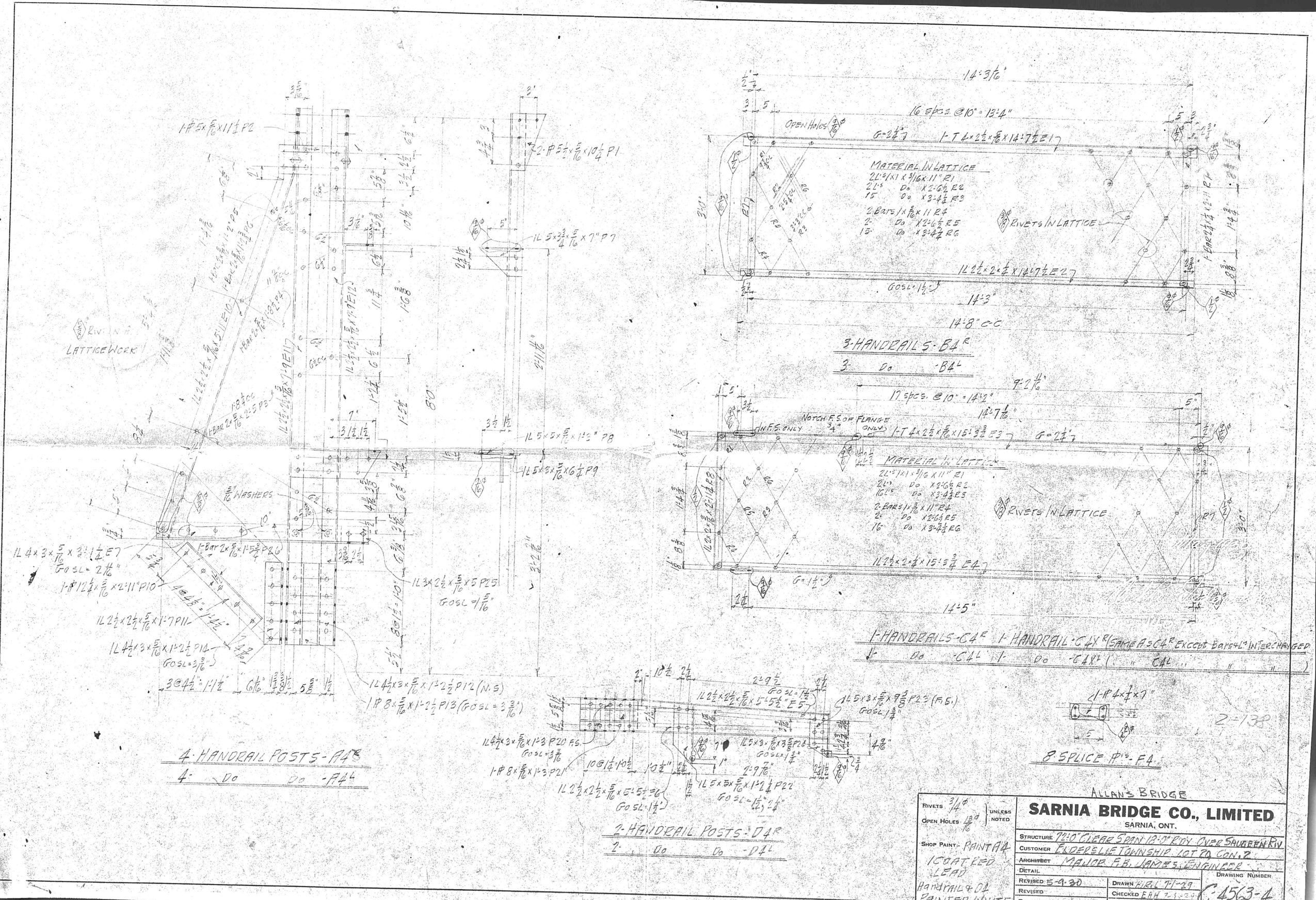
B2 SYM. ABOUT ℄

2-ℝ 5 × $\frac{5}{16}$ × 2-$5\frac{1}{2}$ P6

1-ℝ 17" × $\frac{5}{16}$ × 3'-1 E3

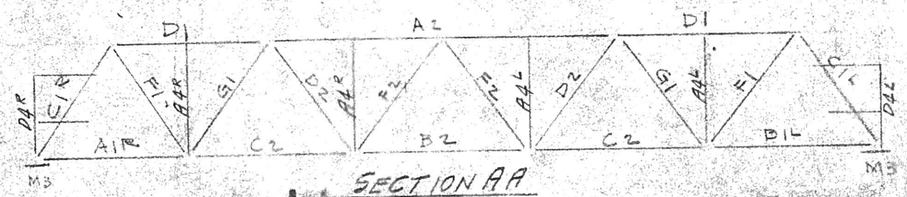
1-ℝ 5 × $\frac{5}{16}$ × $6\frac{1}{2}$ P5

MILL

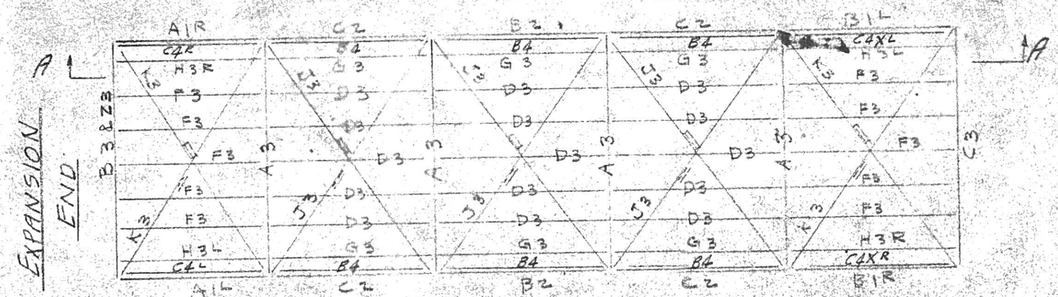


ALLAN'S BRIDGE

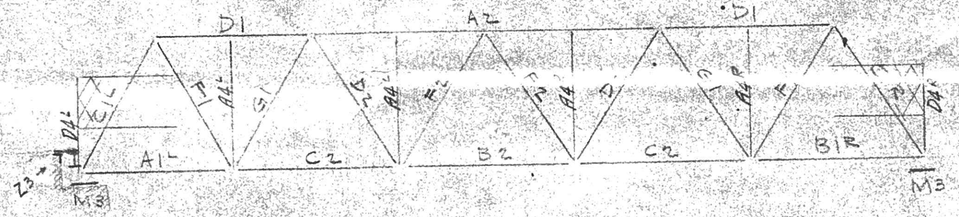
RIVETS 3/4" ϕ UNLESS NOTED	**SARNIA BRIDGE CO., LIMITED** SARNIA, ONT.	
OPEN HOLES 13/16" ϕ	STRUCTURE 72'-0" CLEAR SPAN 18'-0" RDY OVER SAUGEEN RIV	
SHOP PAINT:- PAINT ONE COAT RED LEAD	CUSTOMER ELDERSLIE TOWNSHIP. LOT 70 CON. 2	
Handrail & D4 PAINTED WHITE	ARCHITECT MAJOR F.B. JAMES, ENGINEER	
	DETAIL	DRAWING NUMBER
	REVISED 5-9-30 DRAWN H.R.L. 7-1-29	C-4563-4
	REVISED CHECKED E.A.H. 7-1-29	
	REVISED APPROVED	



SECTION AA



PLAN



SIDE ELEVATION

FIELD PAINT:-
HANDRAIL - 2 COATS WHITE.
OTHER STEEL 1ST COAT - BROWN
& 2ND COAT - BLACK.

SARNIA BRIDGE CO. LIMITED
SARNIA, ONT.

72'-0 CLEAR SPAN 18'-0" RDY OVER SAUGEEN RIVER.
FORELDERSLIE TOWNSHIP LOT 20 CON. 2.
MAJOR F.B. JAMES - ENGINEER

REVISED	5-9-30	DRAWN	5-9-30
REVISED		TRACED	
REVISED		CHECKED	
REVISED		APPROVED	

C-4563-E1

PROPOSED NEW BRIDGE across North Branch of Saugeen River at Lot 20 ~ Concession II. ELDERSLIE TOWNSHIP

Known as ALLENS BRIDGE.

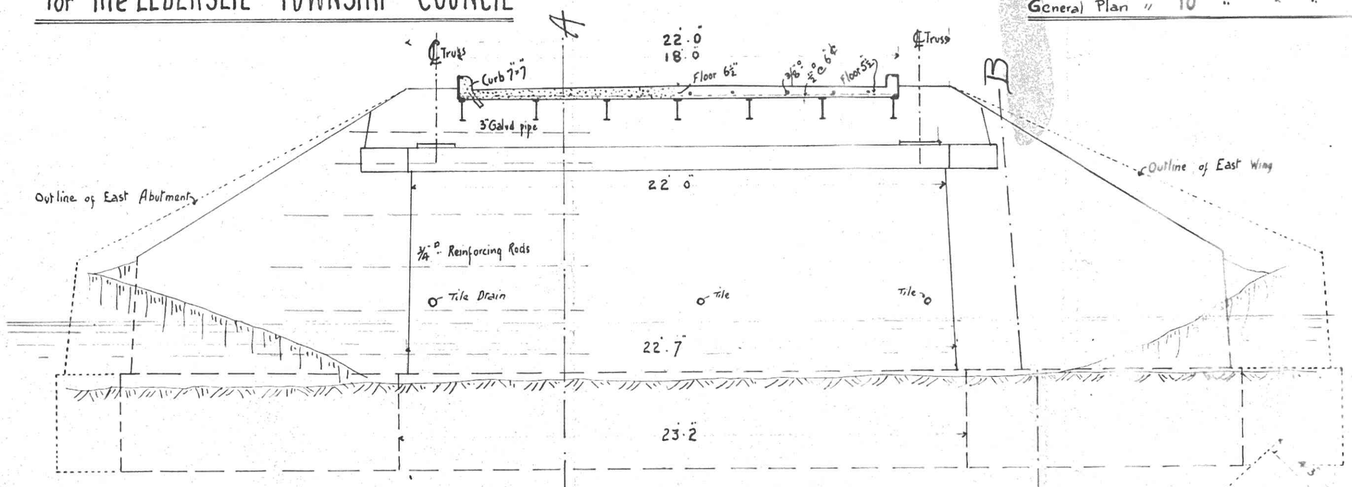
For The ELDERSLIE TOWNSHIP COUNCIL

Quantities

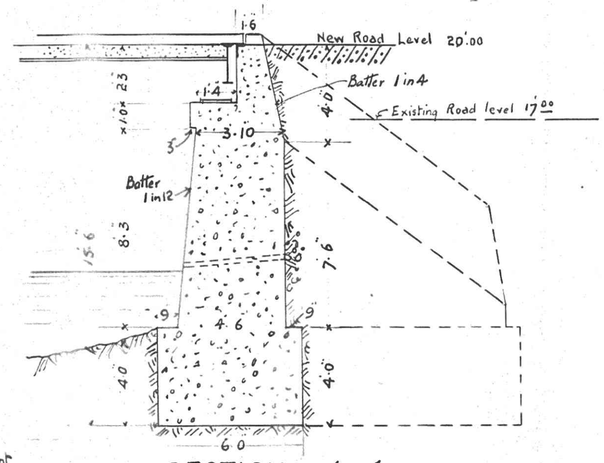
202 cubeyards 1 to 6 Concrete in Foundation & Wall.
28 " " 1 to 4 " Floor & Curb.
30 lineal Feet 4" Drain tile, 6 Lengths 3" Galvd Floor Outlets.
3130 lbs Reinforcing Steel in 24 pieces 3/8"-0 x 27 Feet long.
154 pieces 1/2"-0 x 18 Feet long & 24 pieces 3/4"-0 x 10 Feet long.

CONCRETE PLAN — Scale 4 Feet to an Inch

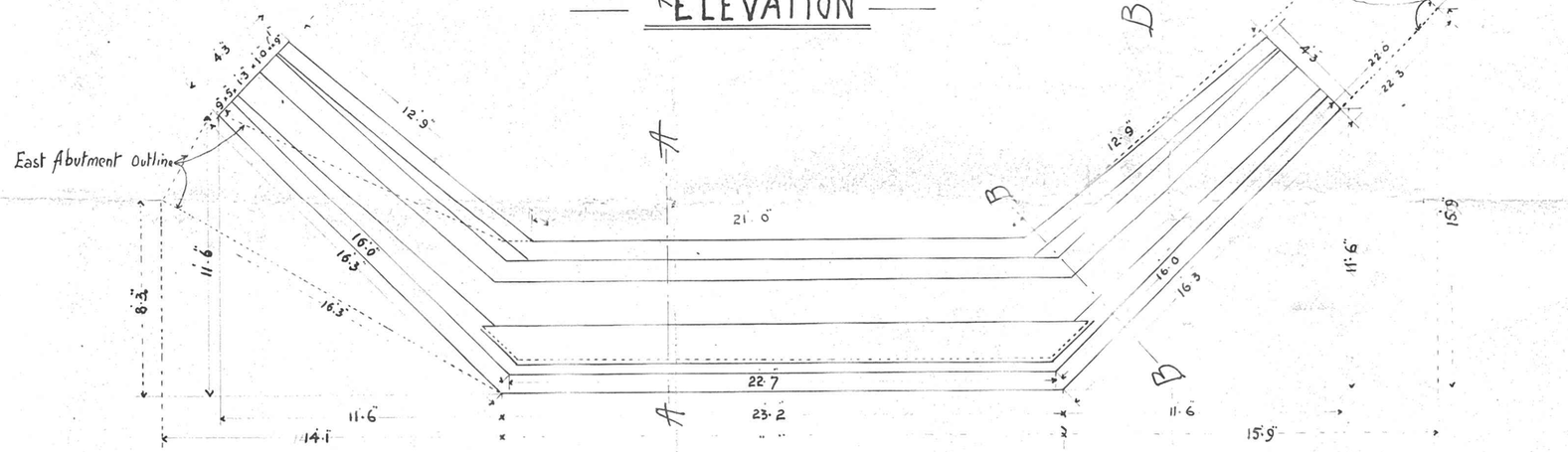
General Plan " 10 " " "



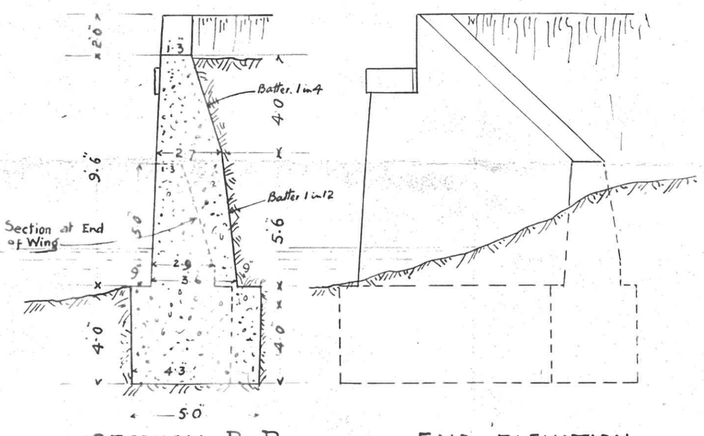
ELEVATION



SECTION - A~A.



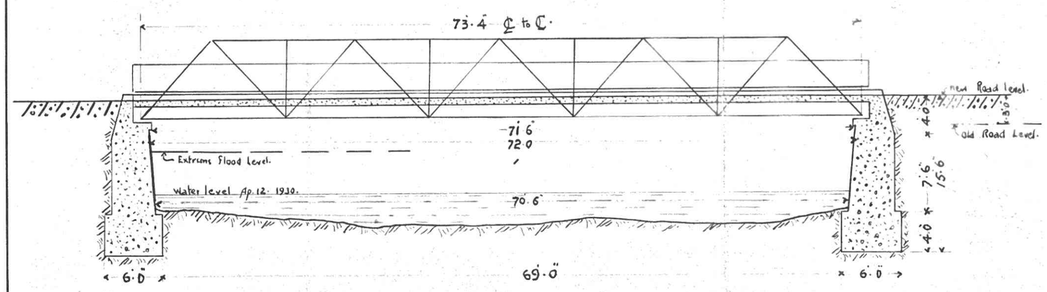
PLAN ~ West Abutment



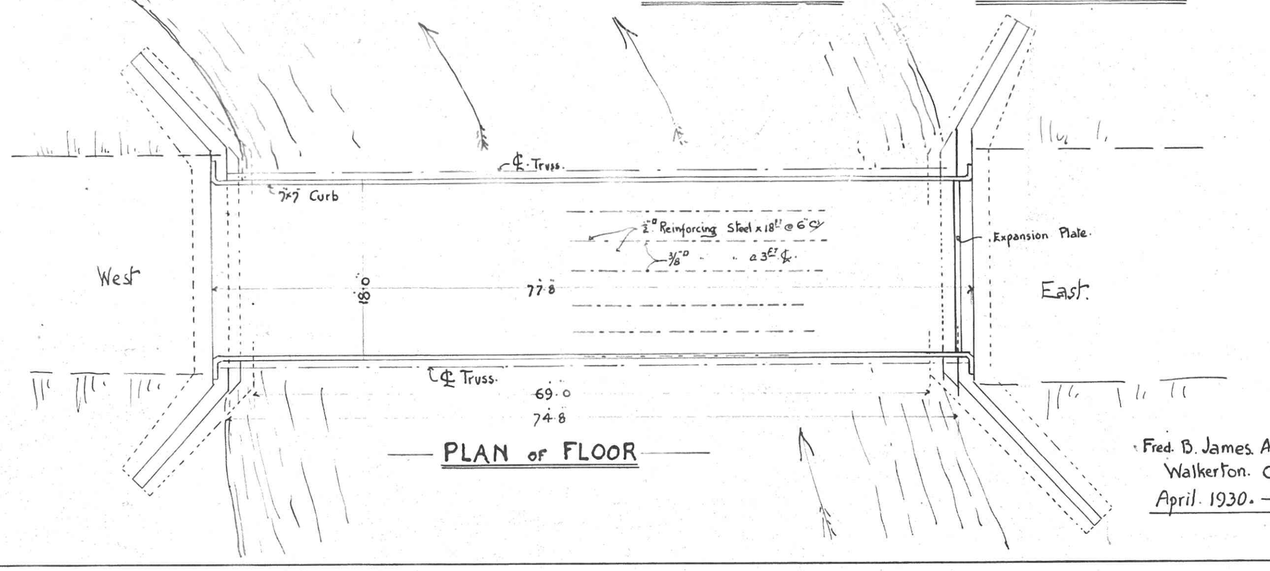
SECTION ~ B ~ B

END ELEVATION

2-138



LONGITUDINAL SECTION



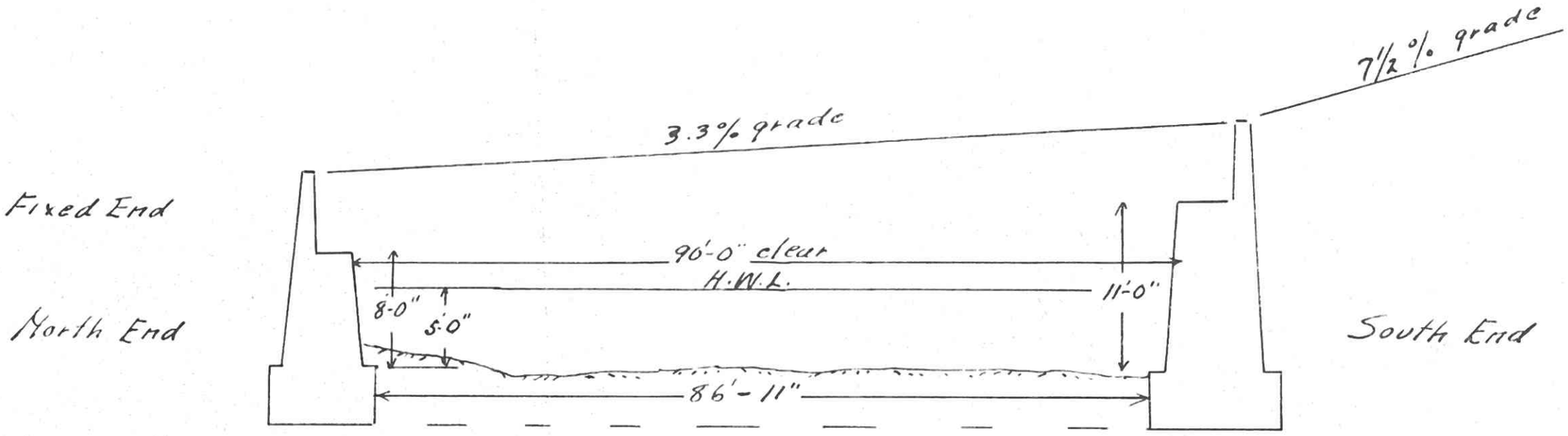
PLAN of FLOOR

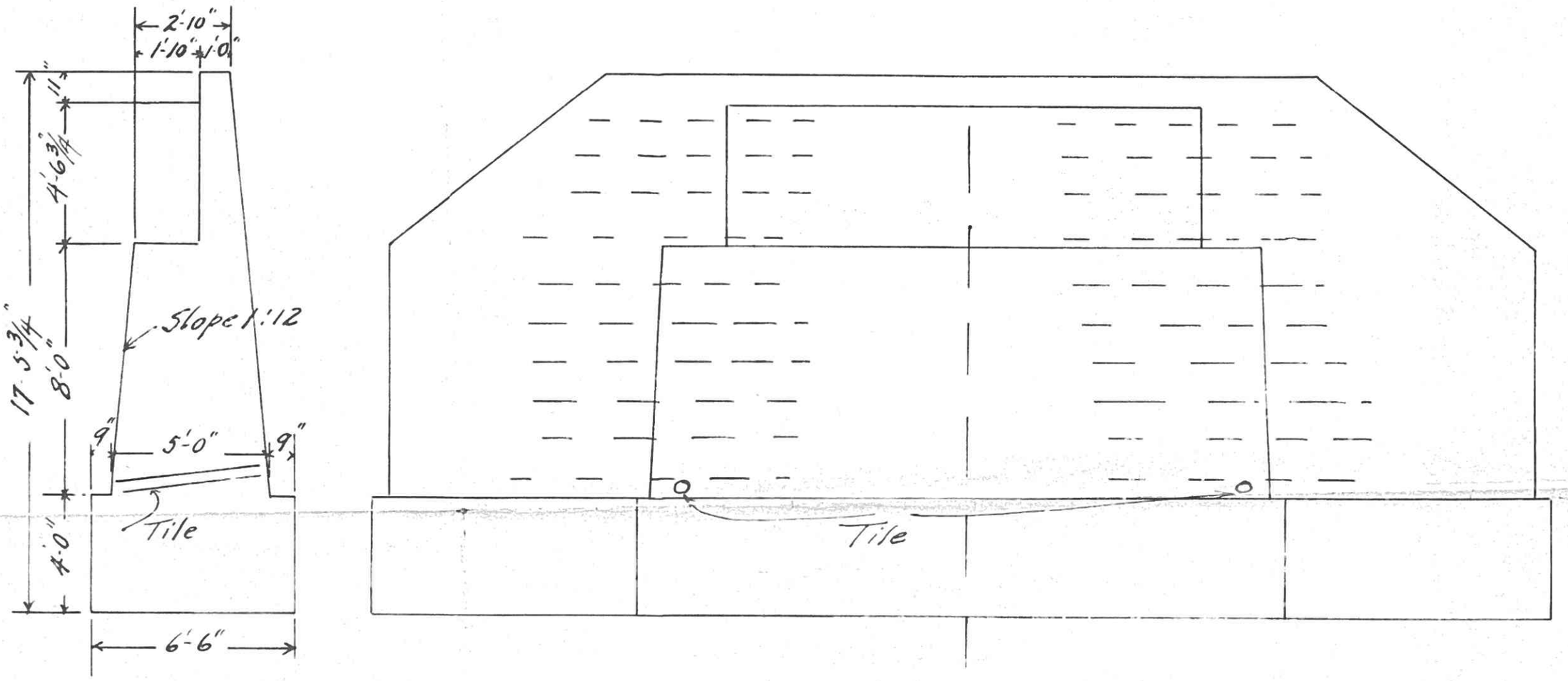
Fred. B. James. AMEIC.
Walkerton. Ont
April. 1930.

Appendix C

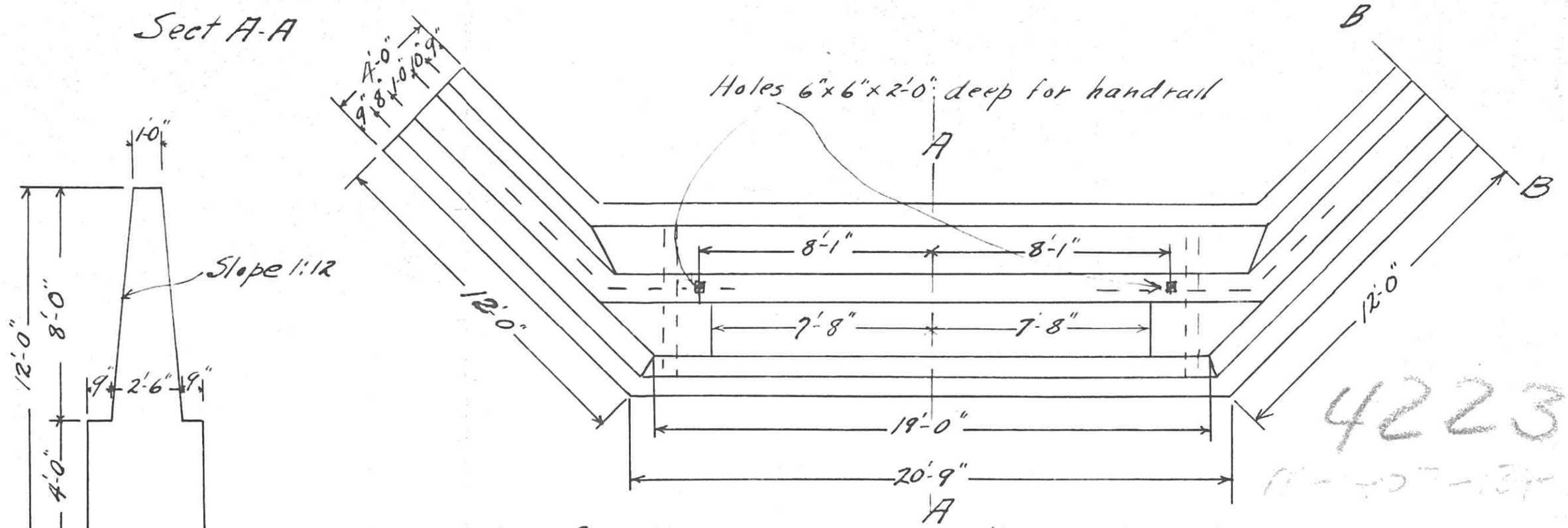
Select Design Drawings for Structure E12

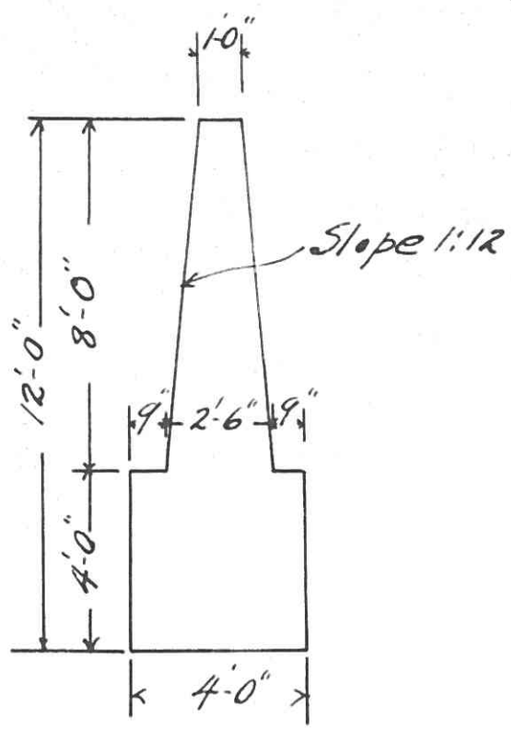
B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario





Sect A-A





Sect B-B

Quantities

82.3 c.y 1:2½:5 concrete

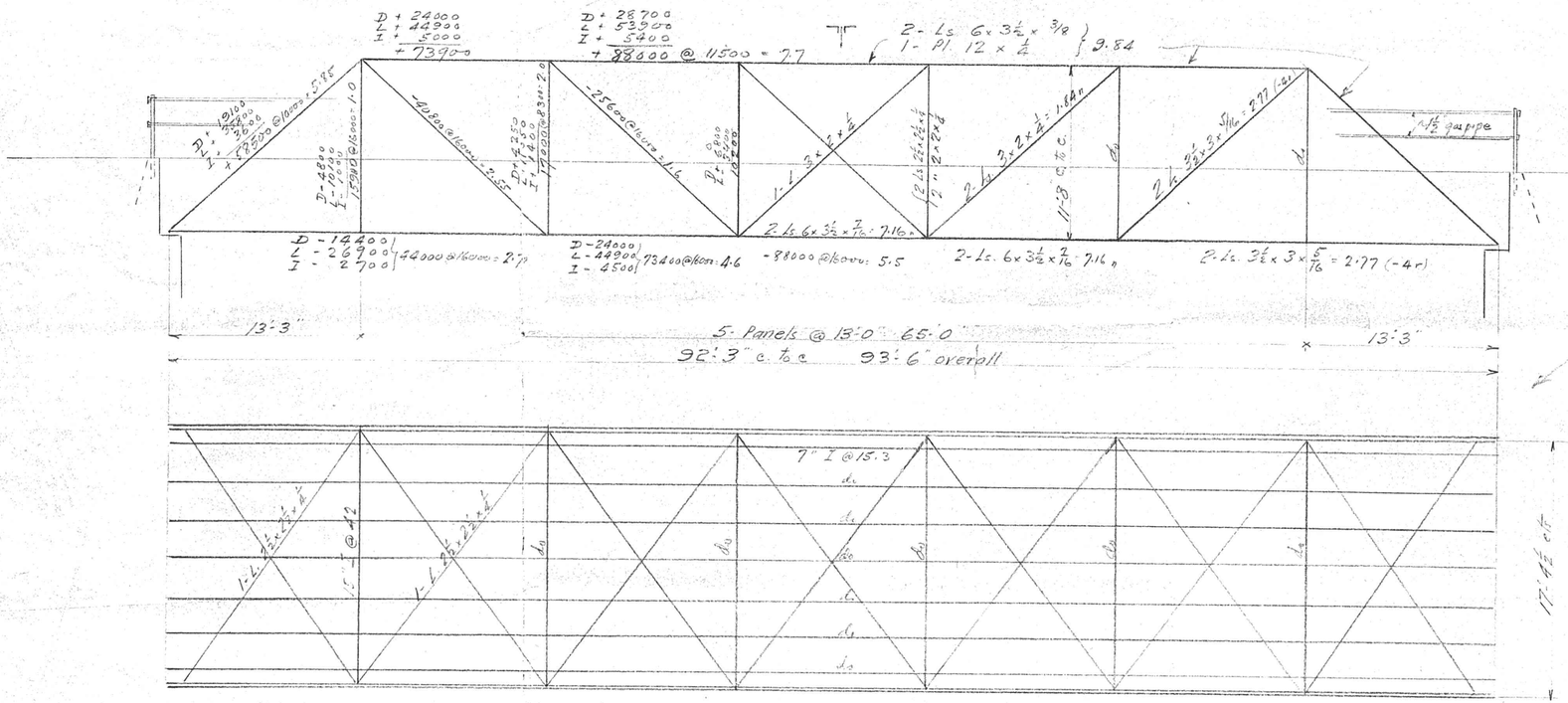
20-⅝" ϕ rods 12'-0" long

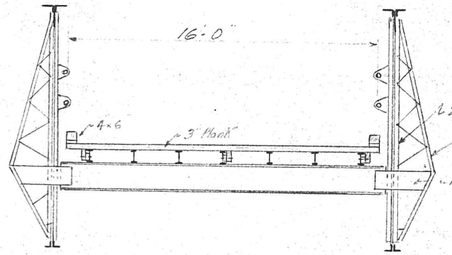
North Abut. for Bridge opp.
lot 5 Con VII Elderslie Twp.
Scale 1" = 4ft

S. W. Stephenson Cty Engr
May 21/32

4223

2-134





CROSS SECTION

Used Steel Bridge

2-134 4220

TOWNSHIP OF ELDERSLIE

BRIDGE ON 5TH SIDE ROAD

BETWEEN CONS - 5 & 6

May 14TH 1932

ONTARIO BRIDGE CO LTD
TORONTO.

Proposed grade 8%

Present grade

℄ Right of way

92'

Wooden Bridge

Plan
Scale 1" = 4 ft

Profile

Hor. Scale 1" = 40 ft.
Vert Scale 1" = 4 ft.

Sect B-B
present grade

Sect A-A

Quantities

c.y. 1:6 gravel concrete
24 - ½" □ rods 10'-0" long

South Abut. for Bridge
opp. lots Con VI Elderslie Twp.
Scale 1" = 4 ft.

3143

G. S. Stephenson C.E. Engr.
June. 15/27

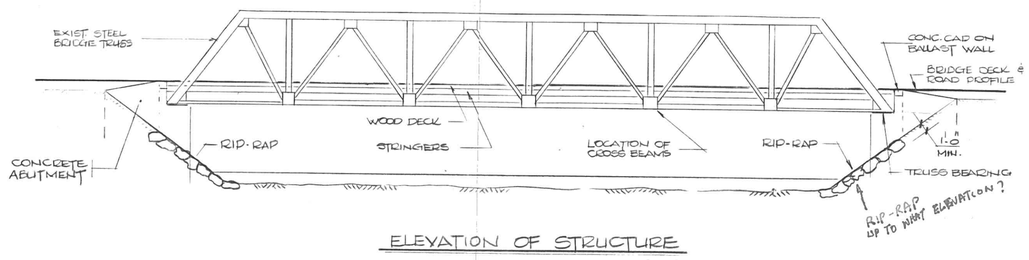
Appendix D

Select Rehabilitation Drawings for Structure A14

B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario

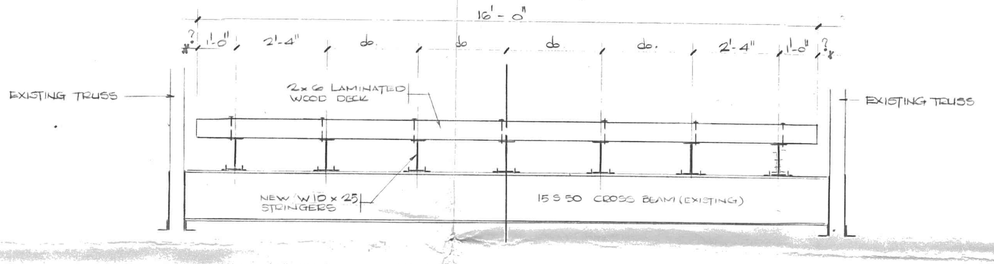
RECOMMEND TO REPLACE
THE BOTTOM CHORD OF THE WHOLE BAY
RATHER THAN TO REPLACE PART OF IT
AS PROPOSED.

PLEASE SUBMIT PROPOSAL TO SUPPORT
THE TRUSS DURING REPLACEMENT.



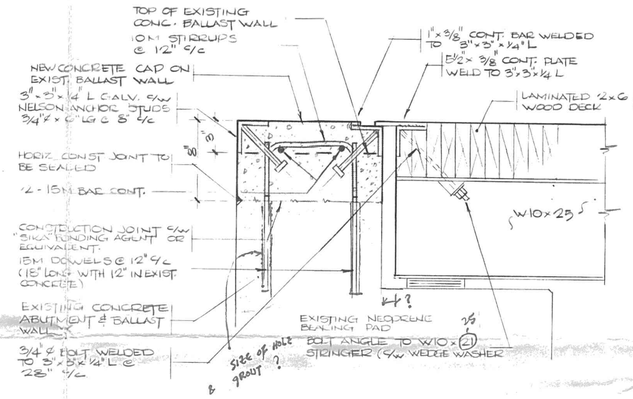
ELEVATION OF STRUCTURE

SCALE 1" = 10'



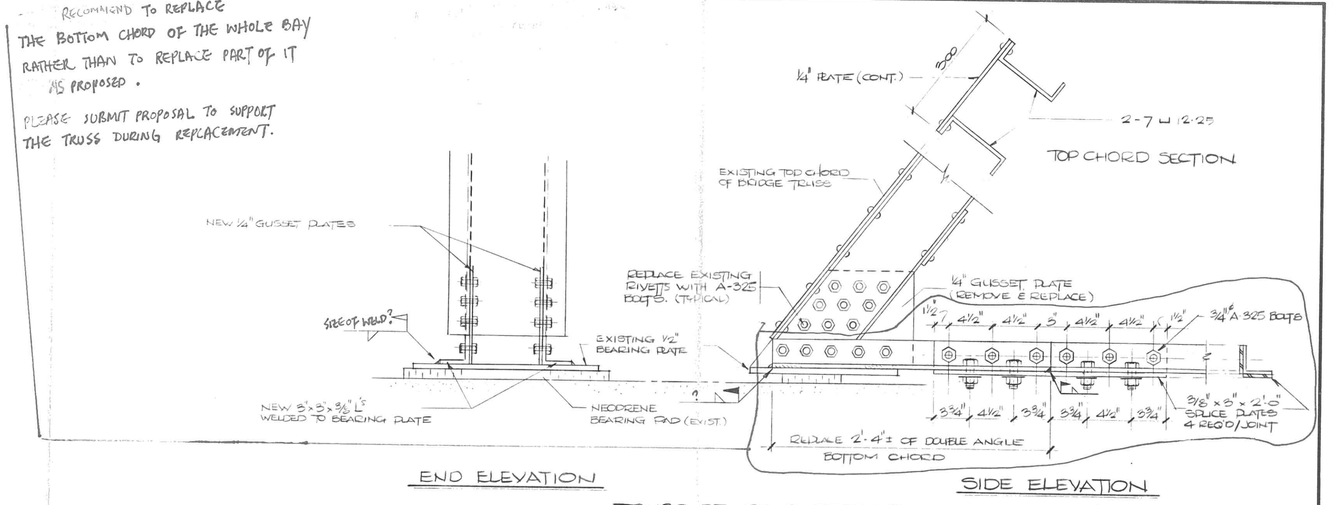
DECK SECTION "A"

SCALE 1/2" = 1'-0"



EXPANSION JOINT DETAIL

SCALE: 1 1/2" = 1'-0"



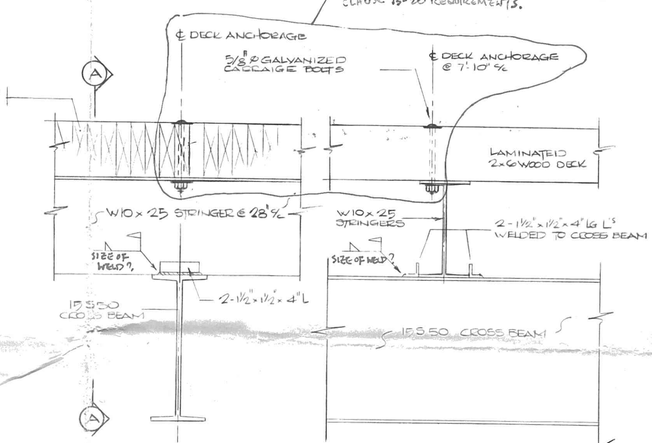
END ELEVATION

SIDE ELEVATION

TRUSS BEARING DETAILS

SCALE: 1 1/2" = 1'-0"

DECK ANCHORAGE NOT ACCEPTABLE - NOT IN ACCORDANCE WITH OHBD CODE SECTION 13 CLAUSE 13-20 REQUIREMENTS.



SIDE ELEVATION

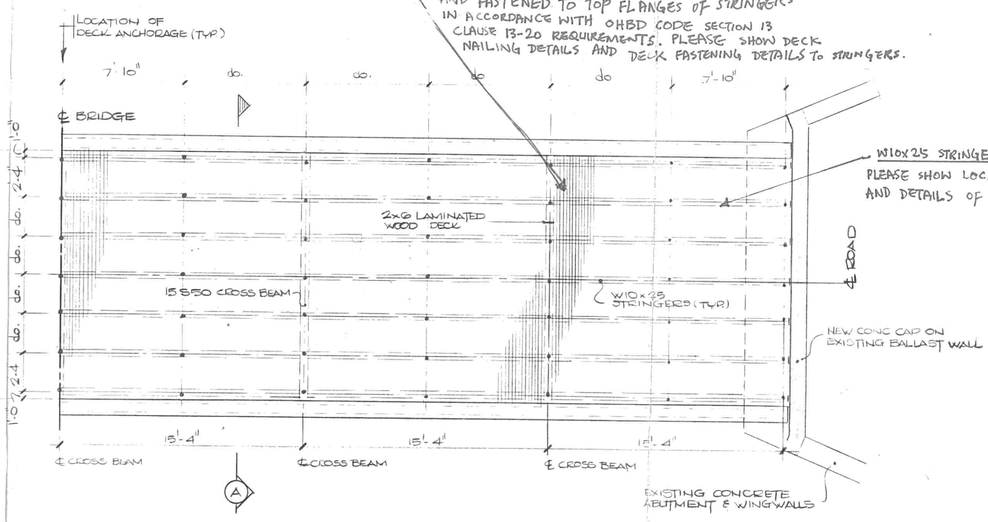
SECTION 'A-A'

STRINGER & DECK DETAIL

SCALE 1/2" = 1'-0"

LAMINATED WOOD DECK.

LAMINATIONS SHALL BE NAILED TOGETHER, AND FASTENED TO TOP FLANGES OF STRINGERS IN ACCORDANCE WITH OHBD CODE SECTION 13 CLAUSE 13-20 REQUIREMENTS. PLEASE SHOW DECK NAILING DETAILS AND DECK FASTENING DETAILS TO STRINGERS.

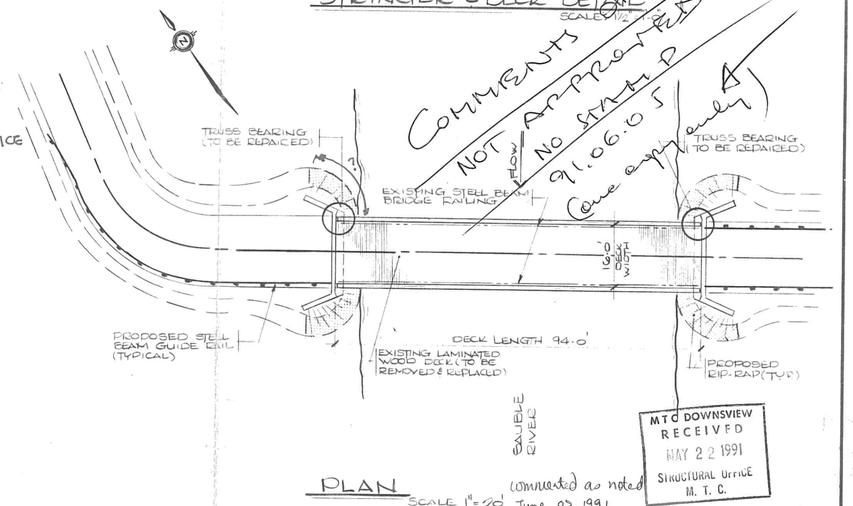


W10x25 STRINGERS

PLEASE SHOW LOCATION OF SPLICE AND DETAILS OF SPLICE

HALF PLAN OF STRUCTURE

SCALE 1" = 5'



PLAN

SCALE 1" = 20'

COMMENTS
NOT APPROVED
NO STAMP
91.06.05
Comments Attached

MTO DOWNSVIEW
RECEIVED
MAY 22 1991
STRUCTURAL OFFICE
M. T. C.

commented as noted
June 03, 1991
Dennis CHIN

DESIGN EVALUATION AND POSTING LOAD:

- DESIGN AND EVALUATION TO OHBD CODE 1983 EDITION
- POSTING LOAD LEVEL 1 ——
  LEVEL 2 ——
  LEVE 3 ——

DESIGN LOADING, EVALUATION LOADING, AND CODE:

* DECK STRINGERS DESIGNED TO OHBD CODE LOADING, OHBDC-1983-C_f.
* LAMINATED TIMBER DECK:
  THE SAFE WHEEL LOADING WAS DETERMINED TO BE 82.4 kN (18.5 kips).
  SAFE AXLE LOAD: 165 kN (37 kips - 18.5 tons)
* CROSS GIRDERS SUPPORTING DECK STRINGERS:
  EVALUATION LEVEL 1, SAFE FOR 51.4% OF EVALUATION LOADING
  SAFE ALLOWABLE AXLE LOADING - SINGLE AXLE LOAD OF 127 kN (28.7 kips - 14.4 tons)
* STEEL PONY TRUSSES:
  * WILL SAFELY SUPPORT EVALUATION LEVEL 1 LOADING
  * WILL SAFELY SUPPORT 80% OF EVALUATION LEVEL 2 LOADING
* AFTER REHABILITATION, THE STRUCTURE MAY BE POSTED FOR A SAFE LOADING OF 14 TONS.

SPECIFICATIONS:

* MTO FORMS AND SPECIAL PROVISIONS AS NOTED IN CONTRACT DOCUMENTS.

CONCRETE:

* CONCRETE MIX TO BE AN MTO APPROVED DESIGN MIX WITH A MINIMUM STRENGTH AT 28 DAYS OF 30 MPa.
* ALL CONCRETE SHALL BE AIR ENTRAINED 5% TO 7%. THE AIR ENTRAINING AGENT SHALL BE ADDED AT THE CONCRETE PLANT.
* SOURCE OF SUPPLY OF READY-MIX CONCRETE MUST BE APPROVED BY THE ENGINEER.

REINFORCING STEEL:

* ALL STEEL SHALL BE GRADE 400 MPa.
* REINFORCING STEEL BAR LAPS AS PER OHBDC.
* CLEAR CONCRETE COVER OVER REINFORCING STEEL TO BE 70 mm ± 20 mm.

GENERAL CONTRACTOR:

* ALL CONSTRUCTION JOINTS SHALL BE MADE ONLY AT LOCATIONS SHOWN ON THE DRAWINGS OR AS APPROVED BY THE ENGINEER.
* APPROVED BONDING AGENT SHALL BE APPLIED WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE.
* INSTALLED REINFORCING STEEL TO BE INSPECTED BY THE ENGINEER PRIOR TO POUR.
* CONCRETE NOT TO BE POURED AT TEMPERATURES BELOW 0° C WITHOUT PERMISSION OF THE ENGINEER.
* ALL EXPOSED EDGES TO BE CHAMFERED 25 mm UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL:

* ALL STRUCTURAL STEEL SHALL MEET CAN3 - CSA G-40.21 SPECIFICATIONS (Fy = 44 ksi)
* STRUCTURAL BOLTS TO BE A-325. BOLT THREADS SHALL BE EXCLUDED FROM THE SHEAR PLANES

NOTES:

MTO STRUCTURE SITE NO 2-42

Owen Sound - Dan Thomas 811+519-376-7350

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE DONE TO THEM.

NO	DATE	REVISION DESCRIPTION	CHECKED

REGISTERED PROFESSIONAL ENGINEER
W. J. MANNEROW
PROVINCE OF ONTARIO
P. Eng

ARRANVALE BRIDGE REHABILITATION

LOT 29, CONCESSION 5-6

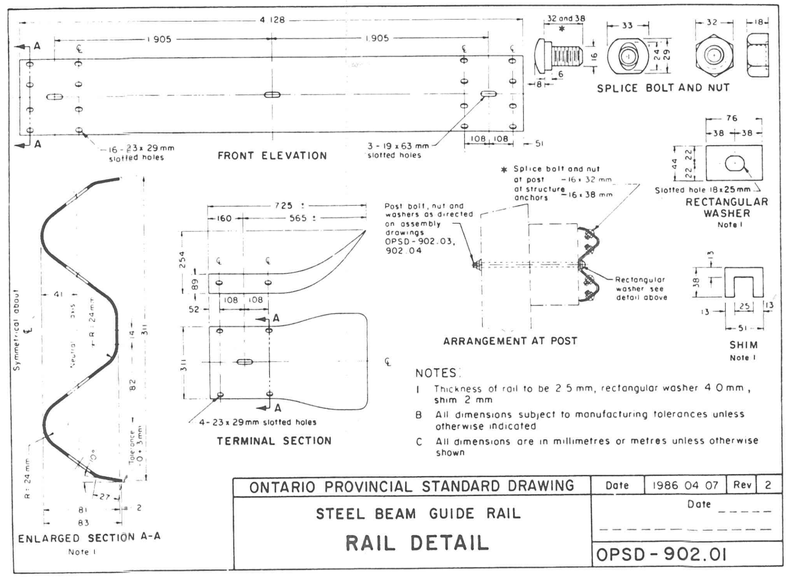
TOWNSHIP OF ARRAN

PLANS, ELEVATION & DETAILS

STRUCTURE SITE No 2-42

GAMSBY AND MANNEROW LIMITED
Consulting Professional Engineers
GUELPH – HALTON HILLS – OWEN SOUND

DRAWN BY	APPROVED BY	PROJECT Nº	DRAWING Nº
D.W.Mc	W.J.M.	B1170	1
DESIGNED BY	DATE	SCALE	
W.J.M.	FEB 1991	AS NOTED	



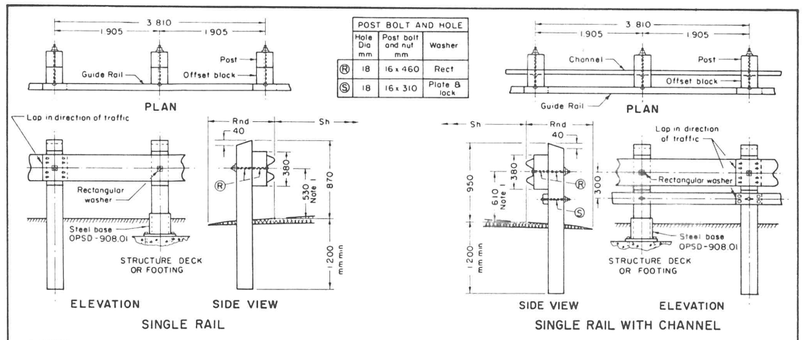
NOTES:

1 Thickness of rail to be 2.5 mm, rectangular washer 4.0 mm, shim 2 mm

B All dimensions subject to manufacturing tolerances unless otherwise indicated

C All dimensions are in millimetres or metres unless otherwise shown

ONTARIO PROVINCIAL STANDARD DRAWING	Date	1986 04 07	Rev	2
STEEL BEAM GUIDE RAIL **RAIL DETAIL**	Date _____			
OPSD - 902.01				



POST BOLT AND HOLE			
Hole Dia mm	Post bolt and nut mm	Washer	
(R) 18	16 x 460	Rect	
(S) 18	16 x 310	Plate B lock	

NOTES:

1 Where guide rail is adjacent to curb, mounting height shall be measured:
- a Vertically at face of guide rail when face of guide rail is more than 300 mm beyond gutter line.
- b Vertically at gutter line when face of guide rail is 300 mm or less beyond gutter line.

A Wooden posts and offset blocks: Size 200 x 200 mm nominal, 190 x 190 mm ± 1.5 mm dressed, tops to have 25 mm chamfer.

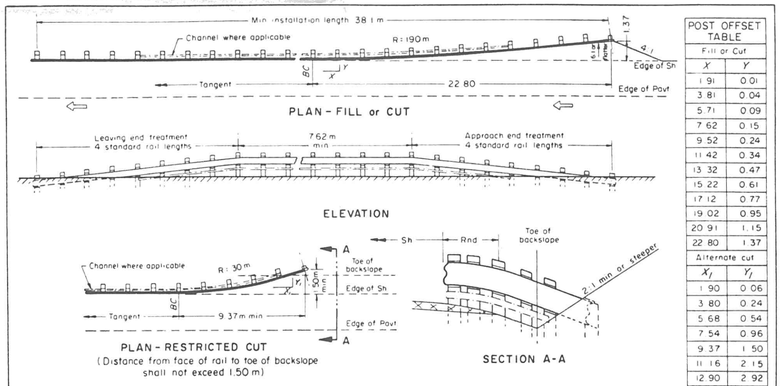
B Wooden posts to be set by instrument for alignment and grade, with tops parallel to pavement grade.

C To produce an even alignment, shim beam element where necessary.

D This standard to be read in conjunction with OPSD-902.01 and 902.02

E All dimensions are in millimetres or metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Date	1990 11 15	Rev	3
STEEL BEAM GUIDE RAIL **ASSEMBLY DETAIL** SINGLE RAIL WITH OR WITHOUT CHANNEL	Date _____			
OPSD - 902.03				



POST OFFSET TABLE	
Fill or Cut	
X	Y
1.91	0.01
3.81	0.04
5.71	0.09
7.62	0.15
9.52	0.24
11.42	0.34
13.32	0.47
15.22	0.61
17.12	0.77
19.02	0.95
20.91	1.15
22.80	1.37
Alternate cut	
X_1	Y_1
1.90	0.06
3.80	0.24
5.68	0.54
7.54	0.96
9.37	1.50
11.16	2.15
12.90	2.92
14.59	3.79
16.23	4.77

NOTES:

A All lateral dimensions measured from face of rail.

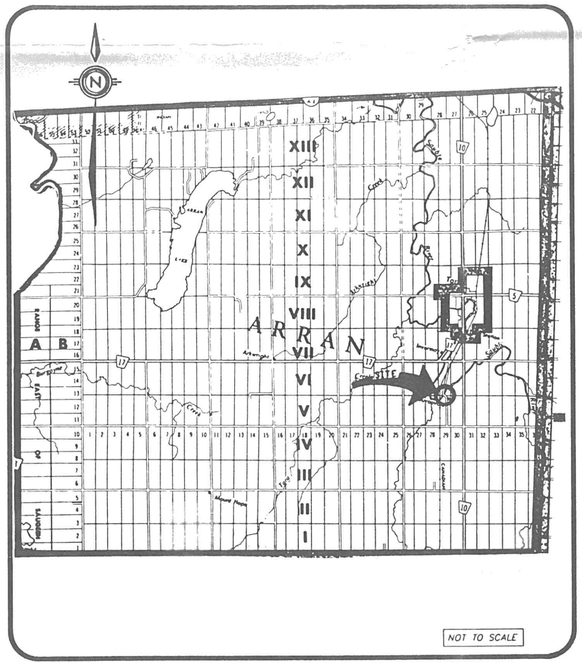
B Straight guide rail panels to be placed to fit arc when radius exceeds 45 m. Curved guide rail panels to be placed to fit arc when radius is 45 m or less.

C This standard to be read in conjunction with OPSD-902.03.

D Cross section must be widened to incorporate terminal end.

E All dimensions are in millimetres or metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Date	1988 04 15	Rev	1
STEEL BEAM GUIDE RAIL **APPROACH AND LEAVING END TREATMENTS**	Date _____			
OPSD - 902.05				



LOCATION PLAN
BRIDGE No. 14
TOWNSHIP OF ARRAN

MTC DO NOT REVIEW
RECEIVED
MAY 22 1991
STRUCTURAL OFFICE
M. T. C.

STRUCTURE SITE No. 2-42

NOTES:

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE DONE TO THEM.

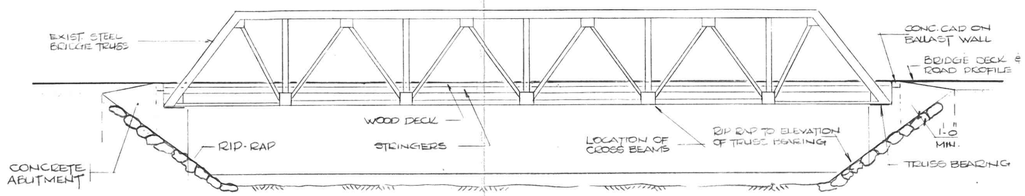
NO	DATE	REVISION DESCRIPTION	CHECKED

REGISTERED PROFESSIONAL ENGINEER
W. J. MANNEROW
PROVINCE OF ONTARIO
P.Eng.

ARRANVALE BRIDGE REHABILITATION
LOT 29, CONCESSION 5-6
TOWNSHIP OF ARRAN
LOCATION PLAN & STANDARDS

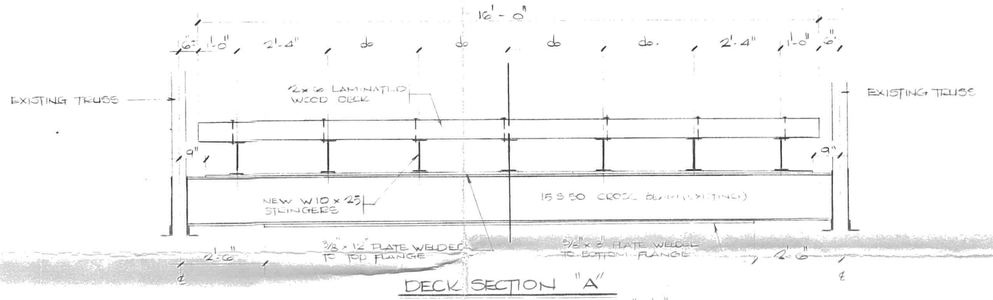
GAMSBY AND MANNEROW LIMITED
Consulting Professional Engineers
GUELPH – HALTON HILLS – OWEN SOUND

DRAWN BY	APPROVED BY	PROJECT NO	DRAWING NO
DWM	W J M	B1170	2
DESIGNED BY	DATE	SCALE	
W J M	APR. 1991	N.T.S.	



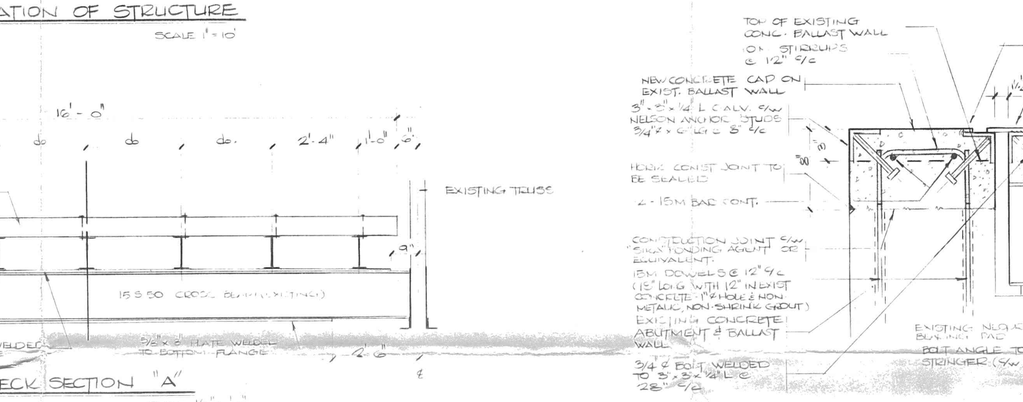
ELEVATION OF STRUCTURE

SCALE 1" = 10'



DECK SECTION "A"

SCALE 1½" = 1'-0"



EXPANSION JOINT DETAIL

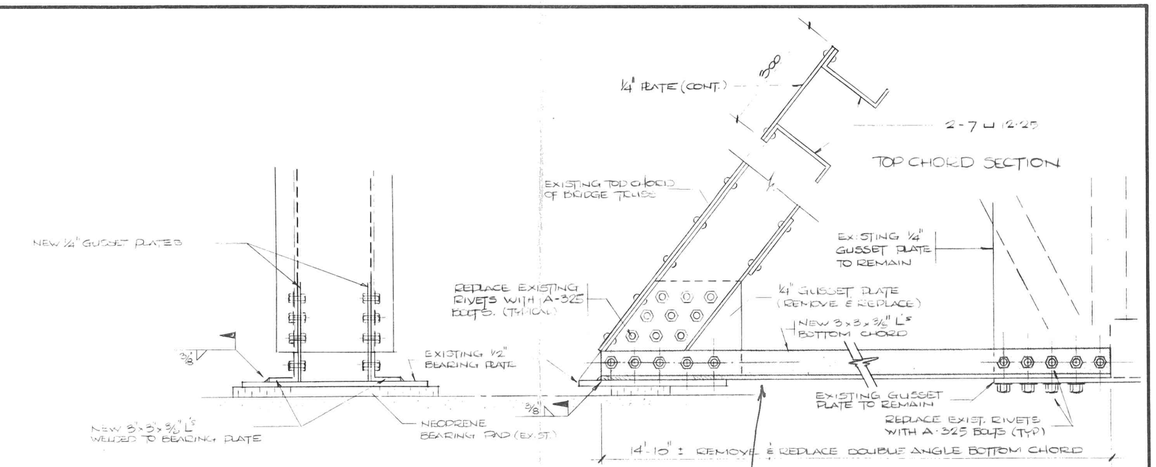
SCALE 1½" = 1'-0"

STRINGER & DECK DETAIL

SCALE: 1½" = 1'-0"

WELDING COVER PLATES TO EXISTING CROSS BEAMS NOT ACCEPTABLE. COVER PLATES SHALL BE BOLTED TO TOP AND BOTTOM FLANGES.

DECK ANCHORAGE NOT ACCEPTABLE - NOT IN ACCORDANCE WITH OHBD CODE SECTION 13 CLAUSE 13-20 REQUIREMENT.



TRUSS BEARING DETAILS

SCALE 1½" = 1'-0"

INTERMEDIATE AND END TIE PLATES REQUIRED FOR TENSION MEMBER. PLEASE SHOW LOCATIONS AND DETAILS

POSTING LOAD SHALL BE 11 TONNES FOR LEVEL 1

GENERAL NOTES

POSTING:

* POSTED LOAD LIMITS AFTER REPAIRS: 14 tonnes

SPECIFICATIONS:

* MTO FORMS AND SPECIAL PROVISIONS AS NOTED IN CONTRACT DOCUMENTS.

CONCRETE:

BE CONCRETE MIX TO DAYS OF 30 MPa. AN MTO APPROVED DESIGN MIX WITH A MINIMUM STRENGTH AT 28

* ALL CONCRETE SHALL BE AIR ENTRAINED 5% TO 7%. THE AIR ENTRAINING AGENT SHALL BE ADDED AT THE CONCRETE PLANT.
* SOURCE OF SUPPLY OF READY-MIX CONCRETE MUST BE APPROVED BY THE ENGINEER.

REINFORCING STEEL:

* ALL STEEL SHALL BE GRADE 400 MPa.
* REINFORCING STEEL BAR LAPS AS PER OHBDC.
* CLEAR CONCRETE COVER OVER REINFORCING STEEL TO BE 70 mm ± 20 mm.

GENERAL CONTRACTOR:

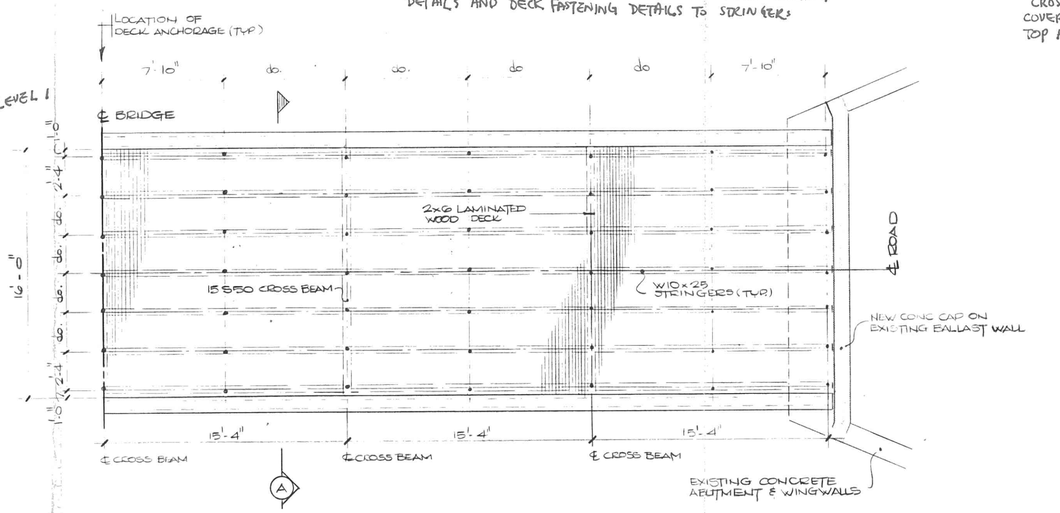
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* APPROVED BONDING AGENT SHALL BE APPLIED WHERE NEW CONCRETE IS PLACED AGAINST EXISTING CONCRETE.
* INSTALLED REINFORCING STEEL TO BE INSPECTED BY THE ENGINEER PRIOR TO POUR.
* CONCRETE NOT TO BE POURED AT TEMPERATURES BELOW 0° C WITHOUT PERMISSION OF THE ENGINEER.
* ALL EXPOSED EDGES TO BE CHAMFERED 25 mm UNLESS OTHERWISE NOTED.

STRUCTURAL STEEL:

* ALL STRUCTURAL STEEL SHALL MEET CAN3 - CSA G-40.21 SPECIFICATIONS (Fy = 44 KSI)
* STRUCTURAL BOLTS TO BE A-325.
* BOLT THREADS SHALL BE EXCLUDED FROM SHEAR PLANES.

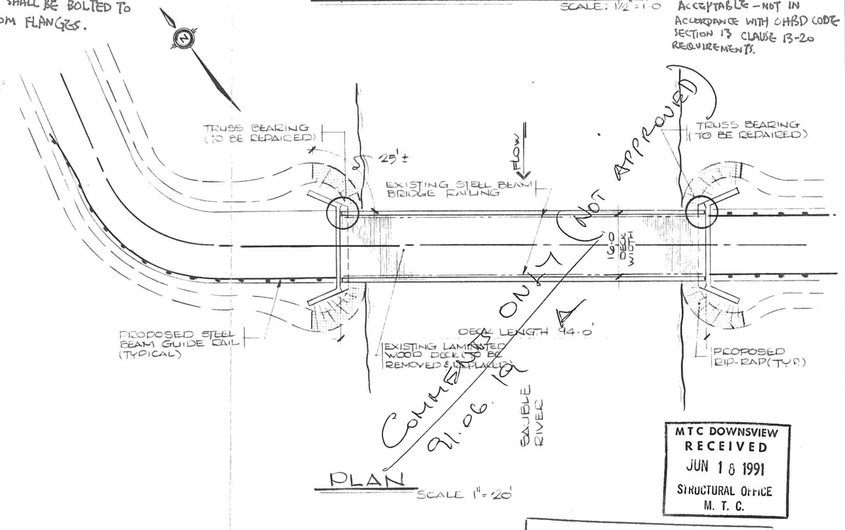
LAMINATED WOOD DECK

LAMINATIONS SHALL BE NAILED TOGETHER AND FASTENED TO TOP FLANGES OF STRINGERS IN ACCORDANCE WITH OHBD CODE SECTION 13 CLAUSE 13-20 REQUIREMENTS. PLEASE SHOW DECK NAILING DETAILS AND DECK FASTENING DETAILS TO STRINGERS



HALF PLAN OF STRUCTURE

SCALE 1" = 5'



PLAN

SCALE 1" = 20'

MTC DOWNSVIEW
RECEIVED
JUN 18 1991
STRUCTURAL OFFICE
M. T. C.

STRUCTURE SITE No. 2-42

NOTES:

MTC STRUCTURE SITE NO 2-42

DETAIL OF THE CONTRACTORS METHOD OF SUPPORTING THE TRUSS DURING WORK ON THE BEARING SHALL BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT.

THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR ANY DAMAGE DONE TO THEM.

NO	DATE	REVISION DESCRIPTION	CHECKED
1	JUN. 13/91	AS PER MTO COMMENTS	W.J.M

REGISTERED PROFESSIONAL ENGINEER W. J. MANNEROW PROVINCE OF ONTARIO

P.Eng

AREANVALE BRIDGE REPAIR

LOT 29, CONCESSION 5-6

TOWNSHIP OF ARRAN

PLANS, ELEVATION & DETAILS

GAMSBY AND MANNEROW LIMITED

Consulting Professional Engineers

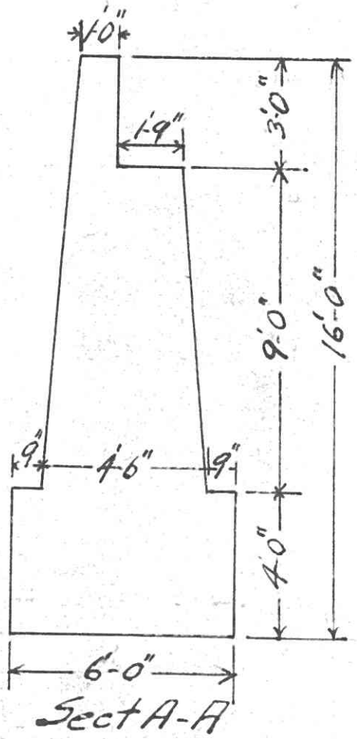
GUELPH – HALTON HILLS – OWEN SOUND

DRAWN BY	APPROVED BY	PROJECT NO	DRAWING NO
D.W.Mc	W. J. M.	B 1170	1
DESIGNED BY	DATE	SCALE	
W. J. M.	FEB. 1991	AS NOTED	

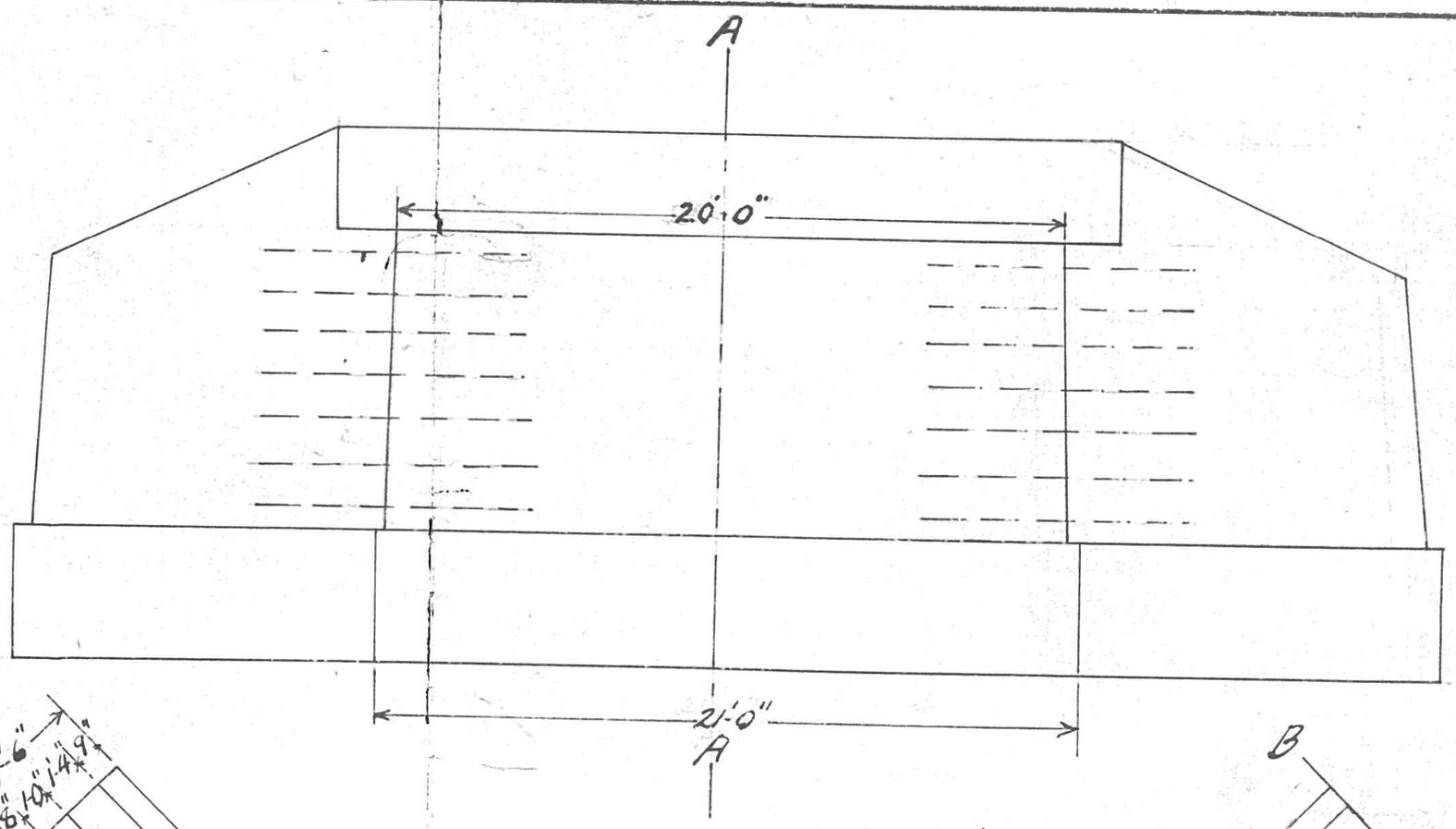
Appendix E

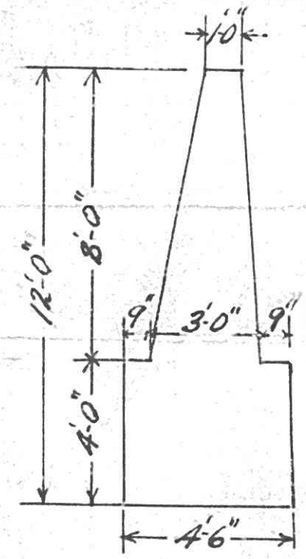
Select Design Drawings for Structure E17

B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario

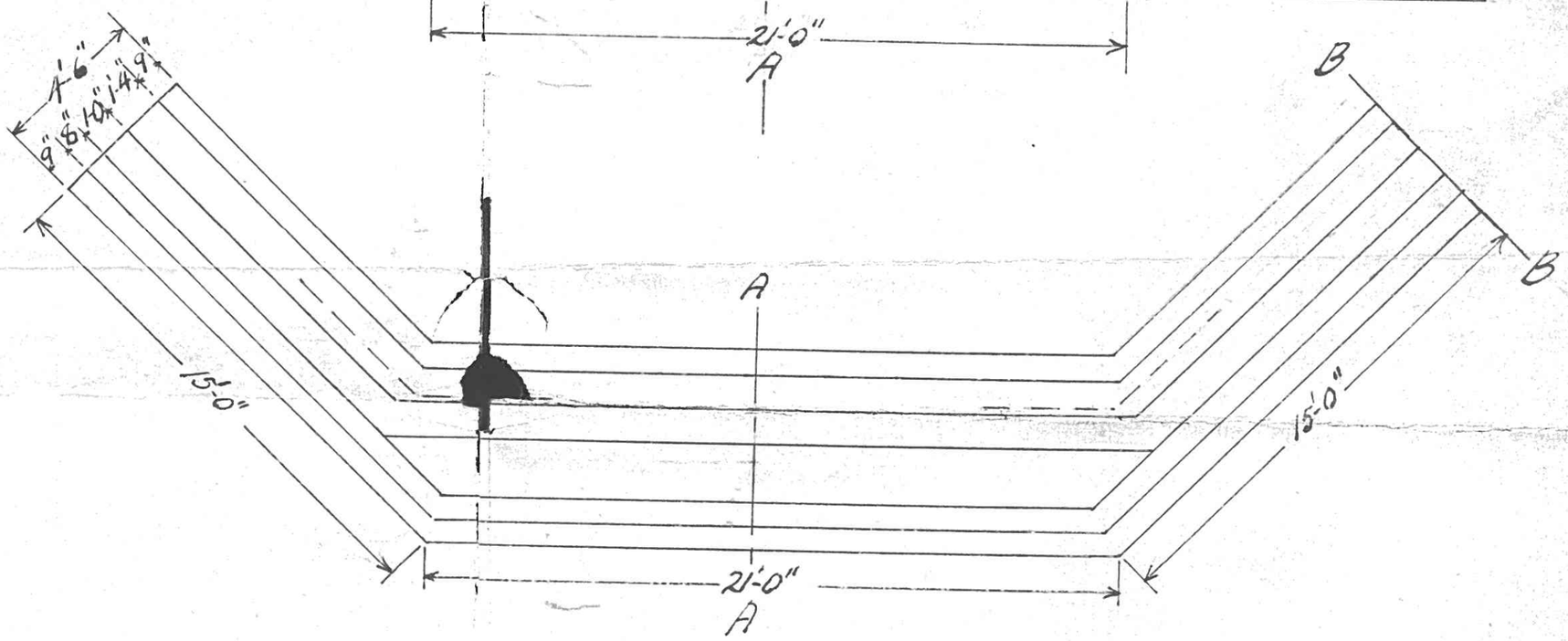


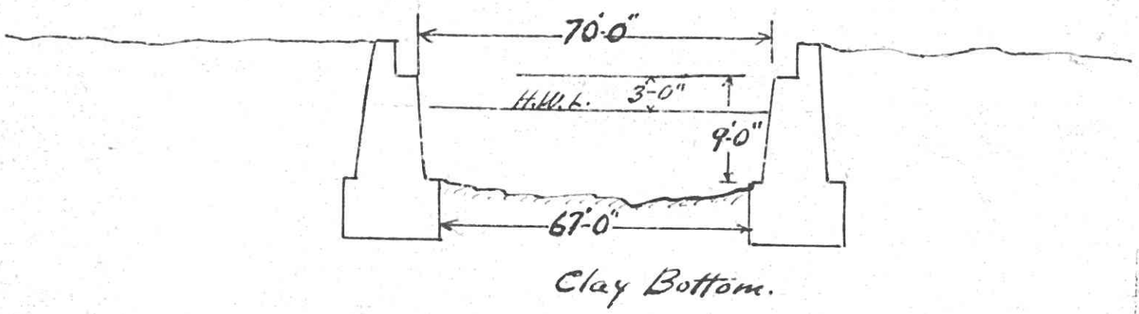
Sect A-A



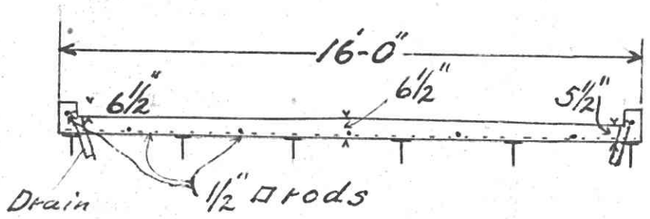


Sect. B-B





Clay Bottom.



Plan of Abuts for Bridge opp. lot 26 Con VIII Eldersle Twp.
Scale 1" = 4 ft.

Quantities

Abuts 165 c.y. 1:6 concrete
14 - ½" □ rods 9'-0" long
Floor 23 c.y 1:4 concrete
185 - ½" □ rods 15'9" long

G. R. Stephenson Cty Engr.
2-150 Walkerton, June 20/27

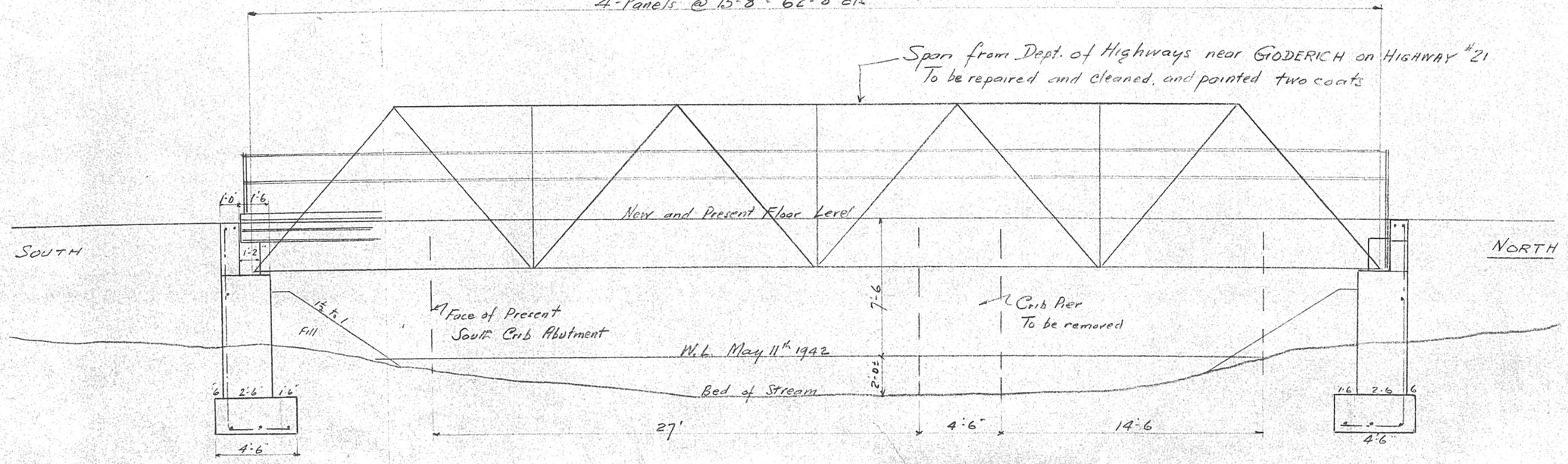
PLAN No 3124

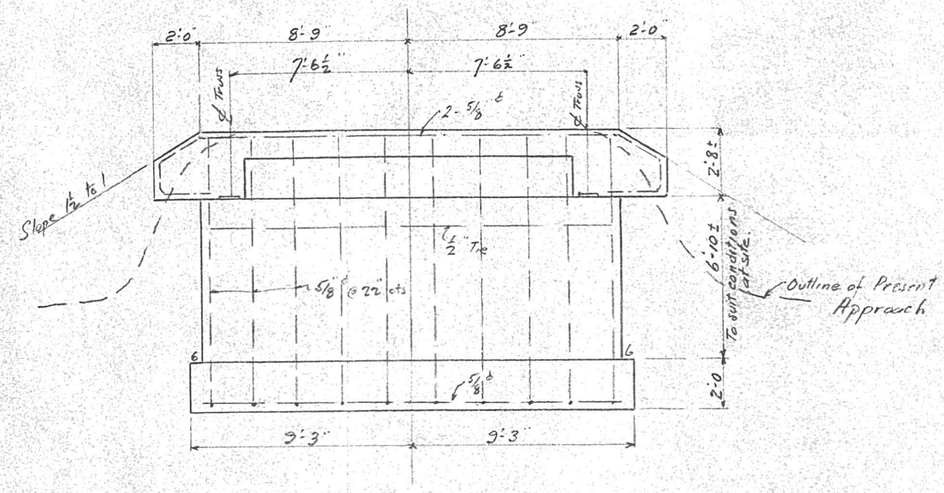
AECOM

Appendix F

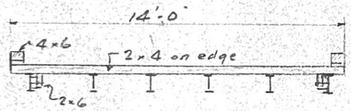
Select Design Drawings for Structure E22

B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario





FRONT VIEW OF ABUTMENT



SECTION OF FLOOR

Department of Highways Ont
Specifications

TOWNSHIP OF ELDERSLIE

PROPOSED BRIDGE OVER ELDERSLIE CK

ON SIDEROAD Nº 10 - CON. 12

May 21st 1942

2-77

ONTARIO BRIDGE Co LTD TORONTO

H 2059

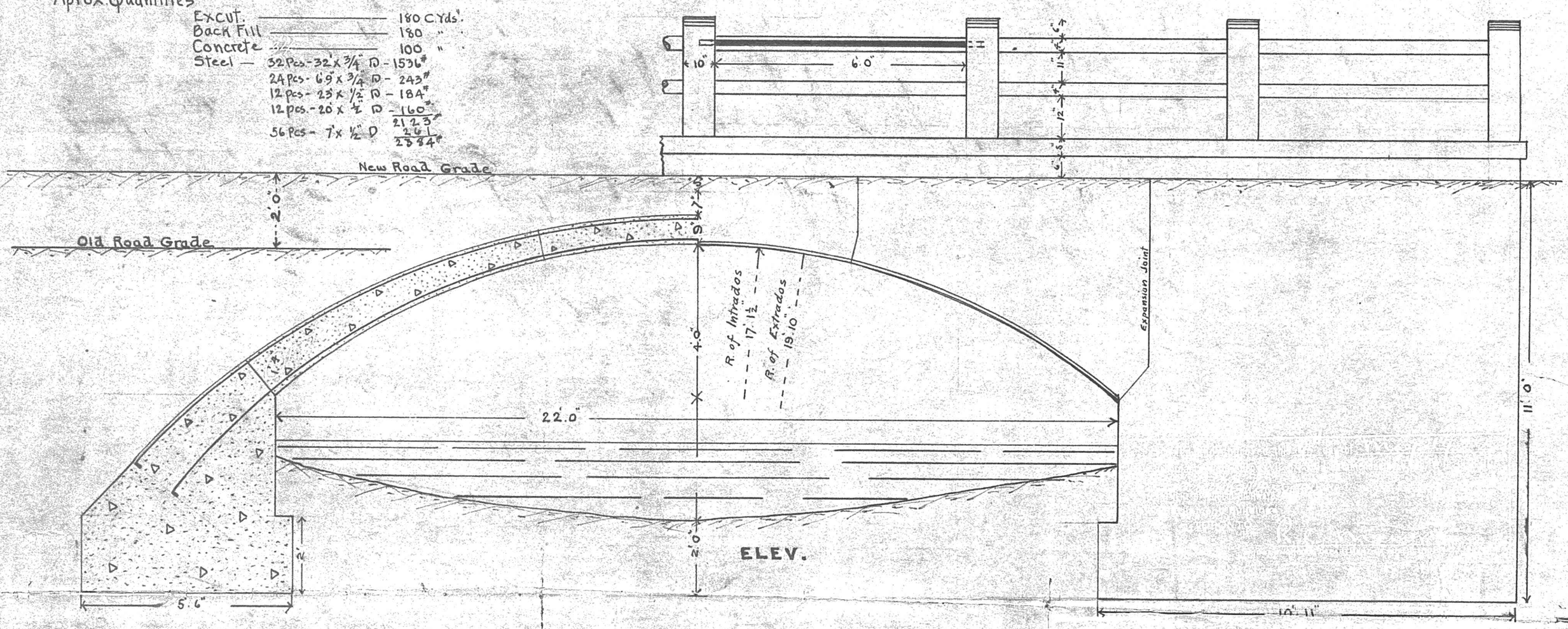
Appendix G

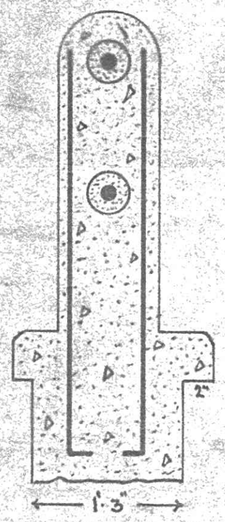
Select Design Drawings for Structure A11

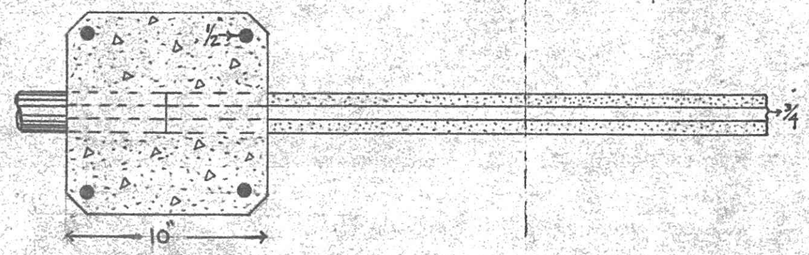
B.M. Ross and Associates Ltd.
Cultural Heritage Evaluation Report
Arran-Elderslie Bridge Master Plan
Structures: A5, A11, A14, E1, E4, E12, E17, E22, E24
Bruce County, Ontario

Aprox. Quantities

Excut.		180 C.Yds.
Back Fill		180 "
Concrete		100 "
Steel —	32 Pcs - 32' x 3/4" D	- 1536#
	24 Pcs - 6.9" x 3/4 D	- 243#
	12 Pcs - 23' x 1/2 D	- 184#
	12 pcs - 20' x 1/2 D	- 160#
		2123#
	56 Pcs - 7' x 1/2" D	261#
		2384#







POST · RAIL

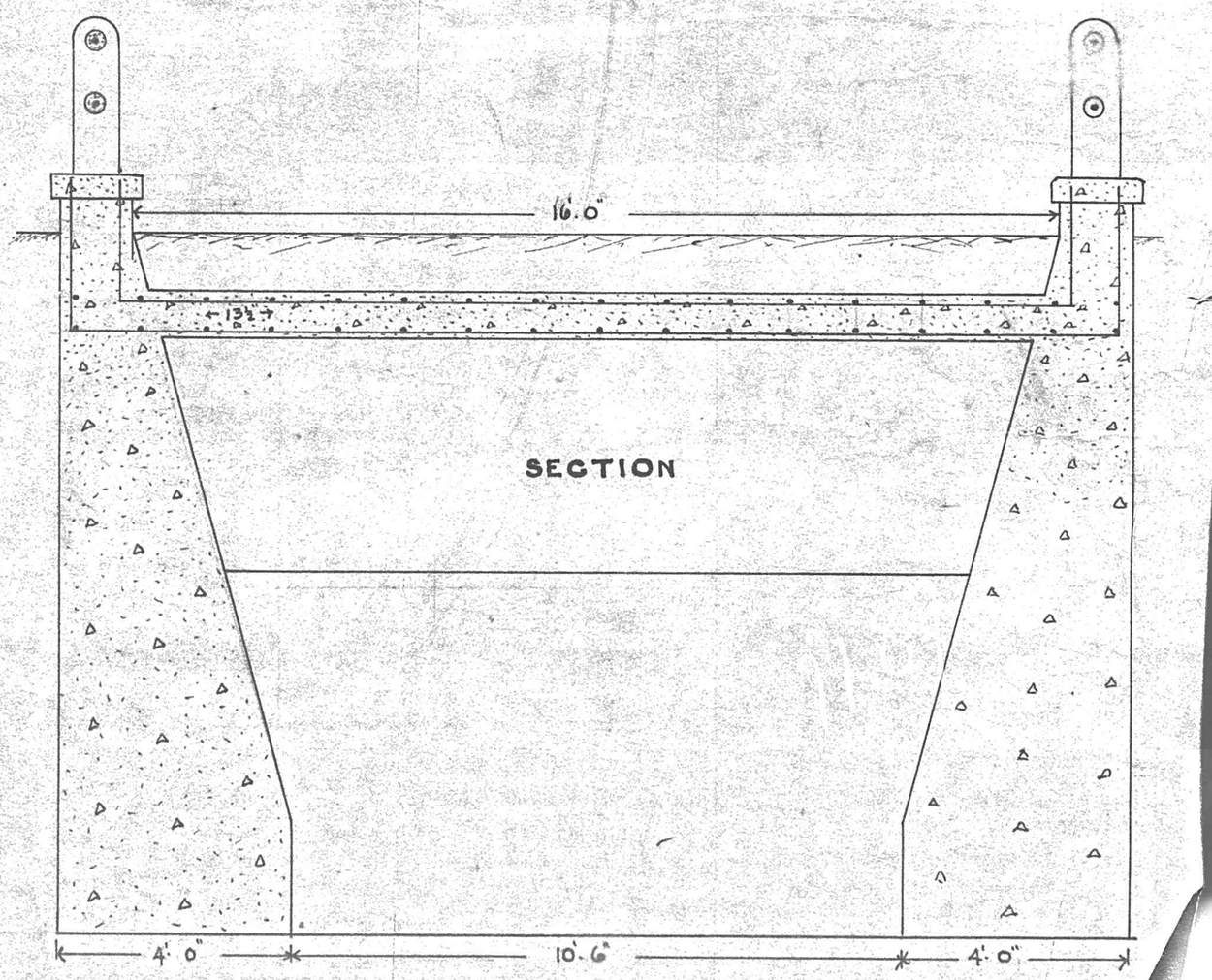
TP. OF ARRAN
ARCH BRIDGE
LOT 5 CON. VII

SCALE - ½ INCH - 1 FOOT

Apr. 26th 1922

R. McDowall C.E.
Tp. Engineer

STRUCTURE REGISTER No. 2-28
280-28
PLAN No. #64
M 280 1-1
M 280 28-1



Contact
Michael Greguol, MA
Cultural Heritage Specialist
T 519.963.5866
E michael.greguol@aecom.com

Adria Grant, MA, CAHP
Manager, Cultural Resources
T 519.963.5861
E adria.grant@aecom.com

aecom.com

APPENDIX E

CONSULTATION PROGRAM

BRIDGE INFRASTRUCTURE MASTER PLAN
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

NOTICE OF STUDY COMMENCEMENT

The Municipality of Arran-Elderslie is planning to undertake a Bridge Infrastructure Master Plan which will identify future infrastructure needs associated with a group of older bridges distributed throughout the municipality. The bridges, which were constructed between 1910 and 1950, require significant rehabilitation or replacement in the next 5 to 10 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan review process will consider a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. As an outcome of this process, one or more of the structures being reviewed may be identified for removal and/or permanent retirement from vehicular traffic. The location of the bridges included in the review can be viewed at the following link: www.bmross.net/Public Information Centre/Arran-Elderslie.

THE ENVIRONMENTAL ASSESSMENT PROCESS:

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and also include consultation with government review agencies, Aboriginal Communities, adjacent property owners, and the general public. This Notice is being issued to advise of the start of study investigations. Additional opportunities for public input and comment will be provided as the study progresses.

PUBLIC INVOLVEMENT:

Public consultation is a key component of this study. The proposed consultation plan provides for a Public Information Meeting (PIC) to be held during the spring of 2020 to review components of the Infrastructure Master Plan and to give interested parties an opportunity to provide input into the process. Any comments collected in conjunction with the Class EA Master Plan process will be maintained on file for use during the project and may be included in project documentation. With the exception of personal information, all comments will become part of the public record.

Please contact the project engineers if you have any questions regarding this Notice: B.M. Ross and Associates: 62 North Street, Goderich, Ontario, N7A 2T4. Telephone (Toll Free): (888) 524-2641. Fax: (519) 524-4403. Kelly Vader, Environmental Planner (e-mail: kvader@bmross.net), within 30 days from the date of this Notice

Scott McLeod, Works Manager
Municipality of Arran-Elderslie

This Notice Issued September 18, 2019

Young activists lead protests

Demonstrations held across world to bring attention to global warming

GABRIELLA BORTER, FABRIZIO BENSCH AND PATPICHA TANAKASEMPIPAT

From the Solomon Islands to New York's Wall Street, millions of students and workers abandoned schools and offices on Friday to demand urgent action to stop global warming, joining a worldwide strike inspired by 16-year-old Swedish activist Greta Thunberg.

Demonstrations that started in the Pacific islands followed the rising sun across Australia, Japan, Southeast Asia and then on to Europe, Africa, the Middle East and the Americas.

Thunberg, who sailed across the Atlantic in an emissions-free yacht ahead of the summit, was in New York to headline a massive rally ahead of next week's climate summit at the headquarters of the UN.

"She's like the icon of our generation," New York protester Fiamma Cochrane, 17, said of Thunberg.

Demonstrators in Paris raised a painting of Thunberg in likeness of the Virgin Mary, a halo around her head reading, "Our house is on fire."

Alarmed by images of the Greenland ice sheets melting and the Amazon rain forests burning, the protests highlighted the leadership role of young people in the international cry to reduce consumption of fossil fuels.

Worldwide concern has escalated since U.S. President Donald Trump abandoned the international Paris Accord on climate change and took a series of steps to dismantle environmental protections including moving on Thursday to block stricter vehicle emissions standards in California.

"Save our planet!" marchers roared while parading from an area near Wall Street to a harborside park with a view of the Statue of Liberty.

Three million people had participated worldwide as of midday in New York, organizers with the anti-fossil fuels group 350 said. Britain's opposition leader Jeremy Corbyn tweeted that 100,000 people joined the demonstration in London.



Swedish climate activist Greta Thunberg, centre, takes part in a demonstration in Lower Manhattan in New York. *SHANNON STAPLETON/REUTERS*

"This is about my future, not only my future, but the future of my entire generation and all the generations to come after ours," said Tristan Vancleef, 16, among some 15,000 demonstrators who marched through central Brussels, Belgium.

More than 200 young people in Thailand stormed into the Environment Ministry and dropped to the ground feigning death as they demanded government action, while students in New Delhi staged a similar "die-in."

Activists in Berlin and Munich re-enacted gallows, standing on melting blocks of ice with nooses around their necks to symbolize the death that awaits them when the polar ice caps melt. Others in Warsaw staged a performance of people drowning in a sea of plastic waste.

"There is no Planet B," read a sign hoisted by a young woman in London, England.

Global warming caused by heat-trapping greenhouse gases from burning fossil fuels has already led to droughts and heat waves, melting glaciers, rising sea levels and floods, according to scientists.

Carbon emissions climbed to a record high last year, despite a warning from the UN-backed Intergovernmental Panel on Climate Change in October that output of the gases must be slashed over the next 12 years to stabilize the climate.

The UN summit next week brings together world leaders to discuss climate change mitigation strategies, such as transitioning to renewable energy sources.

Reuters

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Public Notices

BRIDGE INFRASTRUCTURE MASTER PLAN
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

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Scott McLeod, Works Manager
Municipality of Arran-Elderslie **This Notice Issued September 18, 2019**

Legal & Tender Notices

GREY BRUCE Health SERVICES

Bids Open for GBHS Markdale Hospital Snow Removal Contract

Grey Bruce Health Services is soliciting proposals for snow removal and salting at our **Markdale Hospital** for the 2019-2020 season, with renewal option for two subsequent years.

Components of the work include:

➡ Plowing, salting of parking lots & roadway
➡ Snow hauling
➡ Maintaining entrances and exits

Detailed bid package, including Terms and Conditions, may be picked up at the Engineering Services Department, Markdale Hospital or Email contact below.
- Mandatory Site Visit 11:00 AM, Friday Oct 4.
- Closing Date for Bids is 3:00 PM, Thursday Oct 10.

GBHS reserves the right to not accept the lowest, or any proposal.

Email or mail proposals to: GBHS
1800 8th Street East
Owen Sound, Ontario
N4K 6M9
Attn. Mr. Mark Elliott
Phone (519) 376-2121 X 2153
MELLIOTT@GBHS.ON.CA

GREY BRUCE Health SERVICES

Bids Open for GBHS Owen Sound Hospital Snow Removal Contract

Grey Bruce Health Services is soliciting proposals for snow removal and salting at our **Owen Sound Hospital** for the 2019-2020 season, with renewal option for two subsequent years.

Components of the work include:

➡ Plowing, salting of parking lots & roadway
➡ Snow hauling
➡ Maintaining entrances and exits

Detailed bid package, including Terms and Conditions, may be picked up at the Engineering Services Department, Owen Sound Hospital or Email contact below.
- Mandatory Site Visit 3:00 PM, Thursday Oct 3
- Closing Date for Bids is 3:00 PM, Thursday Oct 10

GBHS reserves the right to not accept the lowest, or any proposal.

Email or mail proposals to: GBHS
1800 8th Street East
Owen Sound, Ontario
N4K 6M9
Attn. Mr. Mark Elliott
Phone (519) 376-2121 X 2153
MELLIOTT@GBHS.ON.CA

Condos & Apartments

Grey Bruce

APTS/ HOUSES 1, 2 or 3 BDRM Owen Sound, Tara, Allenford (519)371-9920 or (519)371-9980 **Meaford** (519)538-2407 **Wiarton** (519)379-7312 **Port Elgin** (519)477-4323

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dmackaydental@hotmail.com

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Thank You



This letter is directed to Hospital Staff, to my very good neighbours Paul, Debby, William and the ambulance crew Aug 9, 2019. They were my life line. Thanks to Dr Siddiqui, Dr Van Sligterhorst. The staff on 6-2, Nurse Andie, Nurse Patti, Nurse Casewell, Nurse Gorgan, Nurse Tim, Nurse Kalleeng. More to remember but you know who you are. Thanks to dietician, Kitchen Staff, Cleaning ladies, Lab Staff, Drs who performed many tests in the downstairs Depts, the partners who kept me warm in the drafty halls with warm sheets. Thanks to Sandy Fry Niel and others from Physio. Many thanks to my Church family for prayers, hospital visits I'm sure are a great help in my recovery so far. Thanks to my care giver Marie who drives me to post hospital & medical appts, to Jennifer who filled in. If I have omitted anyone, please forgive. God Bless All in your line of expertise.

- Patricia McMillan

U.S. SUES SNOWDEN OVER BOOK

WASHINGTON The U.S. filed a lawsuit on Tuesday against Edward Snowden, shown, the former National Security Agency contractor who in 2013 leaked secret documents about U.S. telephone and internet surveillance, saying his new book violates non-disclosure agreements. The Justice Department said Snowden published his memoir, Permanent Record, without submitting it to intelligence agencies for review, adding



that speeches given by Snowden also violated non-disclosure agreements. The U.S. is seeking all proceeds earned by Snowden for the book, the Justice Department said. The lawsuit also names the "corporate entities" behind the book's publication as nominal defendants. Snowden has lived in Russia since he revealed details of U.S. intelligence agencies' secret surveillance programs.

Reuters

Israeli election too close to call, exit polls show

Netanyahu's fight for survival could go on for weeks after second vote this year

JEFFREY HELLER

JERUSALEM Israeli Prime Minister Benjamin Netanyahu's battle for political survival looked set to stretch on for days or weeks after exit polls following Tuesday's election showed the race too close to call.

The surveys by Israeli TV stations gave Netanyahu's right-wing Likud 31-33 of parliament's 120 seats compared with 32-34 for the centrist Blue and White led by former general Benny Gantz.

They indicated that Netanyahu's ally-turned-rival, ex-defence minister Avigdor Lieberman, could be the kingmaker, with the backing of his far-right Yisrael Beitenu party critical to the formation of any ruling coalition.

"Netanyahu has lost, but Gantz hasn't won," said Udi Segal, a prominent Israeli news anchor.

Without Lieberman's support, the polls suggested, Likud could put together a right-wing coalition controlling only up to 57 parliamentary seats, while Blue and White could enlist no more than 58 legislators — meaning both parties fall short of the 61 needed for a governing majority.

Lieberman was forecast to capture eight to 10 seats, up to double his current tally in parliament, making him the linchpin.

The election was called after Netanyahu, 69, failed in efforts to cobble together a coalition following an April ballot in which Likud and Blue and White wound up in a dead heat, each taking 35 parliamentary seats. It is the first time Israel has had two general elections in a single year.

The two main parties' campaigns pointed to only narrow differences on many important issues: the regional struggle against Iran, the Palestinian conflict, relations with the U.S. and the economy.

An end to the Netanyahu era, after a decade in power, would be unlikely to bring about a significant change in policy on hotly disputed issues in the peace process with the Palestinians that collapsed five years ago.

Netanyahu, Israel's longest-serving prime minister, has announced his intention to annex the Jordan Valley in the occupied West Bank, where the Palestinians seek statehood.

But Blue and White has also said it would strengthen Jewish settlement blocs in the West Bank, with the Jordan Valley as Israel's "eastern security border." The Palestinians and many countries consider the settlements to be illegal.

Lieberman, a Jewish settler from the former Soviet Union who ran on a platform of limiting the influence of ultraorthodox rabbis and politicians on everyday life in Israel, has said he seeks a "national unity" government with the two major parties, Likud and Blue and White.

That could be complicated: Lieberman has said he would not join a coalition that included ultraorthodox parties — Netanyahu's traditional allies. Gantz has ruled out participating in an administration with Netanyahu, if the Israeli leader is indicted on looming corruption charges.

As in the election five months ago, his opponents, including Gantz, focused on bribery and fraud allegations against Netanyahu in three corruption cases. Netanyahu, due to face a pretrial hearing in October to argue against the charges being filed, has denied any wrongdoing.

An election loss could leave Netanyahu more at risk of prosecution, without the shield of parliamentary immunity which his political allies had promised to seek for him.

And there is no certainty they would stand by a weakened leader without an obvious public mandate in any coalition-building.

In the final hours of campaigning, Netanyahu strained every sinew, urging voters to support him to avert what he described as the "disaster" of a left-wing government.

Reuters



Prime Minister Benjamin Netanyahu casts his vote during Israel's parliamentary election in Jerusalem. *HEIDI LEVINE/REUTERS*

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Public Notices

BRIDGE INFRASTRUCTURE MASTER PLAN
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

NOTICE OF STUDY COMMENCEMENT

The Municipality of Arran-Elderslie is planning to undertake a Bridge Infrastructure Master Plan which will identify future infrastructure needs associated with a group of older bridges distributed throughout the municipality. The bridges, which were constructed between 1910 and 1950, require significant rehabilitation or replacement in the next 5 to 10 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan review process will consider a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. As an outcome of this process, one or more of the structures being reviewed may be identified for removal and/or permanent retirement from vehicular traffic. The location of the bridges included in the review can be viewed at the following link: www.bmross.net/Public Information Centre/Arran-Elderslie.

THE ENVIRONMENTAL ASSESSMENT PROCESS :

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and also include consultation with government review agencies, Aboriginal Communities, adjacent property owners, and the general public. This Notice is being issued to advise of the start of study investigations. Additional opportunities for public input and comment will be provided as the study progresses.

PUBLIC INVOLVEMENT :

Public consultation is a key component of this study. The proposed consultation plan provides for a Public Information Meeting (PIC) to be held during the spring of 2020 to review components of the Infrastructure Master Plan and to give interested parties an opportunity to provide input into the process. Any comments collected in conjunction with the Class EA Master Plan process will be maintained on file for use during the project and may be included in project documentation. With the exception of personal information, all comments will become part of the public record.

Please contact the project engineers if you have any questions regarding this Notice: B.M. Ross and Associates: 62 North Street, Goderich, Ontario, N7A 2T4. Telephone (Toll Free): (888) 524-2641. Fax: (519) 524-4403. Kelly Vader, Environmental Planner (e-mail: kvader @bmross.net), within 30 days from the date of this Notice

Scott McLeod, Works Manager
Municipality of Arran-Elderslie **This Notice Issued September 18, 2019**

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825 9th St. W
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TerraCorp.

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978 8th Ave.
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LARGE SUITES
4 Stainless Steel Appliances
Renovated Kitchens
Luxury Plank Flooring
Balcony
Walk-ins Welcomed
226-909-3888
TerraCorp.

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Oliphant, Furnished 1Bdrm $900 plus utils ph 905-745-7651or email malacon.road@gmail.com

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Meaford (519)538-2407
Wiarton (519)379-7312
Port Elgin (519)477-4323

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John Stil 519-794-2530

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Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 • f. (519) 524-4403
www.bmross.net

File No. 19195

September 13, 2019

Review Agency
(see attached list)

RE: Municipality of Arran-Elderslie
Bridge Infrastructure Master Plan

The Municipality of Arran-Elderslie is planning to undertake a Bridge Infrastructure Master Plan which will identify future infrastructure needs associated with a group of older bridges distributed throughout the municipality. The bridges, which were constructed between 1910 and 1950, require significant rehabilitation or replacement in the next 5 to 10 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan review process will consider a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. As an outcome of this process, one or more of the structures being reviewed may be identified for removal and/or permanent retirement from vehicular traffic. The location of the bridges included in the review can be viewed at the following link: www.bmross.net/Public Information Centre/Arran-Elderslie.

The Bridge Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA) which is an approved process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and also include consultation with the general public, government review agencies First Nation and Métis communities, and affected property owners. There will be additional opportunities for input and involvement as the study progresses.

Your organization has been identified as possibly having an interest in this project and we are soliciting your input. Please forward your response to our office by October 25, 2019. If you have any questions or require further information, please contact the undersigned at kvader@bmross.net or by phone at 1-888-524-2641.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:es
Encl.
cc. Scott McLeod, Municipality of Arran-Elderslie

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN

REVIEW AGENCY CIRCULATION LIST

REVIEW AGENCY	INVOLVEMENT
Ministry of the Environment, Conservation & Parks (London) - EA Coordinator	Mandatory Contact
Ministry of Natural Resources and Forestry Guelph	Potential Impact on Natural Features
Ministry of Tourism, Culture and Sport, Toronto	Potential Impact to Cultural Heritage Features
Ministry of Transportation (Owen Sound)	Potential Impact on Transportation Network
Municipality of Brockton	Adjacent Municipality
Township of Chatsworth	Adjacent Municipality
Town of Saugeen Shores	Adjacent Municipality
Township of Georgian Bluffs	Adjacent Municipality
Bruce County - Highways Department - Planning & Development Department	- General Information - Implications for Long-Term Development
Saugeen Valley Conservation Authority	Potential Impact on Natural Features
Grey-Sauble Conservation Authority	Potential Impact on Natural Features
Arran-Elderslie	Proponent
Department of Fisheries and Oceans Canada	Burlington
Bruce Grey Catholic District School Board Transportation Services	Impact on Transportation
Bluewater District School Board	Impact on Transportation



























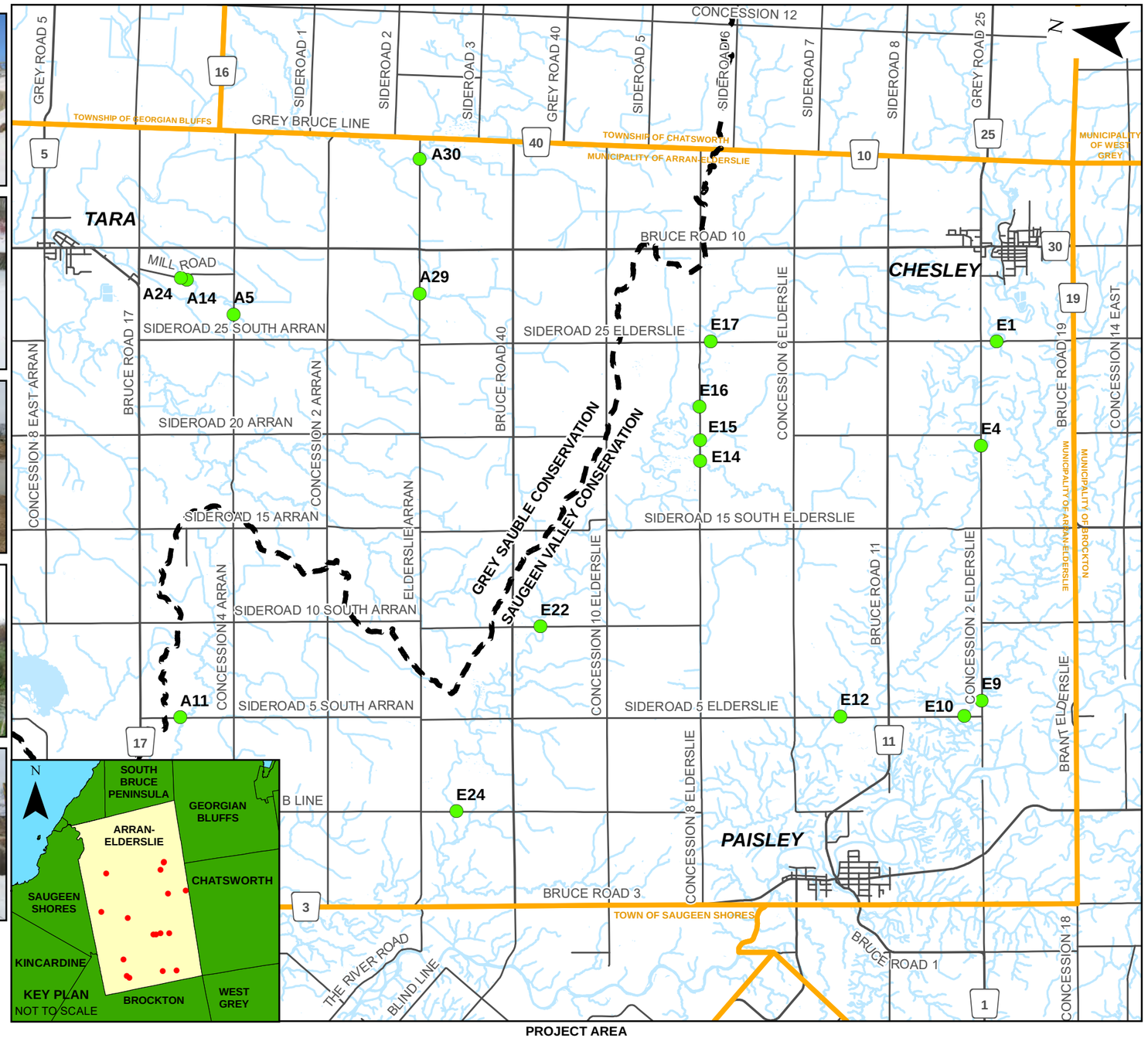








SITE PHOTOS TAKEN THROUGH 2012 & 2017



PROJECT AREA
SCALE 1 : 100,000

BMROSS engineering better communities

MUNICIPALITY OF ARRAN-ELDERSLIE

CLASS ENVIRONMENTAL ASSESSMENT
FOR BRIDGE MASTER PLAN

GENERAL LOCATION PLAN

DATE	PROJECT No.
AUGUST, 2019	19195
SCALE	FIGURE No.
AS SHOWN	2.2

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B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 • f. (519) 524-4403
www.bmross.net

File No. 19195

September 13, 2019

Aboriginal Community
(see attached list)

RE: Municipality of Arran-Elderslie
Bridge Infrastructure Master Plan

The Municipality of Arran-Elderslie is planning to undertake a Bridge Infrastructure Master Plan which will identify future infrastructure needs associated with a group of older bridges distributed throughout the municipality. The bridges, which were constructed between 1910 and 1950, require significant rehabilitation or replacement in the next 5 to 10 years and, as a group, represent a significant capital commitment for the municipality. The Master Plan review process will consider a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. As an outcome of this process, one or more of the structures being reviewed may be identified for removal and/or permanent retirement from vehicular traffic. The location of the bridges included in the review can be viewed at the following link: www.bmross.net/Public Information Centre/Arran-Elderslie.

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Your community has been identified as possibly having an interest in this project. For your convenience, a response form is enclosed. Please forward your response to our office by October 25, 2019. If you have any questions or require further information, please contact the undersigned at 519-524-2641 or by e-mail at kvader@bmross.net.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:es
Encl.
cc. Scott McLeod, Municipality of Arran-Elderslie

Z:\19195-Arran-Elderslie-Bridge_Master_Plan\WP\Master Plan\Aboriginal Consultation\19195-19Sept13-Aboriginal Let.docx

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN
PROJECT: 19195

ABORIGINAL CIRCULATION LIST

Chippewas of Nawash Unceded First Nation
Chief Gregory Nadjiwon
R.R. #5
Wiarton, ON N0H 2T0
executiveassistant@nawash.ca

Chippewas of Saugeen First Nation
Chief Lester Anoquot
Hwy. 21, R.R. # 1
Southampton, ON N0H 2L0
sfn@saugeen.org

Saugeen Ojibway Nation (SON) – Chippewas of Saugeen &
Chippewas of Nawash
Land Use Planning: Doran Ritchie
25 Maadookii Subdivision
Neyaashiinigmiing, ON N0H 2T0
d.ritchie@saugeenojibwaynation.ca

Historic Saugeen Métis
George Govier, Consultation Coordinator
204 High Street, Box 1492
Southampton, ON N0H 2L0

Métis Nation of Ontario
Suite 1100 – 66 Slater Street
Ottawa, ON K1P 5H1
consultations@metisnation.org

Great Lakes Métis Council
380 9th Street East
Owen Sound, ON N4K 1P3
greatlakesmetis@gmail.com

Response Form

Project Name: Bridge Infrastructure Master Plan

Project Description: Class EA Master Plan to develop a Bridge Infrastructure Master Plan in Arran-Elderslie for a group of older bridges distributed throughout the Municipality

Project Location: Municipality of Arran-Elderslie

(Key Plan of Project Location attached)

Please Detach and Return in Envelope Provided

Name of Aboriginal Community: _____

Please check appropriate box

☐ **Please send additional information on this project**

☐ **We would like to meet with representatives of this project.**

☐ **We have no concerns with this project and do not wish to be consulted further**

The CORPORATION OF THE MUNICIPALITY OF ARRAN-ELDERSLIE
1925 Bruce Road #10 Chesley, ON N0G1L0
519-363-3039 Fax: 519-363-2203

Arran-Elderslie Municipal Newsletter

Winter 2019/2020

Mayors Message

With the weather changing outside it seems appropriate to say a few words about the exciting changes to our Newsletter. We are providing more information, faster. We want to earn a spot on the side of the fridge. Community events formerly in our newsletter are encouraged to contact Laura at ecdev@arran-elderslie.ca to have events displayed on one or all of our three electronic signs in Chesley, Paisley, and Tara and advertised on our social media.

Did you know: Municipal Council meets twice a month (once a month in July and August) in the Council Chambers at the Municipal Office. Council meetings are open to the public and you are welcome to sit in! You can ask to come as a delegation to Council by contacting the Deputy Clerk Christine Fraser-McDonald at deputyclerk@arran-elderslie.ca. For a list of dates for 2020 Council Meetings, check out our website or call the Municipal office.

Council has been busy with several grand openings, new builds, and volunteering, making Arran-Elderslie a great place to live, work, and play.

Steve Hammell
Mayor of Arran-Elderslie

Dog Tags

did you know?

Permanent dog tags were issued to all registered dogs in Arran-Elderslie starting in 2017. If your dog was registered you will receive an invoice in January 2020. The invoice will remain $15 per dog up until March 31st. On April 1st the invoice will be $25. Replacement tags are available according to the By-Law for $5.

If your dog is unregistered please call the office to obtain a dog tag, and to avoid additional charges & fines.

Any outstanding invoices shall be added to the final tax bill. Guide Dogs, Service Dogs, Working or Police Dogs must be licensed, however no fee is required.

Many thanks to those residents who keep the snow shoveled from the fire hydrants in case of an Emergency! We appreciate you!

Important Municipal Dates

- **November 11-** Remembrance Day Services
- **November 12-** Council Meeting
- **November 25-** Council Meeting
- **December 9-** Council Meeting
- **December 25 to January 2-** Municipal Office Closed
- **January 14-** Council Meeting
- **January 28-** Council Meeting



Annual Santa Clause Parades

Paisley – November 29th
Tara – December 7th
Chesley – December 6th

A Message from our Works Department

Scott McLeod- Works Manager

After hours road **emergencies** can be reported to: 519-373-9781
Additional numbers:
519-270-0446 and 519-373-9780
After hours **water and sewer** emergencies can be reported to Pager # 519-374-2804 and/or 519-363-3039.
Follow the prompts and you will receive a call back ASAP.



Columbarium

Christine Fraser- McDonald- Deputy Clerk

Spaces in the Tara Hillcrest Cemetery and Chesley Cemetery columbarium are available for purchase. Please email deputyclerk@arran-elderslie.ca for more information. Did you know that cemeteries are important as religious, historic and heritage sites?

Winter Parking

did you know?

Lisa McDonald- By-Law Enforcement Officer

The Municipality of Arran-Elderslie restricts on street parking to provide safe snow removal and emergency services to the municipal residents. As per the Traffic and Parking By-law No. 43-08, parking is restricted from November 1st to March 31st between 2:00 a.m. to 7:00 a.m. Applicable fines will apply and vehicles impeding snow removal may be towed at owner's expense. Thank you in advance for helping winter maintenance crews plow faster and more efficiently.

Garbage and Recycling Pickup

Garbage and Blue Box pickup for Christmas and New Years will be your normal day. Arran Landfill hours will be as normal: Thursday 8:00am – 3:00pm and Saturday 8:00am-12:00noon.

A Message from our Economic Development Department

Laura Fullerton- Community Development Coordinator

Hello! My name is Laura Fullerton and I am the Community Development Coordinator for Arran-Elderslie. It is my job to work with business owners, beautify our main streets, work to fill up empty storefronts, assist with Physician Recruitment and overall market Arran-Elderslie as an attractive place to live, work or open a business! I have had the opportunity to complete a variety of interesting projects since I started 6 months ago, including new banners for the downtowns of Chesley, Paisley and Tara, assisting with a Business Retention and Expansion strategy for Paisley, starting Chesley in the Spruce the Bruce process, assisting with the Chesley Physician Recruitment Gala, hosting a Commercial Space Open House, attending Chamber of Commerce and TDIA meetings, and much more. Thinking about opening a business in Arran-Elderslie? Send me an email!



Bridge Infrastructure Master Plan

Arran-Elderslie has initiated a Bridge Infrastructure Master Plan which will identify future infrastructure needs for a group of older bridges distributed throughout the municipality. The bridges, built between 1910 and 1950, require significant rehabilitation or replacement in the next 5 to 10 years and, as a group, represent a significant capital commitment. The Master Plan will consider factors such as traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. As an outcome of the process, one or more of the structures may be identified for removal and/or permanent retirement from vehicular traffic. For more information on the study go to: www.bmross.net/Public Information Centre/Arran-Elderslie.

Recreation Programs

Katrina Eke- Program Coordinator-
programs@arran-elderslie.ca
519-363-3039 ext 117

Chesley Hockey Skills

Thursdays from 4-5pm for kids from ages 5-11 years at the Chesley Arena. Must be able to skate. Skates, stick and helmet with full cage are required, proper hockey equipment is recommended. No registration required. $3 drop in fee

It's ice season!!!!!!

To book a regular ice time, or an occasional ice time, call Katrina. Call the office for availability of our $102.00 sell off ice.

Community Guide

Anyone with inclusions for,or anyone wishing to advertise in the 2020 Community Guide, are asked to contact Katrina by the November 29th deadline.

Ad fees

Business card – $89.95 ¼ page – $138.00
½ page – $179.75

Thanks Local Businesses!

Special thanks to all the local businesses that support recreation in Arran Elderslie by means of advertising on the Arena Boards.

MacDonnell Fuels	Country 93 / Mix 106.5
John Bridge Plumbing	Bruce Power
Aiken Brothers Plumbing	Bruce Telecom
Aiken Brothers Hardware	Eastlink
Slumskie Brothers Construction	Wayne Bird Fuels
Allens Home Building Centre	Square Deal Neil

Chesley Rexall

AE Weekly Skate Times

CHESLEY
Adult and tots –Mon, Wed, Fri 10-11am Starts Oct 16th
Public Skate – Friday 5-6pm starting Nov 1st
Sunday 5-6pm starting October 13th

PAISLEY
Adult and tots –Tues and Fri 9:30-10:30am Starts Oct 15th
Noon skate – Tuesday 12-1pm Starts Oct 15th
Public Skate – Friday 2-3pm Starts Oct 18th
Sunday 6:30-7:30pm Starts Oct 20th

TARA
Adult and tots – Monday and Friday 11am-12pm Starts Oct 28th
Public Skate – Friday 4:30-5:30pm Starts Nov 1st
Sunday 4-5pm Starts Nov 3rd

Tot Learn To Skate Program!!

Chesley Arena Ages 3-6 yrs Cost is $30 per session
Tuesdays from 4:30-5:30pm
Second session will be from Jan 7 to Feb 25th.
We need a minimum of 12 participants per session to run this program.

For more information or to register your child please call or email Katrina

Skating Sponsorships Available

Any individuals or businesses that are interested in sponsoring a Free Skate during the Christmas holiday season, March Break, or PD Days, are asked to contact Katrina. Cost is $71.00 per hour.

For information on any of the following programs in Chesley, Paisley, and Tara call Katrina.
-Various fitness classes -Carpet Bowling
-Nordic /Walking -Cards -Tai Chi

Kelly Vader

From: Doran Ritchie <d.ritchie@saugeenojibwaynation.ca>
Sent: September 18, 2019 10:35 AM
To: Kelly Vader
Cc: chiefsdesk@nawash.ca; Lester Anoquot; Terry King; Leona Roote
Subject: Re: FW: 19195 - Master Plan Initiation - Municipality of Arran-Elderslie

Hello Kelly,

Thanks for the notification. I reviewed the letter and offer the following comments...

SON is aware and appreciates that the bridges in Arran-Elderslie are dated and in need of repair and maintenance. Commenting or involvement on any of of these projects will be limited to the following:

- Any new works outside of the existing footprint that requires an archeological assessment or areas of known archeological sites
- Any projects requiring a fish act authorization
- Any projects that impact species at risk

We would however, like to stay informed on the progress of any one replacement, timing of the project, and road closures and any fisheries reports generated fro the project.

Please don't hesitate to call me if you have any questions.

Thanks,
Doran

Doran Ritchie | Manager of Resources and Infrastructure
Saugeen Ojibway Nation Environment Office
25 Maadookii Subdivision, Neyaashiinigmiing, ON, N0H 2T0
Cell: 519-374-9210 | Office: 519-534-5507 | Fax: 519-534- 5525

On Wed, Sep 18, 2019 at 10:17 AM Kelly Vader <kvader@bmross.net> wrote:

> Hi Doran:

Kelly Vader

From: Chris Hachey <hsmasstlrcc@bmts.com>
Sent: September 24, 2019 9:08 AM
To: Kelly Vader
Subject: Request for Comments - Arran-Elderslie - Class EA Bridge Infrastructure Master Plan

Your File: 19195
Our File: Bruce County - Arran-Elderslie (Projects)

Ms. Vader,

The Historic Saugeen Métis (HSM) Lands, Resources and Consultation Department appreciates the opportunity to be consulted regarding the Class EA Bridge Infrastructure Master Plan for Arran-Elderslie. HSM interests related to the study largely focus on environmental effects / sustainability and the potential for archaeological resources associated with future development.

HSM looks forward to further consultation regarding this project as information becomes available.

Regards,

Chris Hachey

Assistant Coordinator, Lands, Resources and Consultation

Historic Saugeen Métis
204 High Street
Southampton, Ontario, N0H 2L0
Telephone: (519) 483-4000
Fax: (519) 483-4002
Email: hsmasstlrcc@bmts.com

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Kelly Vader

From: EA Notices to SWRegion (MECP) <eanotification.swregion@ontario.ca>
Sent: September 27, 2019 2:13 PM
To: Kelly Vader
Cc: works@arran-elderslie.ca
Subject: FW: 19195-Bridge Infrastructure Master Plan - Municipality of Arran-Elderslie
Attachments: streamlined_ea_project_information_form_2.xlsx; Initial Notice.pdf

Dear Ms. Kelly Vader and Mr. Scott McLeod:

This email acknowledges the Ministry of Environment, Conservation and Parks (MECP) receipt, with thanks, of the Notice of Commencement for the 19195 Bridge Infrastructure Master Plan.

Based on the information submitted to date, the MECP offers the following preliminary comments with respect to the proposed undertaking:

Aboriginal Consultation

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before the Municipality of Arran-Elderslie may proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of consultation to project proponents while retaining oversight of the process.

The Municipality of Arran-Elderslie's proposed project may have the potential to affect Aboriginal or treaty rights protected under section 35 of Canada's *Constitution Act 1982*. Where the Crown's duty to consult is triggered in relation to the Municipality of Arran-Elderslie's proposed project, the MECP is delegating the procedural aspects of rights-based consultation to the Municipality of Arran-Elderslie through this email. The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown`s preliminary assessment the Municipality of Arran Elderslie is required to consult with the following communities who have been identified as potentially affected by your proposed project. Please be aware that the guidance that follows may change as new information becomes available on project impacts and/or communities areas of interest. If new information becomes available related to project impacts, MECP would be happy to review the recommendations below to determine if it would change.

-Saugeen Ojibway Nation (Saugeen First Nation and Chippewas of Nawash Unceded First Nation)
-Great Lakes Métis

The MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role the Municipality of Arran-Elderslie will be asked to play should additional steps and activities be required.

Source Water Protection

As per the recent amendments to the Municipal Engineers Association (MEA) Class Environmental Assessment parent document approved October 2015, proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be clearly documented in an ESR. If the project is occurring in a vulnerable area, then there may be policies in the local Source Protection Plan (SPP) that need to be addressed (requirements under the Clean Water Act). The proponent should contact and consult with the appropriate Conservation Authority/Source Protection Authority (CA/SPA) to discuss potential considerations and policies in the SPP that apply to the project.

Please include a section in the report on Source Water Protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or changes or creates new vulnerable areas and provide applicable details about the area. If located in a vulnerable area, proponents should document whether any project activities are a prescribed drinking water threat and thus pose a risk to drinking water (this should be consulted on with the appropriate CA/SPA). Where an activity poses a risk to drinking water, the proponent must document and discuss in the Project File Report/ESR how the project adheres to or has regard to applicable policies in the local SPP. If creating or changing a vulnerable area, proponents should document whether any existing uses or activities may potentially be affected by the implementation of source protection policies. This section should then be used to inform and should be reflected in other sections of the report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc. As a note, even if the project activities in a vulnerable area are deemed not to be a drinking water risk, there may be other policies that apply and so consultation with the local CA/SPA is important.

Climate Change

The Municipality of Arran-Elderslie is strongly encouraged to include climate change in this EA. Climate change should be considered in the context of mitigation and the context of adaptation. The Ministry has recently released a guidance document to support proponents in including climate change in environmental assessments. The guide can be found online: https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process. It should be noted that Climatic Features is identified in Appendix 2 of the Municipal Class EA page 2-7 (2015).

Part II Order Request Form

Please note that as of July 1, 2018, a Part II Order Request Form must be used to request a Part II Order as per O. Reg. 152/18. Accordingly, please include those details when conveying information regarding the Part II Order process such as on the Notice of Completion. The following sample text would cover this requirement in the Notice of Completion for this project:

"As of July 1, 2018, a Part II Order Request Form must be used to request a Part II Order in accordance with O. Reg. 152/18. The Part II Order Request Form is available online on the Forms

Kelly Vader

From: Matt Armstrong <m.armstrong@svca.on.ca>
Sent: September 27, 2019 2:26 PM
To: Kelly Vader
Subject: Arran-Elderslie Bridge Master Plan

Hi Kelly,
I will be the contact for SVCA for this particular file. Please keep me aware of any site meetings and proposals for these structures as SVCA review and permits may very likely be required.

Thanks,

SAUGEEN CONSERVATION
Matt Armstrong, Regulations Officer
1078 Bruce Rd. 12, P.O. Box 150 Formosa, ON N0G 1W0
Phone: 519-367-3040 Ext.242 Fax: 519-367-3041
m.armstrong@svca.on.ca
www.svca.on.ca



PRIVACY DISCLAIMER: This e-mail (including any attachments) may contain confidential, proprietary, and privileged information and unauthorized disclosure or use is prohibited. If you received this e-mail in error, please notify the sender and delete this e-mail from your system. SAUGEEN VALLEY CONSERVATION AUTHORITY. Thank You!

Kelly Vader

From: Andrew Sorensen <a.sorensen@greysauble.on.ca>
Sent: October 28, 2019 4:53 PM
To: kvader@bmross.net
Cc: 'Scott McLeod - Municipality of Arran-Elderslie (works@arran-elderslie.ca)'; John Bittorf; Lauren McGregor
Subject: Preliminary Comments -- Bridge Infrastructure Master Plan Arran- Elderslie -- Your File: 19195

Hi Kelly;

Sorry for the delay in response.
The following structures within the GSCA's jurisdiction will require permits for replacement and/or removals.

Structure A5 – Concession 4 – Arranvale Creek

Structure A14 -- Mill Road – Sauble River

Structure A24 -- Mill Road -- Sauble River (Braided channel)

Structure A29 – Elderslie Arran Line – Arranvale Creek

Structure A 30 – Elderslie Arran Line -- Sauble River

We do have hydraulic reports associated with flood plain mapping in Tara and Invermay (CCL 1979-1993) and are aware of a study completed for the Grey Bruce Line Sauble River flood plain and related crossings. (Gamsby and Mannerow Ltd.1990?). This study completed some flood plain mapping at a course scale and A30 is contained within the mapped flood plain area. The remainder of the sites are located outside of the engineered flood plain mapping study limits.

We have a water level gauge at the Invermay bridge which could provide some relevant data for the project. We may have some of the reports electronically. If you require any of these reports or any additional information we may have on file, please contact me or John Bittorf in our office.
I believe the Grey Bruce line report may be available at the Municipality or the Counties. I will look further into our files to ascertain whether we have any further flooding information around these structures that may be relevant.

Our main goal in our permitting process is to ensure the flood issues are not aggravated through replacement and capacity continues to be able to be conveyed during precipitation events.

We are interested in being informed and updated on the process as it progresses.

If you wish discuss any of the above, let me know.

Best Regards,

Andrew J. Sorensen
Environmental Planning Coordinator
Grey Sauble Conservation Authority
237897 Inglis Falls Road, R.R. #4
Owen Sound, ON

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 **www.bmross.net**

File No. 19195

VIA EMAIL ONLY

September 15, 2023

'Agency'

RE: Bridge Infrastructure Master Plan
Municipality of Arran–Elderslie

The Municipality of Arran-Elderslie currently maintains 64 bridges. In September 2019 the municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges. Constructed between 1910 and 1950, the crossings require significant rehabilitation or replacement in the next 10 to 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value.

The location of the bridges included in the review can be viewed at the following link: https://bmross.net/public-information-centre/arran-elderslie/bridge-infrastructure-master-plan/general-location-plan. Based on the options that were considered, preliminary outcomes have been identified for each of the crossings; however, the Municipality is seeking input from residents, Indigenous Communities and review agencies prior to finalizing the recommended approach and completing the Master Plan process.

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and include consultation with government review agencies, Indigenous Communities, adjacent property owners, and the general public.

Your organization has been identified as possibly having an interest in this project and we are soliciting your input. A **Public Meeting** has been scheduled to advise residents of the current status of the project and to receive additional input from interested parties. Details of the meeting are as follows:

Date: **Tuesday, September 19, 2023**
Time: **6:00 p.m. - 8:00 p.m. (Presentation at 6:30 p.m.)**
Place: **Chesley Community Centre (129 4th Ave. SE, Chesley)**

Copies of the presentation material will be posted on the Arran-Elderslie website at www.arran-elderslie.ca for review. Alternatively, hard copies of the presentation material could be provided by mail or email if requested.

Please forward any comments on the project by **October 30, 2023**. If you have any questions or require further information, please contact the undersigned at kvader@bmross.net or by phone at 1-888-524-2641.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:hv
Encl.
cc. Scott Mcleod, Municipality of Arran-Elderslie

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN

REVIEW AGENCY CIRCULATION LIST

REVIEW AGENCY	INVOLVEMENT
Ministry of the Environment, Conservation & Parks Mark Badali Regional Environmental Planner (REP) – Southwest Region Email: Mark.Badali1@ontario.ca	Mandatory Contact
Ministry of Natural Resources and Forestry Allison Gordon Regional Planner (Acting) alison.gordon@ontario.ca	Potential Impact on Natural Features
Ministry of Tourism, Culture and Sport Toronto Karla Barboza, Team Lead - Heritage (Acting) Email: karla.barboza@ontario.ca Joseph Harvey, Heritage Planner Email: Joseph.Harvey@ontario.ca	Potential Impact to Cultural Heritage Features
Ministry of Transportation (Toronto) Kartik Rudra- Planner (Acting) Kartik.Rudra2@ontario.ca	Potential Impact on Transportation Network
Municipality of Brockton John Strader, Roads Supervisor jstrader@brockton.ca	Adjacent Municipality
Township of Chatsworth Ron Davidson - Planner ron.davidson@chatsworth.ca Jamie Edwards – Public Works Operations Manager jamie.edwards@chatsworth.ca	Adjacent Municipality
Town of Saugeen Shores Jay Pausner- Manager of Planning and Development jay.pausner@saugeenshores.ca	Adjacent Municipality
Township of Georgian Bluffs Micheal Benner- Planner	Adjacent Municipality
Bruce County - Planning & Development Department - Transportation Department Ryan Errington, Engineering Mgr. Rerrington@brucecounty.on.ca	- General Information - Implications for Long-Term Development
Saugeen Valley Conservation Authority Matt Armstrong, Regulations Officer m.armstrong@svca.on.ca	Potential Impact on Natural Features
Grey-Sauble Conservation Authority MacLean (Mac) Plews Manager of Environmental Planning	Potential Impact on Natural Features
Arran-Elderslie	Proponent
Bruce Grey Catholic District School Board Transportation Services bruce_grey@bgcdsb.org	Impact on Transportation
Bluewater District School Board Shelley Crummer, Business Analyst shelley_crummer@bwdsb.on.ca	Impact on Transportation

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Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
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File No. 19195

VIA EMAIL ONLY

September 15, 2023

'Community'

RE: Bridge Infrastructure Master Plan
Municipality of Arran–Elderslie

The Municipality of Arran-Elderslie currently maintains 64 bridges. In September 2019 the municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges. Constructed between 1910 and 1950, the crossings require significant rehabilitation or replacement in the next 10 to 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value.

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Please forward any comments on the project by **October 30, 2023**. If you have any questions or require further information, please contact the undersigned at kvader@bmross.net or by phone at 1-888-524-2641.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:hv
Encl.
cc. Scott Mcleod, Municipality of Arran-Elderslie

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN
PROJECT: 19195

ABORIGINAL CIRCULATION LIST

Chippewas of Nawash Unceded First Nation
Ogimaa Gregory Nadjiwon
135 Lakeshore Blvd.,
Neyaashiinigmiing, ON, N0H 2T0
Email: Chief@nawash.ca
executiveassistant@nawash.ca

Chippewas of Saugeen First Nation
Chief Conrad Ritchie (Chi-Nimkii)
Hwy. 21, R.R. # 1
Southampton, ON N0H 2L0
sfn@saugeen.org

Saugeen Ojibway Nation (SON) – Chippewas of Saugeen &
Chippewas of Nawash
Infrastructure and Resources Manager: Charlene Leonard
25 Maadookii Subdivision
Neyaashiinigmiing, Ontario, N0H 2T0
Email: manager.ri@saugeenojibwaynation.ca

Historic Saugeen Métis
Chris Hachey, Consultation Coordinator
204 High Street, Box 1492
Southampton, ON N0H 2L0
Email: saugeenmetis@bmts.com
hsmlrcc@bmts.com

Métis Nation of Ontario
Suite 1100 – 66 Slater Street
Ottawa, ON K1P 5H1
consultations@metisnation.org
contactus@metisnation.org

Great Lakes Métis Council
Peter Coture, President
380 9th Street East
Owen Sound, ON N4K 1P1
Email: peterc1908@hotmail.com
greatlakesmetis@gmail.com

BRIDGE INFRASTRUCTURE MASTER PLAN
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

NOTICE OF PUBLIC INFORMATION MEETING

The Municipality of Arran-Elderslie currently maintains 64 bridges. In September 2019 the municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges. Constructed between 1910 and 1950, the crossings require significant rehabilitation or replacement in the next 10 to 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. The location of the bridges included in the review can be viewed at the following link: https://bmross.net/public-information-centre/arran-elderslie/bridge-infrastructure-master-plan/general-location-plan. Based on the options that were considered, preliminary outcomes have been identified for each of the crossings; however, input from residents is needed prior to finalizing the recommended approach and completing the Master Plan process.

THE ENVIRONMENTAL ASSESSMENT PROCESS:

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and also include consultation with government review agencies, Indigenous Communities, adjacent property owners, and the general public.

PUBLIC INVOLVEMENT:

Public consultation is a key component of this study. A Public Information Meeting is being organized by the Municipality to obtain input from residents on the project status. The meeting will provide details about the Master Plan process and approaches identified for each structure based on the options being considered, including which structures have been identified for potential replacement, repair and eventual closure. This meeting will also give residents an opportunity to provide input on the project. Details of the meeting are as follows:

Date:	**Tuesday, September 19th, 2023**
Place:	**Chesley Community Centre (129 4th Ave. SE, Chesley)**
Time:	**6:00 to 8:00 p.m. (Presentation at 6:30 p.m.)**

NEXT STEPS:

Following the meeting, input into this project will be accepted until **October 19, 2023.** Any comments collected in conjunction with this Master Plan process will be maintained on file for use during the project and may be included in project documentation. With the exception of personal information, all comments will become part of the public record. For further information on this project, or to review the Master Plan process, please contact the project engineers: B.M. Ross and Associates: 62 North Street, Goderich, Ontario, N7A 2T4. Telephone: (519) 524-2641. Kelly Vader, Environmental Planner (e-mail: kvader@bmross.net).

Scott McLeod, Works Manager
Municipality of Arran-Elderslie

This Notice Issued September 6, 2023

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE
MASTER PLAN



WELCOME

PUBLIC INFORMATION MEETING
SEPTEMBER 19, 2023

BMROSS
engineering better communities

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

SUMMARY OF MASTER PLAN PROCESS:

- LONG RANGE PLANS DESIGNED TO INTEGRATE INFRASTRUCTURE REQUIREMENTS WITH ENVIRONMENTAL ASSESSMENT PLANNING PRINCIPLES
- EXAMINES A GROUP OF RELATED PROJECTS IN ORDER TO OUTLINE A FRAMEWORK FOR PLANNING FOR SUBSEQUENT PROJECTS AND/OR DEVELOPMENTS
- INVOLVES CONSULTATION WITH THE PUBLIC, REGULATORY AGENCIES AND ADJACENT PROPERTY OWNERS

SCOPE OF THIS STUDY:

- iNVESTIGATE GROUP OF OLDER BRIDGES IN ARRAN-ELDERSLIE AND DEVELOP RECOMMENDATIONS FOR THEIR FUTURE USE
- CONSIDER WHETHER THE CROSSINGS SHOULD BE REPLACED, REPAIRED OR POTENTIALLY CLOSED
- DEVELOP AN EVALUATION MATRIX THAT COMPARES THE DIFFERENT CROSSINGS IN ORDER TO IDENTIFY PREFERRED OUTCOMES
- CONSULT WITH RESIDENTS, INDIGENOUS COMMUNITIES AND REVIEW AGENCIES
- PROVIDE A PROPOSED PHASING PLAN FOR THE STRUCTURES TO IMPLEMENT OVER A 20 - 25 YEAR TIMEFRAME
- PREPARE A REPORT DOCUMENTING THE MASTER PLAN PROCESS AND STUDY RECOMMENDATIONS

PROJECT TIMELINES

September 2019 – Initial Public/Agency Notifications

Winter 2020 – Cultural Heritage Report Completed

Winter 2020/21– Engineering Review of Bridges

Winter 2021/22 – Develop Evaluation Matrix

Summer 2022 – Identify Preliminary Recommendations

Fall 2022 – Develop Cost Estimates/Repair Timelines

February 2023 – Presentation to Council

September 2023 – Public Information Meeting

Fall 2023 – Finalize Recommendations based on Feedback

Fall 2023 – Finalize Class EA Master Plan Process

CULTURAL HERITAGE EVALUATION

Bridge Name	Cultural Heritage Characteristics
Structure E1 Priebe Bridge	• Steel five-panel, rivet-connected, Warren pony truss bridge installed at the site in 1938; • E1 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Plaque on bridge indicates it was built by the Dickson Bridge Works Co. Ltd. • Has design or physical value and historic or associate value.
Structure E4 Allens Bridge	• Steel five-panel, rivet-connected, Warren pony truss bridge installed at the site in 1920; • E4 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Constructed by the Sarnia Bridge Company with design by Fred B. James, the County Engineer. • Has design or physical value and historic or associate value.
Structure E12 Pearces Bridge	• Steel five-panel, rivet-connected, Pratt pony truss bridge built in 1930; • E4 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Constructed by the Ontario Bridge Company. • Has design or physical value and historic or associate value.
Structure A14 Arranvale Bridge	• Steel six-panel, rivet-connected, Warren pony truss bridge built in 1920; • E4 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Associated with the Arran Vale Mill, located adjacent to the site. • Has design or physical value, historic or associate value, and contextual value.
Structure E17	• Steel five-panel, rivet-connected, Warren pony truss bridge built in 1930; • E17 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Retains the original metal post and lattice railings; • Has design or physical value and contextual value.
Structure A5 Hunts's Bridge	• Single span, earth-filled solid concrete spandrel arch bridge, circa 1910; • A5 is an early and rare survivor of its bridge type; • Single lane construction; • Has design or physical value.
Structure E22	• Steel four-panel, rivet-connected, Warren pony truss bridge built in 1920; • E22 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Relocated to the site in 1942 from Goderich area. Abutments designed by the Ontario Bridge Company. • Has design or physical value.
Structure A11 Wilson's Bridge	• Single span, earth-filled solid concrete spandrel arch bridge, circa 1910; • A11 is an early and rare survivor of its bridge type; • Single lane construction; • Has design or physical value.
Structure E24	• Steel four-panel, rivet-connected, Warren pony truss bridge built in 1920; • E22 is a representative and increasingly rare example of a single lane, one span, pony truss bridge; • Retains the original metal post and lattice railings; • Has design or physical value.

STUDY BRIDGES



WILSON BRIDGE – A11

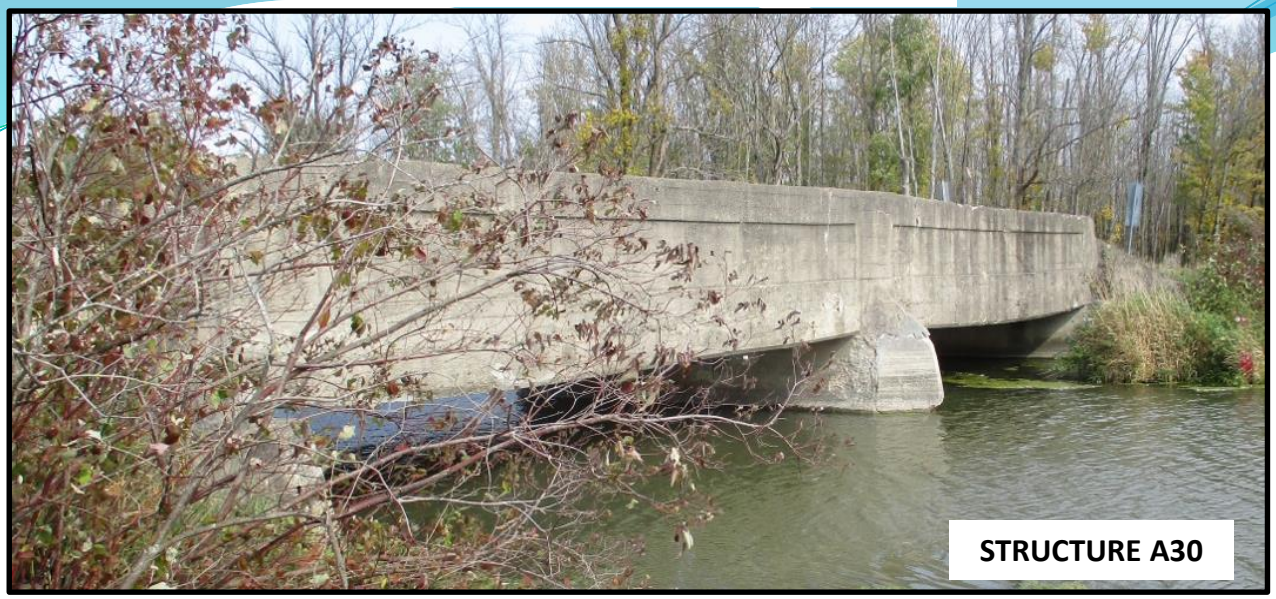


RUFF BRIDGE – A24



STRUCTURE A29

STUDY BRIDGES



STRUCTURE A30

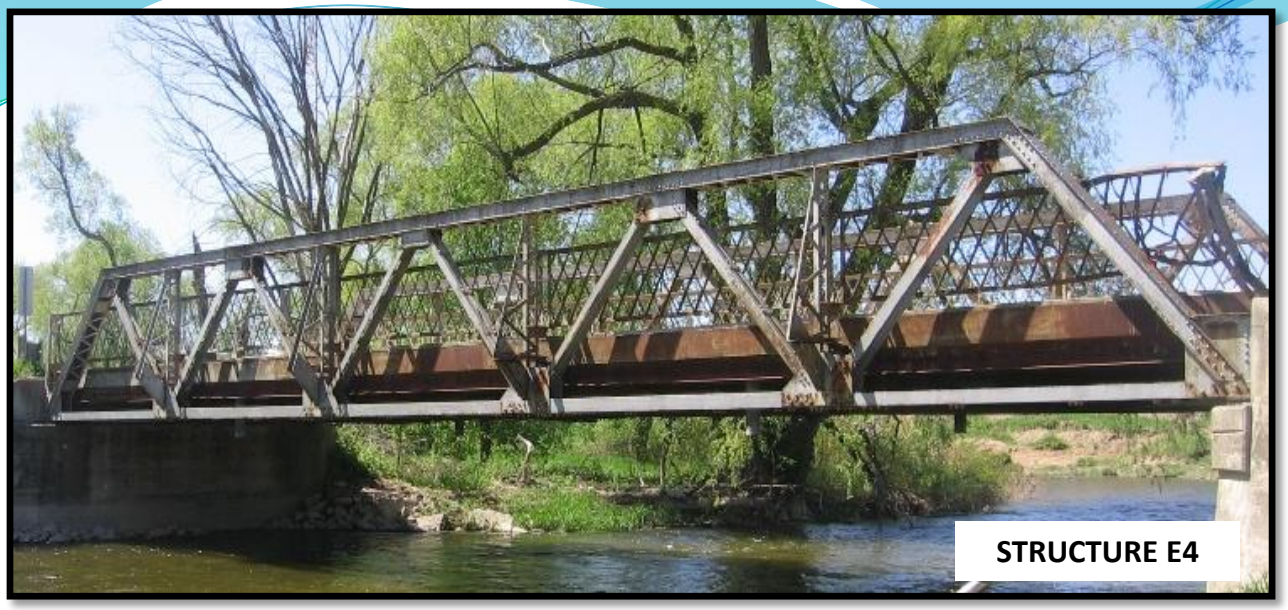


PRIEBE BRIDGE – E1



ARRANVALE BRIDGE – A14

STUDY BRIDGES







STUDY BRIDGES



PEARCES BRIDGE – E12



STRUCTURE E14



STRUCTURE E15

STUDY BRIDGES



STRUCTURE E16



STRUCTURE E17



STRUCTURE E22

STUDY BRIDGES



STRUCTURE E24



HUNTS BRIDGE – A5

Bridge Deficiencies

- Road Capacity
  - 10 of 17 bridges are single lane (< 6m wide)
- Deterioration
  - Concrete and steel deterioration
  - Railing damage from vehicle strikes
  - Footings exposed and deteriorated









Evaluation Matrixes

Approach 1 – Using Multiple Factors

Approach #1

Initial approach to identifying bridge closures, which utilizes BCI, Load Limit, Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity and Replacement Costs, to identify bridges for Closure. Table 1.1 is the matrix used to identify the bridges. Table 1.2 is a proposed timeline for implementation of either closures, repairs or replacements.

Table 1.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A - Option B - +

Structure ID	Type & Age	BCI	Score	Load Limit	Score	Avg. Traffic Counts	Score X 2	Road Type[1]	Score	Detour	Score	Replace$	Score x 2	Road Connectivity	Score	Total
E4 - Allens	Truss-1920	50	10	18/29/36	10	459	10	HCB	5	8.2km	10	$2,018,040	30	Yes	5	80
E9	Beam-1930	26	20	25	5	280	10	LCB	10	12.2km	5	$875,850	10	Yes	5	65
E1 – Priebe	Truss-1938	40	15	10	15	216	20	Gravel	15	8.1km	10	$2,194,590	30	Yes	5	110
E10	T-Beam-1930	48	10	11	10	162	20	LCB	10	12.2km	5	$1,015,710	20	Yes	5	80
E12– Pearces	Truss-1930	46	10	8	15	162	20	Gravel	15	7.6km	15	$2,544,240	30	Some	10	125
A11 – Wilson	Conc. Arch-1910	45	10	12	10	112	20	Gravel	15	8.1km	10	$689,370	10	None	15	90
A29	Conc. slab-1930	56	5	25	5	100	20	Gravel	15	7.9km	15	$829,230	10	Some	10	80
A14–Arranvale	Truss-1920	45	10	14	10	99	30	Gravel	15	5.2km	15	$2,529,780	30	Yes	5	115
A24 – Ruff	Conc. slab-1920	29	20	25	5	99	30	Gravel	15	5.2km	15	$673,830	10	Yes	5	100
E24	Truss-1920	53	5	10	15	98	30	Gravel	15	8.2km	10	$1,614,000	20	None	15	110
A5 – Hunts	Conc. Arc-1910	63	5	9	15	84	30	Gravel	15	7.1km	15	$1,155,570	20	Some	10	110
A30	Conc. slab-1930	38	10	12	10	77	30	Gravel	15	8.8km	10	$1,598,460	20	Some	10	105
E22	Truss 1920	46	10	3	15	68	30	Gravel	15	8.1 km	10	$1,691,700	20	None	15	115
E16	T-Beam-1930	31	15	15	10	67	30	Gravel	15	12.2km	5	$875,850	10	Yes	5	90
E17	Truss-1930	38	15	11	10	53	30	Gravel	15	8.2km	10	$1,963,650	20	None	15	115
E14	T-Beam-1930	34	15	25	5	50	30	Gravel	15	12.2km	5	$899,160	10	Yes	5	85
E15	T-Beam-1920	41	10	25	5	50	30	Gravel	15	12.2km	5	$875,850	10	Yes	5	80

Scoring System: [1]LCB – Low Class Bituminous, HCB – High Class Bituminous

BCI: <30 = 20, 30-40 = 15, 41-50 = 10, >50 = 5

Load Limit: <10 = 15, 11-20 = 10, > 20 = 5

Traffic: <100 = 15, 100-250 = 10, > 250 = 5

Road Type: Gravel = 15, LCB = 10, HCB = 5

Detour Length: < 8 = 15, 8-10= 10, >10 = 5

Replace Cost: < 1 mil = 5, 1–2 mil = 10, > 2 mil = 15

Road Connection: none = 15, some = 10, yes = 5

Approach 2 – Based on Location

Table 2.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A - Option B - +

Structure ID	Type & Age	Avg. Traffic Counts	Score X 2	Road Type[1]	Score	Detour	Score	Replace$	Score x 2	Road Connectivity	Score	Total
E4 - Allens	Truss-1920	459	10	HCB	5	8.2km	10	$2,018,040	30	Yes	5	60
E9	Beam-1930	280	10	LCB	10	12.2km	5	$875,850	10	Yes	5	40
E1 – Priebe	Truss-1938	216	20	Gravel	15	8.1km	10	$2,194,590	30	Yes	5	80
E10	T-Beam-1930	162	20	LCB	10	12.2km	5	$1,015,710	20	Yes	5	60
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A11 – Wilson	Conc. Arch-1910	112	20	Gravel	15	8.1km	10	$689,370	10	None	15	70
A29	Conc. slab-1930	100	20	Gravel	15	7.9km	15	$829,230	10	Some	10	70
A14–Arranvale	Truss-1920	99	30	Gravel	15	5.2km	15	$2,529,780	30	Yes	5	95
A24 – Ruff	Conc. slab-1920	99	30	Gravel	15	5.2km	15	$673,830	10	Yes	5	75
E24	Truss-1920	98	30	Gravel	15	8.2km	10	$1,614,000	20	None	15	90*
A5 – Hunts	Conc. Arc-1910	84	30	Gravel	15	7.1km	15	$1,155,570	20	Some	10	90
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E16	T-Beam-1930	67	30	Gravel	15	12.2km	5	$875,850	10	Yes	5	65
E17	Truss-1930	53	30	Gravel	15	8.2km	10	$1,963,650	20	None	15	90
E14	T-Beam-1930	50	30	Gravel	15	12.2km	5	$899,160	10	Yes	5	65
E15	T-Beam-1920	50	30	Gravel	15	12.2km	5	$875,850	10	Yes	5	65

* If scores are tied for one or more structures, the structure with the highest traffic count is moved to the lower category

Scoring System: [1]LCB – Low Class Bituminous, HCB – High Class Bituminous

Traffic: <100 = 15, 100-250 = 10, > 250 = 5

Road Type: Gravel = 15, LCB = 10, HCB = 5

Detour Length: < 8 = 15, 8-10 = 10, >10 = 5

Replace Cost: < 1 mil = 5, 1–2 mil = 10, > 2 mil = 15

Road Connectivity: none = 15, some = 10, yes = 5

Potential Impacts

- Social Environment
  - Loss of Access
  - Property Values
  - Impacts to Businesses
- Economic Environment
  - Capital Construction Costs
- Cultural Environment
  - Loss of Cultural Heritage Value
- Natural Environment
  - Impacts to terrestrial Habitat
  - Species at Risk/Fish Habitat
  - Flooding



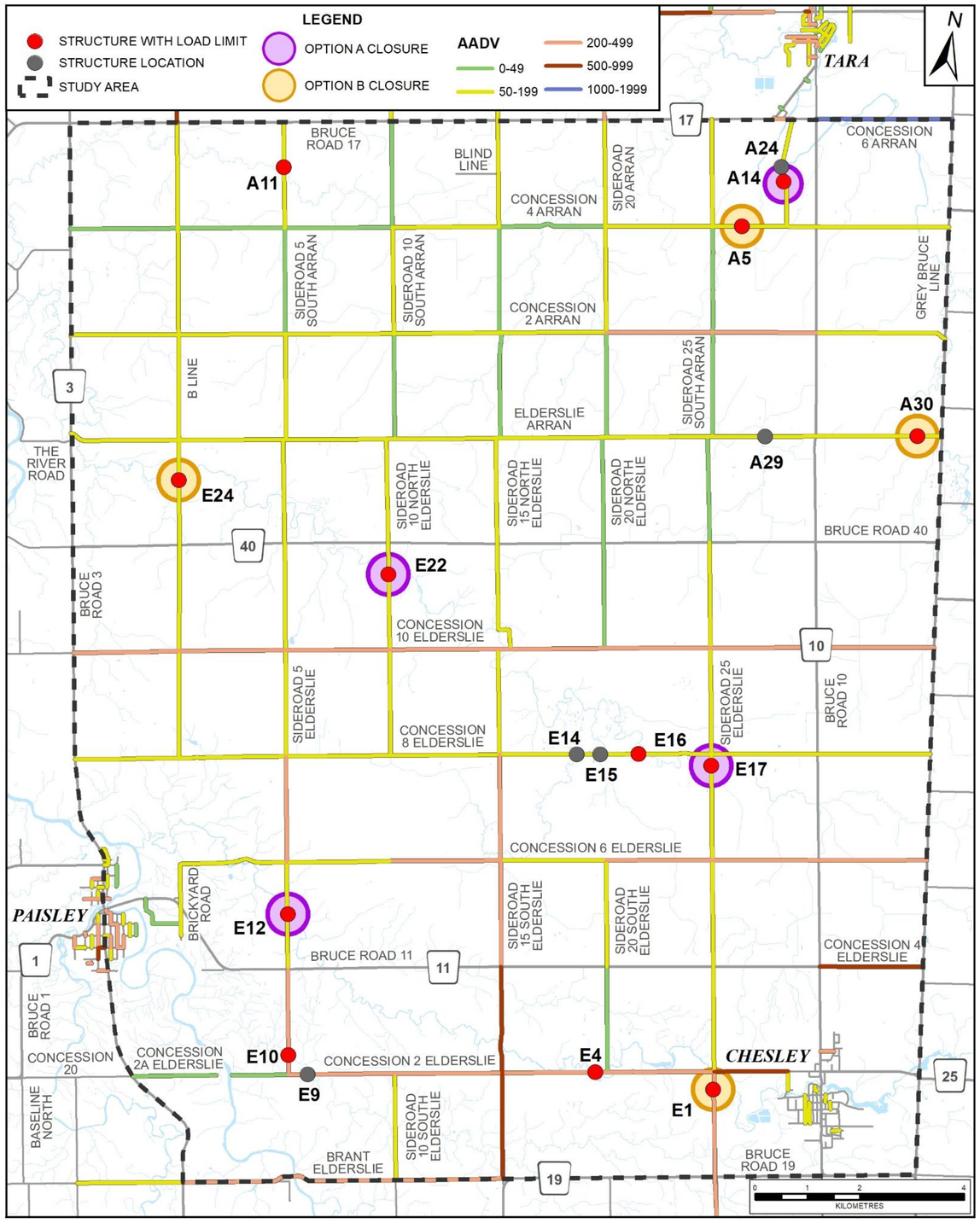
FRESHWATER MUSSEL HABITAT – STRUCTURE E12

IMPACT ON FLOODPLAIN

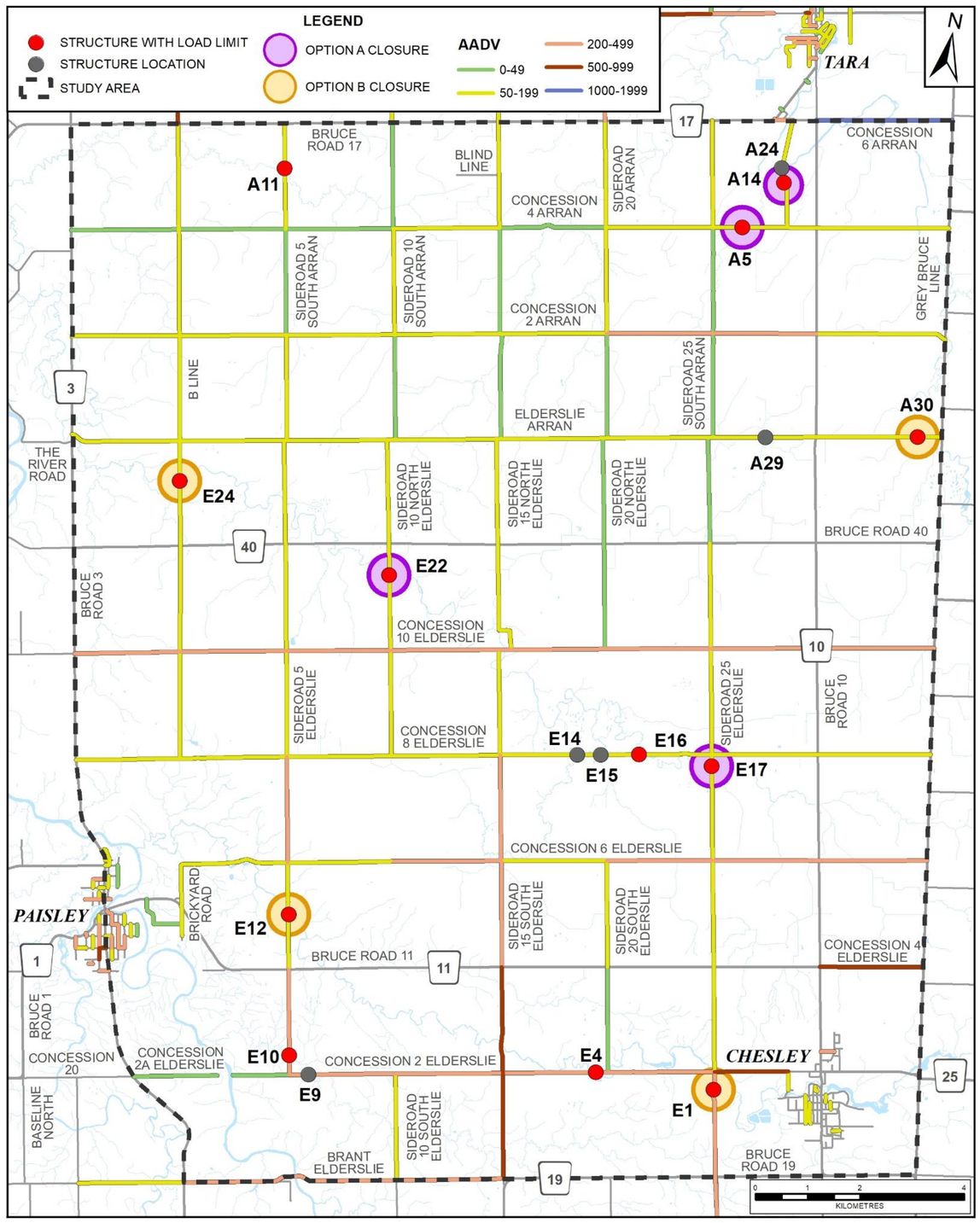


ACCESS FOR AGRICULTURAL EQUIPMENT

Approach #1



Approach #2



File: 19195

MUNICIPALITY OF ARRAN-ELDERSLIE

BRIGE INFRASTRUCTURE MASTER PLAN

PUBLIC INFORMATION CENTRE

Tuesday September 19, 2023

COMMENTS

Name: _____

Address: _____

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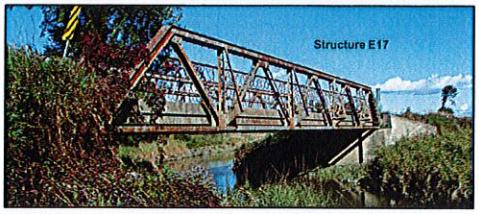
PLEASE HAND IN, MAIL, OR EMAIL TO:

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street
Goderich, Ontario
N7A 2T4

Phone: (519) 524-2641 E-mail: kvader@bmross.net
Attention: Kelly Vader, Environmental Planner

Comments and Information collected by B.M. Ross & Associates Limited on behalf of Arran-Elderslie will assist in decision making pertaining to the project. Comments and opinions will be kept on file but will not be made available for public review. Under the Freedom of Information and Protection Act (1987) personal information provided to Arran-Elderslie will remain confidential unless prior consent is obtained.

MUNICIPALITY OF ARRAN-ELDERSLIE
Bridge Infrastructure Master Plan



Public Meeting
September 19, 2023

1

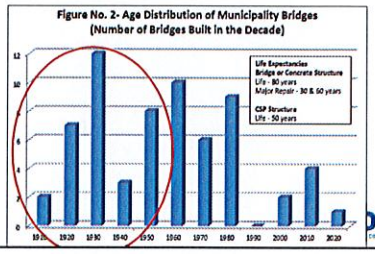
Agenda

- Project Background
- Master Plan Process
- Alternatives
- Evaluation Approach
- Additional Considerations
- Next Steps

2

Project Background

- Arran-Elderslie maintains 64 Bridges (>3m in length)
- In 2013 a similar study was completed in Bruce County that included structures in Arran-Elderslie
- The Infrastructure Master Plan is considering outcomes for only 17 of the oldest crossings in the Municipality



3

Bridge Economics

- Arran-Elderslie maintains 64 Bridges (>3m span)
- Bridges are inspected every 2 years as per OSIM
- Bridge Needs Report prepared in 2020 listed repair or replacement needs to 30 structures over next 1-5 years
  - Sopers replaced in 2022
  - Young Bridges By-Passed with new road
- Priority Repairs – 1 to 5 years - (Includes some of the study bridges) $3,167,600
- Priority Repairs – Amount/year $633,520
- Current annual capital contribution for bridges $150,000

4

Economics cont'd

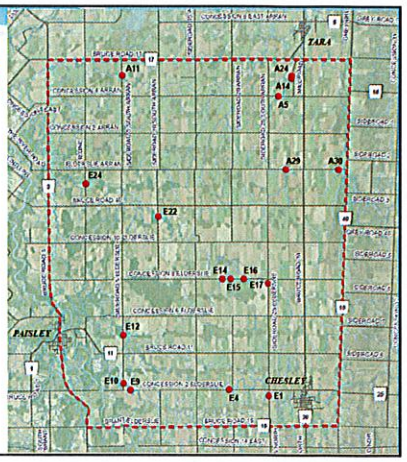
- Typically assume bridges have a life span of 75-80 years
- 17 Study bridges have an average age of 98
- Replacement Cost of 17 Study Bridges - $24 Million (2023$)
- Don't need to be replaced all immediately – likely occur over the next 10-25 years – ongoing repairs can extend life
- With inflation, replacement costs will go up over time

Although Arran-Elderslie doesn't want to close bridges, they may be forced to close some crossings due to lack of funds

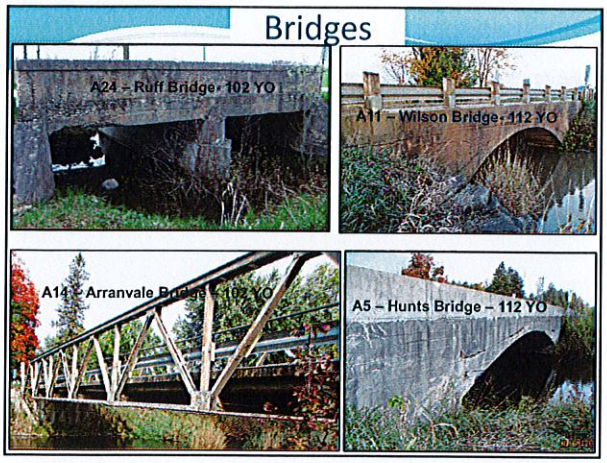
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Study Bridges

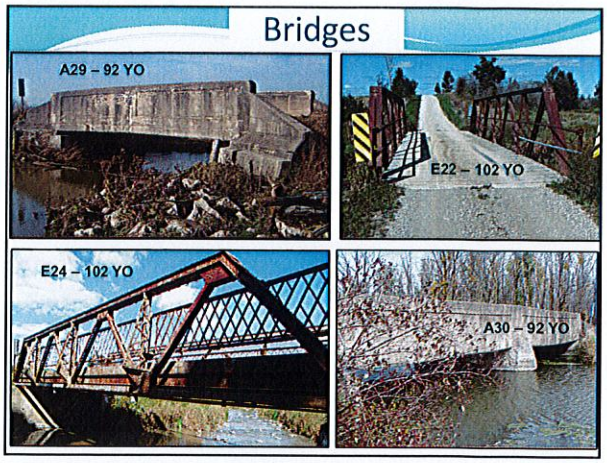
A11-Wilson
A24-Ruff
A14-Arranvale
A5-Hunts
A29, A30
E22, E24
E14, E15, E16, E17
E12-Pearces
E9, E10
E4-Allens
E1-Priebe



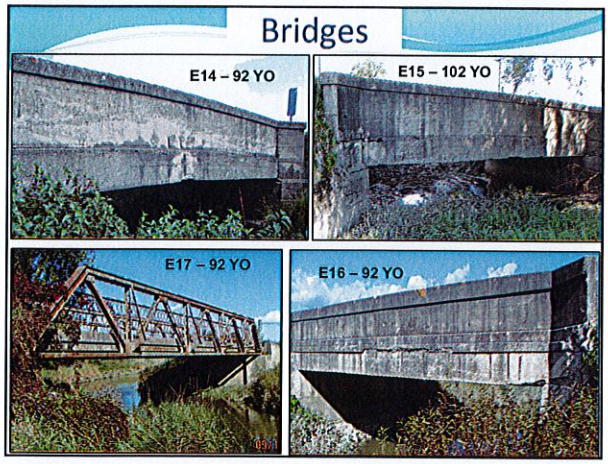
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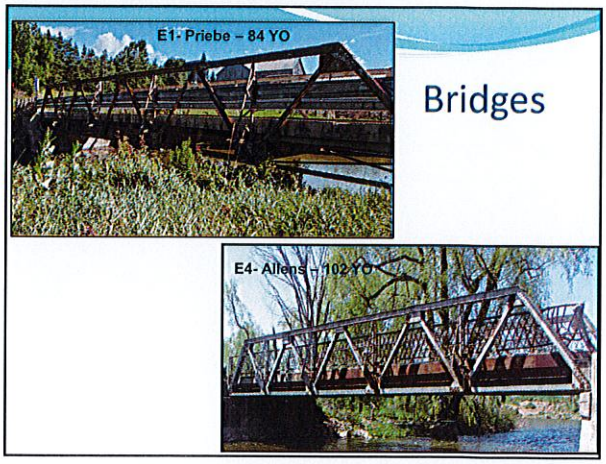
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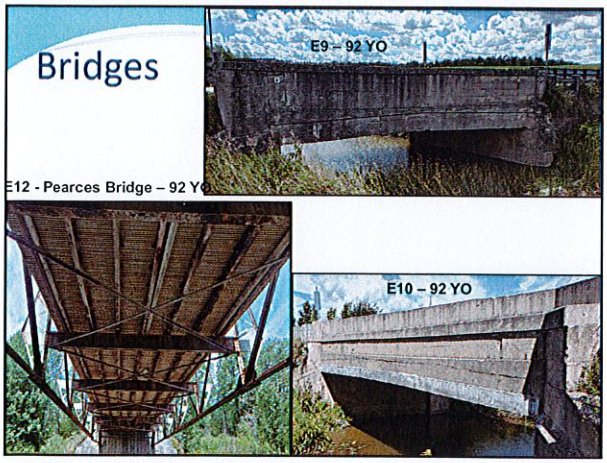
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10



11

Master Plan Timeline

- Initial Notice/Agency & FN Consult — September 2019
- Cultural Heritage Evaluation Report — March 2020
- Engineering Evaluation of Crossings — 2021
- Evaluation of Bridges — 2021
  - Traffic Counts, Detour Options, BCI, Road Connectivity, Road Surface Condition, Load Limit
- Develop Possible Closure Recommendations — 2022
- Council Presentation — February 2023
- Public Meeting — September 2023

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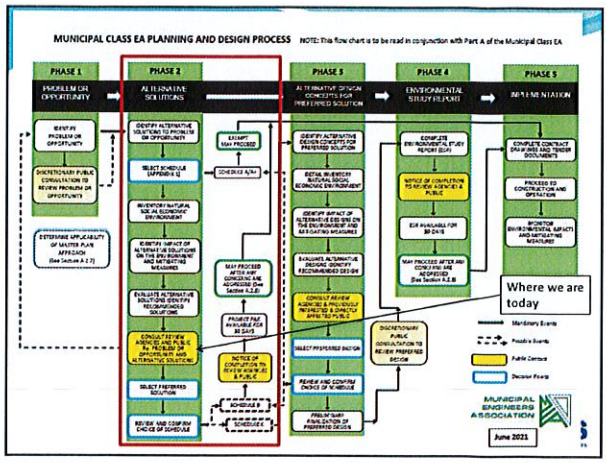
What are Master Plans

- Master Plans take a System Wide Approach to Planning which relates Infrastructure either Geographically or by Function
- Recommends projects to be implemented over an extended period
- Addresses at minimum the First Two Phases of the MEA Class EA which can be Implemented through separate individual projects

SCOPE OF MASTER PLAN STUDY

- Review a number of older bridges in Arran-Elderslie, complete required studies and provide recommendations for future
- Consult with Residents, Review Agencies and First Nations
- Develop a phasing plan for implementation of recommendations
- Consider possible closures

13



14

Master Plan Alternatives

- **Alternative 1** – Replace or repair all of the crossings, as required. This option means that each crossing would be either repaired or replaced, and none would be retired (closed).
- **Alternative 2** – Close some crossings and either replace or repair the remaining crossings. This option means that several bridges will be repaired as long as feasible and then eventually closed to traffic and removed, while the remaining crossings will be either repaired as required or replaced.
- **Alternative 3** – Do Nothing. The do nothing option, is a consideration during any Master Plan Class EA process. This option would propose that no commitment is made either way and improvements or changes to address problems will continue to be made on a case by case basis.

15

Background Investigations

- A number of investigations completed in support of the MP
- Engineering review completed to evaluate the condition of the 17 identified crossings
- Based on the reviews and our professional opinion, completed evaluation to determine if it would be more practical to repair or replace each of the structures
- Based upon current condition, tried to predict when repairs and/or replacements would be necessary
- Probable replacement costs and repair costs, when practical, were calculated for each structure
- Developed methods to compare the value of each crossing relative to the other crossings.
- Summarized the Results

16

Additional Information

- **Traffic Counts** – Provided by Arran-Elderslie (Avg. of last 2)
- **Detour Options** – Shortest Route around if Bridge Closed
- **BCI** – Bridge Condition Index (Condition Score)
- **Road Surface** – Gravel/Pavement
- **Load Limit** – Based on Engineering Review
- **Road Connectivity** – Connection to County Roads or corridors through the Municipality
- **Cost Estimates** – Replacement/Repair

17

Evaluation of Alternatives

- Cost to Replace All Crossings > $24 Million
- Two Main Evaluation Approaches were Identified
- Approach #1
  - Approach #1 utilizes BCI, Load Limit, Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity and Replacement Costs, to identify bridges for Closure.
- Approach #2
  - Approach #2 removes the BCI and Load Limit Scores and just focuses on Traffic Counts, Road Types, Detour Lengths (if closed) and Road Connectivity, to identify bridges for Closure. With this approach you are focusing more on the location and function of the bridges, rather than their current condition.

18

Evaluation of Alternatives

- With both Approaches, 4 Bridges were initially identified for Closure (Option A), then an additional 4 bridges were identified for closure (Option B) – 8 Total
- Bridges identified for closure would remain open until required repair costs exceeded a pre-determined threshold or the condition of the bridge threatened public safety
- Ultimately, Arran-Elderslie will determine how many crossings it wants to permanently close and the timeline for closure
- A long range plan that identifies crossings that will eventually be closed will be helpful in making other infrastructure decisions (road work) and for the agricultural industry and Mennonite communities.

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Scoring System

- An evaluation matrix with a scoring system was developed to evaluate the crossings. Highest scores are recommended for future closure.

BCI: <30 = 20, 31-40 = 15, 41-50 = 10, > 50 = 5

Load Limit: < 10 = 15, 11-20 = 10, > 20 = 5

Traffic X 2: < 100 = 15, 100-250 = 10, > 250 = 5

Road: Gravel = 15, LCB = 10, HCB = 5

Detour: < 8km = 15, 9-10 = 10, > 11 = 5

Replace X2 $: < 1mil = 5, 1-2mil = 10, > 2mil = 15

Road Connection: None = 15, Some = 10, Yes = 5

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Approach #1

Replace All Crossings
> $24 Million

Option A Closures

- E12, E22, E17, A14

$15.3 Million

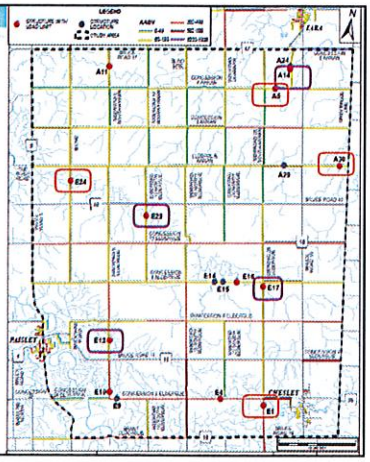
Saves $8.7 Million

Option A&B Closures

- E1, A5, E24, A30
- E12, E22, E17, A14

$8.7 Million

Saves $15.3 Million



21

Approach 1 – Matrix Results

Approach #1

Initial approach to identifying bridge closures, which utilizes BCI, Load Limit, Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity and Replacement Costs, to identify bridges for Closure. Table 1.1 is the matrix used to identify the bridges. Table 1.2 is a proposed timeline for implementation of either closures, repairs or replacements.

Table 1.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A - **Option B -**

Structure ID	Type & Age	BCI	Score	Load Limit	Score	Avg. Traffic Counts	Score x 2	Road Type*	Score	Detour	Score	Replace$	Score x 2	Road Connectivity	Score	Total
E4 - Allens	Truss-1920	50	10	13/26/38	10	459	10	HCB	5	8.7km	10	$2,018,040	20	Yes	5	80
E9	Beam-1930	26	20	25	5	280	10	LCB	10	12.2km	5	$675,850	10	Yes	5	65
E1 – Priebe	Truss-1938	40	15	10	15	316	20	Gravel	15	8.1km	10	$1,194,340	20	Yes	5	110
E10	T-Beam-1930	42	10	11	10	162	20	LCB	10	12.2km	5	$1,015,710	20	Yes	5	80
E12– Pearces	Truss-1930	46	10	8	15	162	20	Gravel	15	7.6km	15	$3,544,240	20	Some	10	115
A11 – Wilson	Conc. Arch-1910	45	10	12	10	112	20	Gravel	15	8.1km	10	$689,370	10	None	15	90
A30	Conc. slab-1930	56	5	25	5	100	20	Gravel	15	7.9km	15	$829,230	10	Some	10	85
A14–Arrarcycle	Truss-1920	45	10	14	10	99	20	Gravel	15	5.2km	15	$2,528,780	20	Yes	5	115
A24 – Ruff	Conc. slab-1920	29	20	25	5	99	20	Gravel	15	5.2km	15	$673,830	10	Yes	5	100
E24	Truss-1900	51	5	10	10	56	20	Gravel	15	8.5km	10	$1,414,500	20	None	10	110
A5 – Hunts	Conc. Arc-1910	61	5	9	10	84	20	Gravel	15	7.1km	15	$1,135,570	20	Some	10	110
A36	Conc. slab-1930	51	10	12	10	77	20	Gravel	15	8.8km	10	$1,598,460	20	Some	10	105
E22	Truss-1920	46	10	3	15	63	20	Gravel	15	8.1km	10	$1,691,790	20	None	10	115
E16	T-Beam-1930	31	15	15	10	67	20	Gravel	15	12.2km	5	$675,850	10	Yes	5	90
E17	Truss-1930	38	15	11	10	53	20	Gravel	15	9.2km	10	$1,861,850	20	None	10	115
E14	T-Beam-1930	34	15	25	5	50	20	Gravel	15	12.2km	5	$859,180	10	Yes	5	85
E15	T-Beam-1920	41	10	25	5	50	20	Gravel	15	12.2km	5	$675,850	10	Yes	5	80

Scoring System: *LCB – Low Class Bituminous, HCB – High Class Bituminous

BCI: <30 = 20, 30-40 = 15, 41-50 = 10, >50 = 5 | Load Limit: <10 = 15, 11-20 = 10, >20 = 5 | Traffic: <100 = 15, 100-250 = 10, >250 = 5 | Road Type: Gravel = 15, LCB = 10, HCB = 5 | Detour Length: < 8 = 15, 8-10= 10, >10 = 5 | Replace Cost: < 1 mil = 5, 1-2 mil = 10, > 2 mil = 15 | Road Connection: none = 15, some = 10, yes = 5

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Approach #1 Timelines

Table 1.2: Recommended Outcomes for Approach #1 – Option #A - 4 Bridge Closures **Option #B– 4 additional closures**

Structure ID	Type & Age	Avg. Traffic Counts	BCI	Recommended Outcome	Repair Costs	Repair Timeline	Replacement Costs	Replacement Timeline
E4 - Allens	Truss-1920	459	50	Replace	No Immediate Repairs	N/A	$2,018,040	15-20 Years
E9	Beam-1930	280	26	Replace	$170,000 (N/A)	N/A	$675,850	1-5 Years
E1 – Priebe	Truss-1938	316	40	Repair then Closure	No Immediate Repairs	N/A	N/A	20-25 Years
E10	T-Beam-1930	162	48	Replace	No Immediate Repairs	N/A	$1,015,710	15-20 Years
E12– Pearces	Truss-1930	162	46	Repair then Closure	No Immediate Repairs	N/A	N/A	15-20 Years
A11 – Wilson	Conc. Arch-1910	112	45	Replace	No Immediate Repairs	N/A	$689,370	15-20 Years
A30	Conc. slab-1930	100	56	Repair then Replace	$65,000	1-5 Years	$829,230	20-25 Years
A14–Arrarcycle	Truss-1920	99	45	Repair then Closure	No Immediate Repairs	N/A	N/A	15-20 Years
A24 – Ruff	Conc. slab-1920	99	29	Replace	N/A	N/A	$673,830	1-5 Years
E24	Truss-1920	56	53	Repair then Closure	$12,000	1-5 Years	N/A	20-25 Years
A5 – Hunts	Conc. Arc-1910	84	63	Repair then Closure	$65,000	1-5 Years	N/A	20-25 years
A30	Conc. slab-1930	77	38	Repair then Closure	$136,000	1-5 Years	N/A	20-25 Years
E22	Truss-1920	68	46	Repair then Closure	$16,000	1-5 Years	N/A	15-20 Years
E16	T-Beam-1930	67	31	Repair then Replace	$130,000	1-5 Years	$675,850	10-15 Years
E17	Truss-1930	53	38	Repair then Closure	$90,000	1-5 Years	N/A	10-15 Years
E14	T-Beam-1930	50	34	Repair then Replace	$65,000	1-5 Years	$899,180	10-15 Years
E15	T-Beam-1920	50	41	Replace	No Immediate Repairs	N/A	$675,850	10-15 Years

*Timelines and anticipated work are preliminary and will change based on the results of annual inspections and other bridge priorities

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Approach #2

Replace All Crossings
> $24 Million

Option A Closures

- A5, A14, E17, E22

$16.7 Million

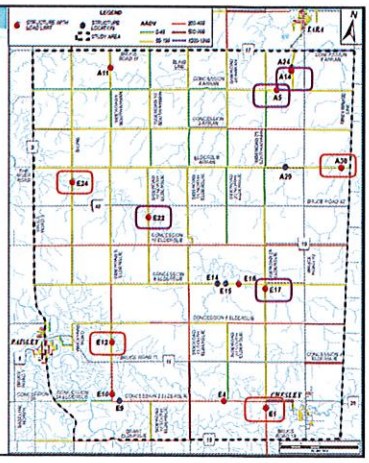
Saves $7.3 Million

Option A&B Closures

- E1, E12, E24, A30
- A5, A14, E17, E22

$8.7 Million

Saves $15.3 Million



24

Approach 2 – Matrix Results

*Evaluate based only on location; remove bridge condition components

Table 2.1: Potential Bridge Closure Assessment Matrix – Recommended Closures Option A • Option B • +

Structure ID	Type & Age	Avg. Traffic Counts	Score X 2	Road Type[1]	Score	Detour	Score	Replace$	Score x 2	Road Connectivity	Score	Total
E4 - Allens	Truss-1920	459	10	HCB	5	8.2km	10	$2,018,040	30	Yes	5	60
E9	Beam-1930	280	10	LCB	10	12.2km	5	$875,850	10	Yes	5	40
E1 – Priebe	Truss-1938	216	20	Gravel	15	8.1km	10	$2,194,500	30	Yes	5	80
E10	T-Beam-1930	162	20	LCB	10	12.2km	5	$1,015,710	30	Yes	5	60
E12- Pearces	Truss-1930	162	20	Gravel	15	7.8km	15	$2,544,240	30	Some	10	90
A11 – Wilson	Conc. Arch-1910	112	20	Gravel	15	8.1km	10	$689,370	10	None	15	70
A29	Conc. slab-1930	100	20	Gravel	15	7.8km	15	$829,230	10	Some	10	70
A14- Arranvale	Truss-1920	99	20	Gravel	15	5.2km	15	$2,529,780	30	Yes	5	85
A24 – Ruff	Conc. slab-1920	99	20	Gravel	15	5.2km	15	$673,830	10	Yes	5	70
E24	Truss-1920	98	20	Gravel	15	8.2km	10	$1,614,000	20	None	15	80
A5 – Hunts	Conc. Arc-1918	84	20	Gravel	15	7.1km	15	$1,155,570	20	Some	10	90
A30	Conc. slab-1930	77	20	Gravel	15	8.8km	10	$1,598,460	20	Some	10	85
E22	Truss-1920	68	20	Gravel	15	8.1 km	10	$1,691,700	20	None	15	90
E16	T-Beam-1930	67	20	Gravel	15	12.2km	5	$875,850	10	Yes	5	65
E17	Truss-1930	53	20	Gravel	15	8.2km	10	$1,963,650	20	None	15	90
E14	T-Beam-1930	50	20	Gravel	15	12.2km	5	$809,160	10	Yes	5	65
E15	T-Beam-1930	50	20	Gravel	15	12.2km	5	$875,850	10	Yes	5	65

* If scores are tied for one or more structures, the structure with the highest traffic count is moved to the lower category

Scoring System: [1]LCB – Low Class Bituminous, HCB – High Class Bituminous

Traffic: <100 = 15; 100-250 = 10; >250 = 5 **Road Type** Gravel = 15; LCB = 10; HCB = 5 **Detour Length:** < 8 = 15; 8-10 = 10; >10 = 5 **Replace Cost:** < 1 mil = 5; 1-2 mil = 10; > 2 mil = 15 **Road Connectivity:** none = 15; some = 10; yes = 5

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Approach #2 Repair Timelines

Table 2.2: Recommended Outcomes for Approach #2 – Option #A - 4 Bridge Closures Option #B – 4 more closures

Structure ID	Type & Age	Avg. Traffic Counts	BCI	Recommended Outcome	Repair Costs	Repair Timeline	Replacement Costs	Replacement Timeline
E4 - Allens	Truss-1920	459	50	Replace	No Immediate Repairs	N/A	$2,018,040	15-20 Years
E9	Beam-1930	280	26	Replace	$170,000 (N/A)	N/A	$875,850	1-5 Years
E1 – Priebe	Truss-1938	216	40	Repair then Closure	No Immediate Repairs	N/A	N/A	20-25 Years
E10	T-Beam-1930	162	48	Replace	No Immediate Repairs	N/A	$1,015,710	15-20 Years
E12- Pearces	Truss-1930	162	46	Repair then Closure	No Immediate Repairs	N/A	N/A	20-25 Years
A11 – Wilson	Conc. Arch-1910	112	45	Replace	No Immediate Repairs	N/A	$689,370	15-20 Years
A29	Conc. slab-1930	100	56	Repair then Replace	$65,000	1-5 Years	$829,230	20-25 Years
A14- Arranvale	Truss-1920	99	45	Repair then Closure	No Immediate Repairs	N/A	N/A	15-20 Years
A24 – Ruff	Conc. slab-1920	99	28	Replace	N/A	N/A	$673,830	1-5 Years
E24	Truss-1920	98	53	Repair then Closure	$12,000	1-5 Years	N/A	20-25 Years
A5 – Hunts	Conc. Arc-1918	84	63	Repair then Closure	$65,000	1-5 Years	N/A	20-25 years
A30	Conc. slab-1930	77	38	Repair then Closure	$136,000	1-5 Years	N/A	20-25 Years
E22	Truss-1920	68	46	Repair then Closure	$15,000	1-5 Years	N/A	15-20 Years
E16	T-Beam-1930	67	31	Repair then Replace	$130,000	1-5 Years	$875,850	10-15 Years
E17	Truss-1930	53	38	Repair then Closure	$90,000	1-5 Years	N/A	10-15 Years
E14	T-Beam-1930	50	34	Repair then Replace	$65,000	1-5 Years	$899,160	10-15 Years
E15	T-Beam-1930	50	41	Replace	No Immediate Repairs	N/A	$875,850	10-15 Years

*Timelines and anticipated work are preliminary and will change based on the results of annual inspections and other bridge priorities

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Additional Considerations

- Connectivity and low replacement costs resulted in lower scores for structures E14, E15, and E16. Need to repair at least two to provide access to properties between them.
- May not want to close A14 and A5, creates dead ends.
- Structure E1 location recorded a relatively high volume of traffic crossing it. If assigned traffic score changed at 200 instead of at 250, it might not be on the Option B lists.
- May put a higher preference on replacing, instead of repairing bridges that Township decides are needed.

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Next Steps

- Collect Input from Residents, Agencies & FN following the public meeting
- Prepare a Summary of Feedback for Council
- Based on Feedback, Establish a Preferred Approach and/or Bridges to be slated for future closure
- Finalize Master Plan Report
- Develop a Phasing Timeline
  - Can be Modified as Bridge Conditions Change over Time
- Publish Notice of Master Plan Completion

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Questions?

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29

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641
www.bmross.net

File No. 19195

Municipality of Arran-Elderslie

BRIDGE INFRASTRUCTURE MASTER PLAN

PUBLIC MEETING NOTES

Details: September 19th, 2023
Chesley Community Centre (129 4th Ave. SE, Chesley)

Open House:	6:00 – 6:30 p.m.
Presentation:	6:30 – 7:45 p.m.
Questions:	7:45 – 8:30 p.m.
Open House:	8:30 – 8:40 p.m.

In Attendance:

Steve Hammell	Mayor of Arran-Elderslie
Jennifer Shaw	Deputy Mayor of Arran-Elderslie
Darryl Hampton	Chesley Ward Councilor
Brian Dudgeon	Elderslie Ward Councilor
Moiken Penner	Paisley Ward Councilor
Sylvia Kirkwood	Chief Administrative Officer
Scott Mcleod	Manager of Public Works
Kelly Vader	B.M. Ross and Associates (BMROSS)
Ken Logtenberg	
Alex Jackman	

Members of the public: 48 persons

6:00 p.m. – 6:30 p.m. – Open House

- **Public Arrival**
  - Members of the public signed in upon arrival.
  - Poster boards were on display for the public to view.
  - BMROSS and Arran-Elderslie Staff were available to talk to the public as they arrived.

6:30 p.m. – 7:45 p.m. – Presentation

- **Power Point Presentation**

- Steve Hammell welcomed those in attendance on behalf of the Municipality of Arran-Elderslie-and introduced the representatives from BMROSS.
- Ken Logtenberg then began the presentation by reviewing the agenda for the meeting and then discussing the scope of the Infrastructure Master Plan and explaining what was involved in the study assessment process.
- Ken provided additional information related to repair and replacement costs for the Municipality's bridges, including estimated repair costs for the next 5 years and the amount set aside each year by Arran-Elderslie for bridge repairs.
- Ken then reviewed photos of each bridge included in the Master Plan study, described its location and the estimated age of each.
- Kelly Vader described the project timeline completed to date for the Master Plan and explained who had been consulted previously as part of the study.
- Kelly explained what was involved in a Master Plan process and the scope of the current study. She also explained what phase of the Class EA planning and design process we are in.
- Kelly then described the Master Plan alternatives that are being considered as part of the study.
- Ken provided details related to the different investigations completed as part of the Master Plan including traffic counts, Bridge Condition Index (BCI), road surface, detour length, load limits, replacement costs, and connectivity.
- Ken reviewed the two different approaches used to develop the evaluation matrix. The first approach used all the factors described above, while the second approach removed the BCI and load limit and focused on the bridge location rather than the condition of the existing bridges.
- He explained the scoring method for each of the approaches and elaborated on how the scoring system was developed. Ken then went through an example of the scoring method used for each of the approaches.
- Ken explained the results of the scoring exercise for each approach and showed the recommended closures on a map of the study area.
- Ken then reviewed some additional considerations that wouldn't have been captured in the assessment. This would include bridges in close proximity to each other that would be impacted by outcomes for the adjacent structures, how closing some of the bridges may create dead ends in the road network, and explaining that sometimes minor adjustments to the scoring criteria has an effect on which structures are scored higher.
- Kelly concluded the presentation by reviewing next steps in the Master Plan process. She indicated that the current recommendations are preliminary, and that council will reevaluate the recommendations based on feedback received from residents.

7:45 – 8:30 p.m. – Questions

- After concluding the presentation, questions were invited from the public.

- **List of Questions**

Q: A landowner asked how farmers with land on both sides of a bridge are supposed to easily transport manure and milk after the structure is closed. The bridge located on the

4th of Arran supports significant agricultural traffic. If closed he said farmers would need to drive through urban areas or cross through the watercourse. Also questioned when the traffic counts were completed. In harvest season he thought there would be a larger volume of traffic. It was also suggested that there often a lot of snow built up on the road near bridge A5.

A: Steve Hammell thanked the landowner for the additional information related to uses of the bridge on the 4th of Arran and indicated that the information would be considered by council when evaluating the alternatives.

A: Scott McLeod explained that traffic counts were completed during the summer. Traffic counts were collected twice and were averaged for use in the study.

Q: A resident asked if the BCI and traffic counts were collected during Covid, when there were less people on the road.

A: Scott McLeod confirmed that the traffic counts were completed in summer of 2019 and 2022 and were averaged for use in the study.

Q: A resident expressed concerns over how the meeting was advertised. They felt that notifications being sent only to resident's living adjacent to the bridges was not sufficient to get representative input from the public. More than just the property owners use the bridges.

A: Kelly Vader advised that the notice for the meeting was posted in two local newspapers and the Paisley Advocate. She suggested that residents leave an email address at the sign-in desk and they would be added to contact list for the project.

A: Sylvia Kirkwood added that the Municipality would consider other methods of notification prior to future information being posted, including additional social media posts and radio.

Q: A resident asked why the Arranvale Bridge, which was damaged due to an overweight truck using the structure, wasn't paying directly for the cost to fix the damage. They felt that taxpayer's money shouldn't be paying these costs. It was suggested that the closure of the Invermay Bridge is effecting the ability of traffic to move around the area as well.

A: Scott McLeod indicated that their insurance company and the police were investigating the incident and the Township is hoping the company responsible will pay for the repairs. However, they cannot be certain of the outcome at this time.

Q: A resident noted that structure E1 – Priebe Bridge brings up concerns with transportation as there is the Amish community to the north and the school is located to the south. Young children regularly ride bicycles over the bridge on their way to school. She added that a small detour for an automobile can be very long for a bike rider or horse and buggy. Also, the individual did not feel comfortable with their children riding through Chesley if the bridge is closed.

A: Ken agreed that additional work needed to be completed to incorporate Mennonite schools and churches into the study. This is why we are holding a public meeting so all can voice their comments and concerns.

Q: A resident asked if dead-end roads that will be created when a bridge closes will pose a problem for snowplows. Would those roads continue to be maintained in the winter?

A: Scott McLeod indicated that a small cul-de-sac would be created adjacent to the closed bridge to allow the plow to turn around. On roads with a small turning radius and dead ends a truck with a plow will be used vs the alternative of a plow. This will allow winter maintenance to continue on those roads.

Q: A resident asked how the bridge replacement costs were determined and why simple steel truss bridges are no longer being constructed.
A: Ken responded that the bridge replacement costs were determined by comparing past projects that are similar in size and type to what is commonly built these days. He also explained that it is no longer practical to construct steel truss bridges, due to the amount of labor involved and the cost of materials. Steel bridges were constructed often in the early 20th century due to the availability of cheap labour and materials.

Q: A resident asked why the study team has not investigated simpler solutions, such as box culverts? It was also suggested that structure A24 is larger than it needs to be.
A: Ken responded by indicating that detailed bridge designs have not been completed for each of the sites and that box culverts may work for some locations. When a decision is made to replace one of the bridges, various bridge design options would be investigated to determine the most cost-effective approach before proceeding. For the purposes of the study, relatively simple formulas were used to estimate costs, based on the span of the existing bridge and type of road. He added that the proposed replacement structures would need to have sufficient capacity to maintain the hydraulic capacity of the channel. The Conservation Authority would not permit a bridge to be replaced with a culvert that reduces the hydraulic capacity excessively and creates potential flooding on adjacent properties. It may be possible to reduce the size of structure, if modeling shows that the current structure is oversized.

Q: A resident asked if a private property owner could install a box culvert on their own property – who is really checking
A: Ken indicated that residents could install box culverts on their own property, however they would still need the necessary permits from the Conservation Authority and Department of Fisheries and Oceans Canada (DFO). However, no Class EA would be required on private property.

Q: A resident asked, based on a comment in the presentation, if there are other municipalities doing similar assessments.
A: Ken responded that there are other municipalities that are also considering the possibility of closing bridges, one being the County of Bruce. Sometimes the closures happen one bridge at a time without much input being obtained from the public. Arran-Elderslie is being proactive by seeking input from residents before closing bridges. Bridge replacement costs have increased significantly due to inflation and availability of labour.

Q: A resident suggested that access to different services such as emergency responders (Fire, OPP, Ambulance) as well as the location of the public works building should be analyzed as well, for public safety and operational purposes.
A: Kelly indicated that this information would be added to the study details.

8:30 p.m. – 8:40 p.m. – Open House

Individual Concerns

- Members of the public were given the opportunity to have one-on-one time with BMROSS Staff and to ask any additional questions after the presentation and question period ended.

Kelly Vader

From: Kyle Hope <k.hope@svca.on.ca>
Sent: October 4, 2023 1:38 PM
To: kvader@bmross.net
Subject: Class EA Bridge Infrastructure Master Plan - Municipality of Arran-Elderslie

Hello Kelly,

I am the Regulations Officer assigned to the proposed Class EA Bridge Infrastructure Master Plan in the Municipality of Arran-Elderslie received on September 19, 2023.

At this preliminary stage of the EA process staff comments for the proposed works will be general in nature and as the Master Plan develops staff can provide more detailed application requirements. Repair or replacement of all bridges identified within the SVCA jurisdiction may require approval from our office under Ontario Regulation 169/06.

Specifically for water crossings SVCA policy outlines that work will be permissible provided it has been demonstrated to the satisfaction of the SVCA that the interference is acceptable on the natural features and hydrologic and ecological functions of the watercourse. Depending on the scale of any proposed repairs and the scale/ nature of any replacements the policy noted below will have to be addressed.

At a minimum, plans should demonstrate the following based on the morphological characteristics of the watercourse:

A) culverts have an open bottom where feasible and where it is not feasible, culverts are appropriately embedded into the watercourse;
B) crossing location, width and alignment should be compatible with stream morphology which typically requires location of the crossing on a straight and shallow/riffle reach of the watercourse with the crossing situated at right angles to the watercourse;
C) the crossing is sized and located such that there is no increase in upstream or downstream erosion or flooding;
D) the design should consider fish and wildlife passage; and
E) have regard for upstream and downstream effects when installing/replacing a culvert.

Please circulate our office on any updates as the project develops for future comments.

Thank you,

Kyle Hope
Regulations Officer
1078 Bruce Rd 12, PO Box 150
Formosa, ON NOG 1W0
Main Office: 519-364-1255 ext. 801
Cell: 519-377-2074
k.hope@svca.on.ca
https://link.edgepilot.com/s/5bafe0d9/i7ZtTR-F9kS2ZIhZFnVQSg?u=http://www.saugeenconservation.ca/

Kelly Vader

From: Coordinator LRC HSM <hsmlrcc@bmts.com>
Sent: October 16, 2023 1:48 PM
To: Kelly Vader
Cc: Alex Jackman
Subject: Request for Comments - Bridge Infrastructure Master Plan Municipality of Arran-Elderslie

Hi Kelly & Alex,

The Historic Saugeen Métis (HSM) has reviewed the Bridge Infrastructure Master Plan for the Municipality of Arran Elderslie and have no objections or opposition to the plan as presented.

We do have interest in the archaeological potential of the sites in which bridges will be replaced or repaired. As the project proceeds, we would appreciate any updates and new information as it becomes available.

Thank you for the opportunity to review this matter.

Regards,

Georgia McLay

Coordinator, Lands, Waters & Consultation
Historic Saugeen Métis
204 High Street
Southampton, ON
saugeenmetis.com
519.483.4000

HISTORIC SAUGEEN MÉTIS

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Ministry of Citizenship and Multiculturalism

Heritage Planning Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
5th Flr, 400 University Ave
Tel.: 613-242-3743

Ministère des Affaires civiques et du Multiculturalisme

Unité de la planification relative au patrimoine
Direction du patrimoine
Division des affaires civiques, de l'inclusion et du patrimoine
Tél.: 613-242-3743

Ontario

November 30, 2023 EMAIL ONLY

Kelly Vader, MCIP, RPP
Environmental Planner
B.M. Ross and Associates Limited
62 North Street, Goderich, ON N7A 2T4
kvader@bmross.net

MCM File	**:**	**0011456**
Proponent	**:**	**Municipality of Arran-Elderslie**
Subject	**:**	**Notice of Commencement and Public Meeting – Master Plan**
Project	**:**	**Bridge Infrastructure Master Plan – Municipality of Arran-Elderslie**
Location	**:**	**Municipality of Arran-Elderslie, County of Bruce**

Dear Kelly Vader:

Thank you for providing the Ministry of Citizenship and Multiculturalism (MCM) with the Notice of Commencement and Public Meeting for this project.

MCM's interest in this master plan relates to its mandate of conserving Ontario's cultural heritage, which includes archaeological resources, built heritage resources and cultural heritage landscapes.

MCM understands that master plans are long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Municipal Class Environmental Assessment (MCEA) outlines a framework for master plan and associated studies which should recognize the planning and design Process of this Class EA, and should incorporate the key principles of successful environmental assessment planning identified in Section A.1.1. The master planning process will, at minimum, address Phases 1 and 2 of the Planning and Design Process of the MCEA.

This letter provides advice on how to incorporate consideration of cultural heritage in the above-mentioned master planning process by outlining the technical cultural heritage studies and the level of detail required to address cultural heritage in master plans. In accordance with the MCEA, cultural heritage resources should be identified early in the process in order to determine known and potential resources and potential impacts.

Master Plan Summary
The Municipality of Arran-Elderslie currently maintains 64 bridges. In September 2019 the Municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges. Constructed between 1910 and 1950, the crossings require

significant rehabilitation or replacement in the next 10 to 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. The Infrastructure Master Plan is being conducted in accordance with the requirements of the MCEA, which is an approved planning process under the *Environmental Assessment Act*.

It is unclear what approach is being taken in accordance with the Master Planning Process outlined in the MCEA. We recommend you clearly identify your proposed study approach. Any individual undertakings proceeding as part of this master plan should be screened for impacts to cultural heritage resources.

Identifying Cultural Heritage Resources
MCM understands that the final public notice for the master plan could become the notice of completion for the Schedule B and C MCEAs within it and that this approach would likely result in extensive documentation should the master plan include numerous Schedule C MCEA undertakings. In regards to cultural heritage resources, the Master Plan document should:

- identify existing baseline environmental conditions;
- identify expected environmental impacts; and
- Include measures to mitigate potential negative impacts.

Archaeological Resources
Any undertakings included as part of the master plan should be screened using the Ministry's *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential* (if shoreline or in-water work is proposed) to determine if an archaeological assessment is needed. If the EA project area exhibits archaeological potential, then an archaeological assessment (AA) should be undertaken by an archaeologist licensed under the Ontario Heritage Act and submitted for MCM review prior to the completion of the master plan.

Built Heritage Resources and Cultural Heritage Landscapes
The Ministry's *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* should be completed to help determine whether this EA project may impact known or potential built heritage resources and/or cultural heritage landscapes.

Where a known or potential built heritage resource or cultural heritage landscape may be directly and adversely impacted, and where it has not yet been evaluated for Cultural Heritage Value or Interest (CHVI), completion of a Cultural Heritage Evaluation Report (CHER) is required to fully understand its CHVI and level of significance. The CHER must be completed as part of the final EA report. If a potential resource is found to be of CHVI, then a Heritage Impact Assessment (HIA) will need to be undertaken and included in the final EA report. Please send the HIA to MCM for review and make it available to local organizations or individuals who have expressed interest in review.

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, municipal heritage committees, community heritage registers, historical societies and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and we suggest that any engagement with Indigenous communities includes a discussion about known or potential cultural heritage resources that are of value to them.

Reference for Best Practice: Bridge Infrastructure Master Plan of Central Bruce County
In July 2021, the County of Bruce initiated a Bridge Infrastructure Master Plan to define the best strategy for resolving deficiencies identified with a group of bridges situated in central Bruce County. The MCEA process for this master plan included a CHER and Stage 1 AA for each individual bridge site. MCM recommends that the MCEA for the Bridge Infrastructure Master Plan of Central Bruce County serve as a reference for best practice.

Environmental Assessment Reporting
Technical cultural heritage studies are to be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed. Please advise MCM whether any technical heritage studies will be completed for this master plan and provide them to MCM before issuing a Notice of Completion.

Please note that the responsibility for administration of the *Ontario Heritage Act* and matters related to cultural heritage have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation to both Karla Barboza and myself.

- Karla Barboza, Team Lead - Heritage | Heritage Planning Unit (Citizenship and Multiculturalism) | 416-660-1027 | karla.barboza@ontario.ca
- Joseph Harvey, Heritage Planner | Heritage Planning Unit (Citizenship and Multiculturalism) | 613-242-3743 | joseph.harvey@ontario.ca

Thank you for consulting MCM on this project. Please continue to do so through the master plan process and contact Joseph Harvey for any questions or clarification.

Sincerely,

Erika Leclerc
Sent on behalf of

Joseph Harvey
Heritage Planner
joseph.harvey@ontario.ca

Copied to: Scott Mcleod, Municipality of Arran-Elderslie
Alex Jackman, B.M. Ross and Associates
Karla Barboza, MCM

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. The Ministry of Citizenship and Multiculturalism (MCM) makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MCM be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33* requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with *Ontario Regulation 30/11* the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

Kelly Vader

From: hsmlrcc@bmts.com
Sent: December 15, 2025 10:17 AM
To: kvader@bmross.net
Subject: HSM comments re Arran-Elderslie Bridge Infrastructure Master Plan

Good morning,

Thank you for providing notice regarding the Municipality of Arran-Elderslie Bridge Infrastructure Master Plan preferred approach. The HSM department of Lands, Waters, and Consultation has reviewed the relevant documents and has no comments or concerns at this time.

Regards,

Neala

Neala MacLeod Farley
Coordinator, Lands, Waters & Consultation

Historic Saugeen Métis
204 High Street
Southampton, ON
saugeenmetis.com
519-483-4000

HISTORIC SAUGEEN MÉTIS

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BRIDGE INFRASTRUCTURE MASTER PLAN

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

NOTICE OF PUBLIC INFORMATION MEETING

THE PROJECT:

The Municipality of Arran-Elderslie currently maintains 62 bridges. In 2019 the Municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges. Constructed from 1910-1950, it is anticipated that the crossings will require significant rehabilitation or replacement in the next 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge including traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value. Based on the options that were considered, Arran-Elderslie Council has selected a preferred approach which is to continue to repair or replace crossings. This option means that the Municipality will continue maintaining, repairing, and replacing bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within municipal budgets.

THE ENVIRONMENTAL ASSESSMENT PROCESS:

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and include consultation with government review agencies, Indigenous Communities, adjacent property owners, and the general public.

PUBLIC INVOLVEMENT:

Public consultation is a key component of this study. A Public Information Meeting is being organized by the Municipality to obtain input from residents on the project status. The meeting will provide an update on the preferred approach for the Master Plan endorsed by Council. This meeting will also give residents an opportunity to provide additional input. Details of the meeting are as follows:

Date:	**Wednesday December 17th, 2025**
Place:	**Arran-Elderslie Council Chambers (1925 Bruce Road 10, Chesley)**
Time:	**6:00 p.m. (Presentation at 6:15 p.m.)**

NEXT STEPS:

Following the meeting, input into this project will be accepted until **January 16, 2026.** Following receipt of input, a Master Plan Report will be published for a mandatory 30 day review period before being formally adopted by Council. Any comments collected in conjunction with this Master Plan will be maintained on file for use during the project and may be included in project documentation. With the exception of personal information, all comments will become part of the public record. For further information on this project, or to review the Master Plan process, please contact the project engineers: B.M. Ross and Associates: 62 North Street, Goderich, Ontario, N7A 2T4. Telephone: (519) 524-2641. Kelly Vader, Environmental Planner (e-mail: kvader@bmross.net).

Scott McLeod, Works Manager
Municipality of Arran-Elderslie
This Notice Issued December 5, 2025

MUNICIPALITY OF
ARRAN-ELDERSLIE

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN
PROJECT: 19195

ABORIGINAL CIRCULATION LIST- 2025

Chippewas of Nawash Unceded First Nation
Councillor Jessica Keeshig-Martin (Acting Chief)
R.R.# 5
Wiarton, ON N0H 2T0
Email: Chief@nawash.ca
Sent 2025-12-05

Chippewas of Saugeen First Nation
Chief Conrad Ritchie
6 Cameron Drive
Southampton, ON N0H 2L0
Email: sfn@saugeen.org
Sent 2025-12-05

Saugeen Ojibway Nation (SON) – Chippewas of Saugeen &
Chippewas of Nawash
Charlene Leonard- Infrastructure and Resource Manager
25 Maadookii Subdivision
Neyaashiinigmiing, ON N0H 2T0
Email: manager.ri@saugeenojibwaynation.ca
Sent 2025-12-05

Historic Saugeen Métis
204 High Street, Box 1492
Southampton, ON N0H 2L0
Email: hsmlrcc@bmts.com
Sent 2025-12-05

Métis Nation of Ontario
Kathleen Anderson – Region 9
Suite 1100 – 66 Slater Street
Ottawa, ON K1P 5H1
Email:
KathleenA@metisnation.org &
contactus@metisnation.org
Sent 2025-12-05

Great Lakes Métis Council
Peter Coture – President
380 9th Street East
Owen Sound, ON N4K 1P3
Email peterc1908@hotmail.com &
GreatLakesMetis@gmail.com Sent 2025-12-05

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 www.bmross.net

File No. 19195

VIA EMAIL ONLY

December 5, 2025

'Aboriginal Community'

RE: Bridge Infrastructure Master Plan
Municipality of Arran–Elderslie

The Municipality of Arran-Elderslie currently maintains 62 bridges. In 2019, the Municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges constructed from 1910-1950. It is anticipated that these crossings will require significant rehabilitation or replacement in the next 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value.

Based on the options that were considered, Arran-Elderslie Council has selected a preferred approach, which is to continue to repair or replace bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within the municipal budget. The locations of the bridges included in the review are shown on the attached figure.

The Infrastructure Master Plan is being conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA), which is an approved planning process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and include consultation with government review agencies, Indigenous Communities, adjacent property owners, and the general public.

Your community was previously contacted about this project. We are therefore soliciting your input on the preferred approach selected by municipal council. A **Public Meeting** has been scheduled to advise residents and to receive additional input. Details of the meeting are as follows:

Date: **Wednesday, December 17th, 2025**
Time: **6:00 p.m. (Presentation at 6:15 p.m)**
Place: **Arran-Elderslie Council Chambers (1925 Bruce Road 10, Chesley)**

Copies of the presentation material will be posted on the Arran-Elderslie website at www.arran-elderslie.ca for review. Alternatively, hard copies of the presentation material could be provided by mail or email if requested.

Please forward any comments on the project by **January 16, 2026**. If you have any questions or require further information, please contact the undersigned at kvader@bmross.net or by phone at 1-888-524-2641.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:sd
Encl.

cc. Scott Mcleod – Public Works Manager

MUNICIPALITY OF ARRAN-ELDERSLIE
BRIDGE INFRASTRUCTURE MASTER PLAN

REVIEW AGENCY CIRCULATION LIST- 2025

REVIEW AGENCY	INVOLVEMENT
Ministry of the Environment, Conservation & Parks Southwest Region Ministry Regional Office Email:eanotification.swregion@ontario.ca Sent: 2025-12-05	Mandatory Contact
Ministry of Natural Resources (Owen Sound Work Centre) Email: midhurstinfo@ontario.ca Sent: 2025-12-05	Potential Impact on Natural Features
Ministry of Citizenship and Multiculturalism Karla Barboza, Team Lead (A) Email: karla.barboza@ontario.ca Sent: 2025-12-05	Potential Impact on Cultural Heritage Features
Ministry of Transportation (Toronto) Email: mtoinfo@ontario.ca Michele Luker – Corridor Management Officer Email: michele.luker@ontario.ca Sent: 2025-12-05	Potential Impact on Transportation Network
Municipality of Brockton John Strader- Operations Manager, Email: jstrader@brockton.ca Sent: 2025-12-05	Adjacent Municipality
Township of Chatsworth Tyler Zamostny – Deputy Clerk Email: tyler.zamostny@chatsworth.ca Cc: Leashia Mustard- enquiries@chatsworth.ca Herb Lemon– Public Works Operations Manager Email: herb.lemon@chatsworth.ca Sent: 2025-12-05	Adjacent Municipality
Town of Saugeen Shores Jay Pausner- Manager of Planning and Development Email: jay.pausner@saugeenshores.ca Sent: 2025-12-05	Adjacent Municipality

REVIEW AGENCY	INVOLVEMENT
Township of Georgian Bluffs Planning Services Email: georgianbluffs.planning@app.foreaction.cloud Engineering & Infrastructure Email: TownshipofGeorgianBluffsEngineering@georgianbluffs.ca Sent: 2025-12-05	Adjacent Municipality
Bruce County Planning & Development Office Email: bcplpe@brucecounty.on.ca Transportation and Environmental Services Email: Transportationinfo@brucecounty.on.ca Sent: 2025-12-05	- General Information - Implications for Long-Term Development
Saugeen Valley Conservation Authority Matt Armstrong, Manager, Environmental Planning and Regulations Email: m.armstrong@svca.on.ca Sent: 2025-12-05	Potential Impact on Natural Features
Grey-Sauble Conservation Authority Carl Seider- Drinking Water Source Protection Manager Email: c.seider@greysauble.on.ca Sent: 2025-12-05	Potential Impact on Natural Features
Arran-Elderslie	Proponent
Bruce Grey Catholic District School Board Transportation Services Email: transportation@sharedschoolservices.ca Sent: 2025-12-05	Impact on Transportation
Bluewater District School Board Shelley Crummer, Business Analyst shelleycrummer@bwdsb.on.ca Sent: 2025-12-05	Impact on Transportation

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 www.bmross.net

File No. 19195

December 5, 2025

'Agency'

RE: Bridge Infrastructure Master Plan
Municipality of Arran–Elderslie

The Municipality of Arran-Elderslie currently maintains 62 bridges. In 2019, the Municipality initiated a Bridge Infrastructure Master Plan to identify future infrastructure needs associated with the 17 oldest bridges constructed from 1910-1950. It is anticipated that these crossings will require significant rehabilitation or replacement in the next 20 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan process considered a range of factors associated with each bridge, including traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, and potential heritage value.

Based on the options that were considered, Arran-Elderslie Council has selected a preferred approach, which is to continue to repair or replace bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within the municipal budget. The locations of the bridges included in the review are shown on the attached figure.

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Your organization was previously contacted about this project. We are therefore soliciting your input on the preferred approach selected by municipal council. A **Public Meeting** has been scheduled to advise residents and to receive additional input. Details of the meeting are as follows:

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Place: **Arran-Elderslie Council Chambers (1925 Bruce Road 10, Chesley)**

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Please forward any comments on the project by **January 16, 2026**. If you have any questions or require further information, please contact the undersigned at kvader@bmross.net or by phone at 1-888-524-2641.

Yours very truly

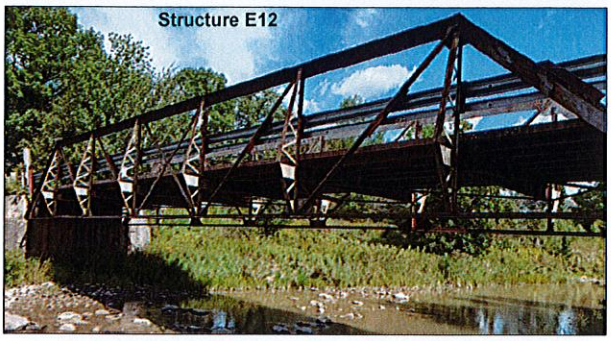
B. M. ROSS AND ASSOCIATES LIMITED

Per _____
Kelly Vader, MCIP, RPP
Environmental Planner

KV:hv
Encl.

cc. Scott Mcleod – Public Works Manager

MUNICIPALITY OF ARRAN-ELDERSLIE
Bridge Infrastructure Master Plan



PUBLIC INFORMATION MEETING

December 17, 2025

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Agenda

- Background
- Summary of Public Input
- Revised Evaluation Approach
- Recommended Approach
- Timeline
- Next Steps

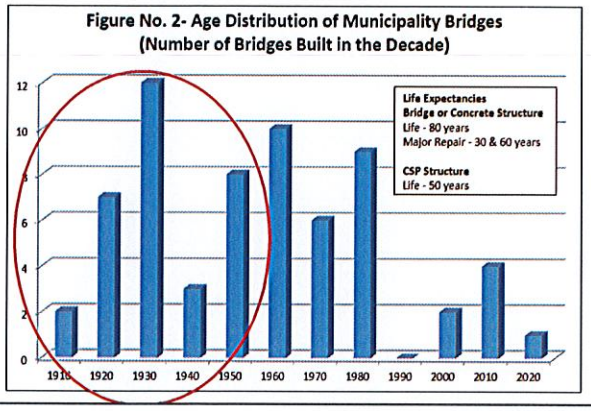
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Project Background

- Arran-Elderslie maintains 62 Bridges (>3m in length)
- The Infrastructure Master Plan is considering outcomes for only 17 of the oldest crossings in the Municipality
- The Master Plan process was initiated in 2019



3

Master Plan Timeline

- Initial Notice/Agency & FN Consult — September 2019
- Cultural Heritage Evaluation Report — March 2020
- Engineering Evaluation of Crossings — 2021
  - Traffic Counts, Detour Options, BCI, Road Connectivity, Road Surface Condition, Load Limit
- Develop Preliminary Recommendations — 2022
- Council Presentation — February 2023
- Public Meeting — September 2023
- Council Presentation — January 2024
- Finalize Master Plan Process — December 2025

4

Bridge Economics

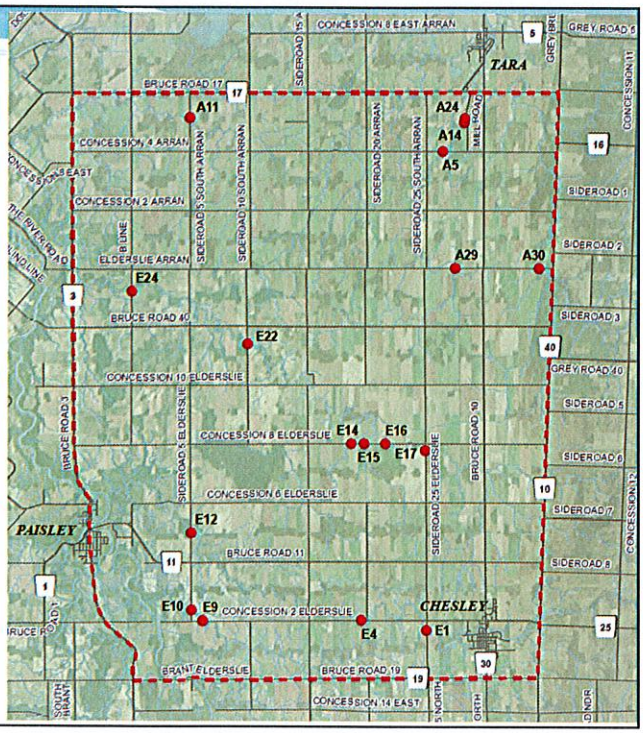
- Arran-Elderslie maintains 62 Bridges (>3m span)
- Bridges are inspected every 2 years as per OSIM
- Bridge Needs Report prepared in 2024 listed repair or replacement needs for 20 structures over next 1-5 years
- Priority Repairs – 1 to 5 years - $6,687,500
- Priority Repairs – Average amount/year $1,337,500
  (Includes some of the study bridges)
- Draft 2026 budget proposes $303,218 to be put into reserves for bridge projects.
- Due for OSIM inspection and updated Needs Report in 2026

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Study Bridges

A11-Wilson
A24-Ruff
A14-Arranvale
A5-Hunts
A29, A30
E22, E24
E14, E15, E16, E17
E12-Pearces
E9, E10
E4-Allens
E1-Priebe



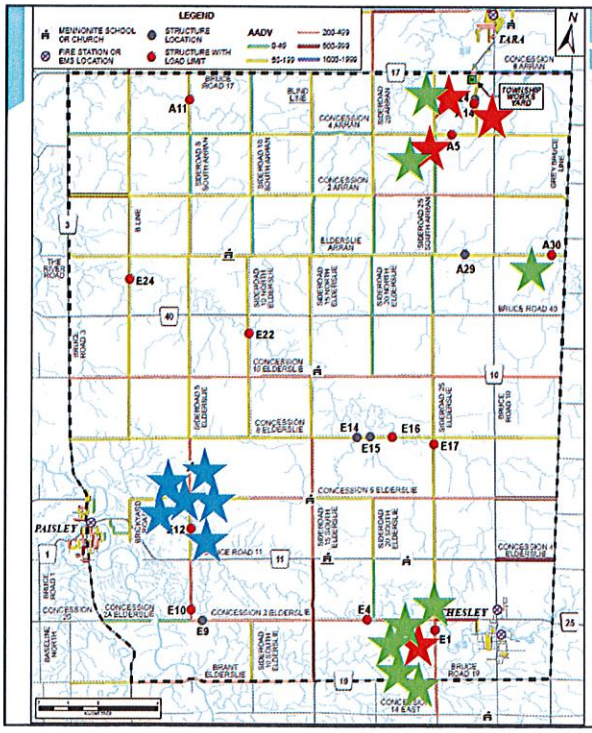
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Feedback from Residents

- 8 written comments received following the September 2023 Public Meeting
- Majority of comments were specific to an individual bridge
- A number of comments were received from the horse & buggy community identifying a bridge that is used often by their community to access a school and church (E1 – Priebe)
- Residents were concerned with timelines for when bridges would eventually be closed
- A number of comments received from residents following the temporary closure of E12 – Pearces Bridge

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Master Plan Public Comments

- Comments made at the 2023 Public Meeting
- Comments received following the 2023 Public Meeting
- Comments received following closure of E12

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Master Plan Alternatives

Preferred Approach

- **Alternative 1** – Continue to repair or replace crossings. This option means that the Municipality would continue maintaining, repairing, and replacing bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within municipal budgets.
- **Alternative 2** – Close some crossings and either replace or repair the remaining crossings. This option means that several bridges will be repaired as long as feasible and then eventually closed to traffic and removed, while the remaining crossings will be either repaired as required or replaced.
- **Alternative 3** – Do Nothing. The do nothing option, is a consideration during any Master Plan Class EA process. This option would propose that no commitment is made either way and improvements or changes to address problems will continue to be made on a case by case basis.

9

Evaluation Criteria

(Criteria that could be used if considering bridge closures.)

- **Traffic Counts** – Provided by Arran-Elderslie
- **Detour Options** – Shortest Route around if Bridge Closed
- **BCI** – Bridge Condition Index (Condition Score)
- **Road Surface** – Gravel/Pavement
- **Load Limit** – Based on Engineering Review
- **Road Connectivity** – Connection to County Roads or corridors through the Municipality
- **Cost Estimates** – Replacement/Repair

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Evaluation of Alternatives

- Matrix developed to Evaluate Different Options
- A 'Community Features' component added after 2023 Public Meeting to capture schools/churches/Fire/EMS/Works Yard
- Approach #1
  - Approach #1 utilized BCI, Load Limit, Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity, Replacement Costs, and **Community Features** to identify bridges for potential closure.
- Approach #2
  - Approach #2 removed the BCI and Load Limit Scores and just focused on Traffic Counts, Road Types, Detour Lengths (if closed), Road Connectivity, Replacement Costs and **Community Features** to identify bridges for potential closure. This approach focused more on the location and function of the bridges, rather than their condition.

11

Matrix Illustrating Approach #1

Structure ID	Type & Age	BCI	Score	Load Limit	Score	Avg. Traffic Counts	Score X 2	Road Type[1]	Score	Detour	Score	Replace$	Score x 2	Road Connectivity	Score	Community Feature	Score	Revised Total
E4 - Allens	Truss-1920	50	10	18/29/36	10	459	10	HCB	5	8.2km	10	$2,018,040	30	Yes	5	EMS Route	5	85
E9	Beam-1930	26	20	25	5	280	10	LCB	10	12.2km	5	$875,850	10	Yes	5	EMS Route	5	70
E1 – Priebe	Truss-1938	40	15	10	15	216	10	Gravel	15	8.1km	10	$2,194,590	30	Yes	5	School (near)	5	105
E10	T-Beam-1930	48	10	11	10	162	20	LCB	10	12.2km	5	$1,015,710	10	Yes	5	EMS Route	5	75
E12– Pearces	Truss-1930	46	10	8	15	162	20	Gravel	15	7.6km	10	$2,544,240	30	Some	10	School (far)	10	120
A11 – Wilson	C. Arch-1910	45	10	12	10	112	20	Gravel	15	8.1km	10	$689,370	10	None	15	None	15	105
A29	C. slab-1930	56	5	25	5	100	20	Gravel	15	7.9km	10	$829,230	10	Some	10	None	15	90
A14– Arranvale	Truss-1920	45	10	14	10	99	20	Gravel	15	5.2km	15	$2,529,780	30	Yes	5	Work Shed	5	110
A24 – Ruff	C. slab-1920	29	20	25	5	99	20	Gravel	15	5.2km	15	$673,830	10	Yes	5	Work Shed	5	95
E24	Truss-1920	53	5	10	15	98	20	Gravel	15	8.2km	10	$1,614,000	20	Some	10	School (far)	10	105
A5 – Hunts	C. Arch-1910	63	5	9	15	84	20	Gravel	15	7.1km	15	$1,155,570	10	Yes	5	Work Shed (far)	10	95
A30	C. slab-1930	38	10	12	10	77	30	Gravel	15	8.8km	10	$1,598,460	20	Some	10	None	15	120
E22	Truss 1920	46	10	3	15	68	30	Gravel	15	8.1 km	10	$1,691,700	20	None	15	School (far)	10	115
E16	T-Beam-1930	31	15	15	10	67	30	Gravel	15	12.2km	5	$875,850	10	Some	10	None	15	110
E17	Truss-1930	38	15	11	10	53	30	Gravel	15	8.2km	10	$1,963,650	20	None	15	None	15	130
E14	T-Beam-1930	34	15	25	5	50	30	Gravel	15	12.2km	5	$899,160	10	Some	10	None	15	105
E15	T-Beam-1920	41	10	25	5	50	30	Gravel	15	12.2km	5	$875,850	10	Some	10	None	15	100

Scoring System: [1]LCB – Low Class Bituminous, HCB – High Class Bituminous

BCI: <30 = 20, 30-40 = 15, 41-50 = 10, >50 = 5 **Load Limit:** <10 = 15, 11-20 = 10, > 20 = 5 **Traffic:** <80 = 15, 81-200 = 10, > 200 = 5 **Road Type:** Gravel = 15, LCB = 10, HCB = 5 **Detour:** < 7.5 = 15, 7.6-10 = 10, >10.1 = 5 **Replace $:** < 1.5 mil = 5, 1.5-2 mil = 10, > 2 mil = 15 **Rd Connection:** none = 15, some = 10, Yes = 5 **Community Feature:** None = 15, Some = 10, Yes = 5

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Preferred Approach

- Council has decided to continue to repair or replace crossings. This means that the Municipality would continue maintaining, repairing, and replacing bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within municipal budgets.
- 2026 Budget includes funding to investigate the costs to replace E12-Pearces Bridge
- Contribution to Bridge Reserves to be increased Annually

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Next Steps

- Council has selected Alternative 1 as their Preferred Approach for the Master Plan
- Obtain Additional Input from residents on this Alternative until mid-January
- Finalize Master Plan Report in early 2026
- Subject to Receipt of additional comments from residents a Notice of Master Plan Completion would be published in January for a 30 Day Mandatory Review Period
- Master Plan Report would be made available for review

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15

BRIDGE INFRASTRUCTURE MASTER PLAN

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT
MUNICIPALITY OF ARRAN-ELDERSLIE

NOTICE OF MASTER PLAN COMPLETION

The Municipality of Arran-Elderslie initiated a Bridge Infrastructure Master Plan in September 2019 in order to address future infrastructure needs associated with 17 older bridges distributed throughout the municipality. The bridges, which were constructed between 1910-1950, require significant rehabilitation or replacement in the next 20-30 years and, as a group, represent a significant capital commitment for the Municipality. The Master Plan review process considered a range of factors associated with each bridge, including current and anticipated traffic volumes, capacity, local and regional transportation linkages, expected replacement cost, potential heritage value and proximity to community features. The Master Plan process has now been completed. The Municipality decided to continue maintaining, repairing, and replacing bridge structures as necessary to ensure the transportation network stays safe and connected, provided these investments continue to be financially sustainable within municipal budgets.

THE ENVIRONMENTAL ASSESSMENT PROCESS:

The Bridge Infrastructure Master Plan was conducted in accordance with the requirements of the Municipal Class Environmental Assessment (Class EA) which is an approved process under the Environmental Assessment Act. Master Plan projects incorporate Phases 1 & 2 of the Class EA process and also include consultation with the general public, government review agencies, Indigenous Communities and affected property owners. While the Master Plan addresses the need and justification for the proposed bridge infrastructure needs at a broad level, more detailed Class EA studies may be required prior to the construction of some components of the plan.

PUBLIC INVOLVEMENT:

The Master Plan has been completed and, by this notice, is being placed on the public record for public review. A digital copy of the final report will be available for review on the Arran-Elderslie website at https://www.arran-elderslie.ca for a 30-day review period as of March 5, 2026. Hard copies of the report will also be available at the municipal office. Comments and questions related to the Master Plan Report will be accepted until April 4th, 2026. Contact information is listed below. Thereafter, the Master Plan will be reviewed and revised taking into consideration the comments that are received from the public. The recommended Master plan will be brought back to Arran-Elderslie Council for their consideration.

Please contact the project engineers if you have any questions regarding this Notice: B.M. Ross and Associates: 62 North Street, Goderich, Ontario, N7A 2T4. Telephone: 1-(519)-524-2641. Kelly Vader, Environmental Planner (e-mail: kvader@bmross.net), within 30 days from the date of this Notice

Scott McLeod, Works Manager
Municipality of Arran-Elderslie
This Notice Issued March 5, 2026

MUNICIPALITY OF
ARRAN-ELDERSLIE