# WELCOME

Ontario

MORRISON HERSHFIELD

## ARGYLE STREET BRIDGE
## CALEDONIA

## Preliminary Design (PD) and Class Environmental Assessment Study
## Long Term Strategy

## AND

## Detail Design (DD) and Class Environmental Assessment Project
## Short Term Bridge Repair

## Public Information Centre #3

# GENERAL INFORMATION

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## FREEDOM OF INFORMATION

Comments and information regarding this study are being collected to assist the Ministry of Transportation in meeting the requirements of the *Environmental Assessment Act* (R.S.O. 1990).

Information at this Public Information Centre is being collected in accordance with the *Freedom of Information and Protection of Privacy Act* (R.S.O. 1990). This information will be kept on file and may be included in study documentation, which is made available for public review. With the exception of personal information, all comments will become part of the public record. Names and addresses will be kept confidential.

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# ARGYLE STREET BRIDGE

# BACKGROUND INFORMATION

# BACKGROUND INFORMATION

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## CULTURAL HERITAGE INFORMATION

The bridge in Caledonia carries Argyle Street over the Grand River, and it is the fifth bridge to be constructed at this crossing. The first was wood and it was erected in 1843 to provide permanent and unimpeded passage on the plank road between Hamilton and Port Dover.

In 1875, a five-span iron bridge was built. At this time, adjacent to the bridge, a red and buff brick Gothic revival house was built for the new bridge's toll keeper. Tolls were collected at the bridge until about 1890.

The present bridge was designed by A.B. Crealock, bridge engineer with the Department of Public Works, constructed in 1927 by Randolph MacDonald Co. Ltd. of Toronto and rehabilitated in 1984. It is considered a landmark gateway to the town centre. It is a 200 metre reinforced concrete structure with nine arched spans. It was one of three bridges of similar construction built in Ontario during the mid to late 1920's. The other two are also located along the Grand River at Freeport and Bridgeport.

The Ontario Heritage Bridge Program was established in July 1982 in order to provide a framework for the consideration for the conservation of heritage bridges during engineering design projects. Key elements of the program comprise: a formal system of listing; the use of evaluation criteria; and consideration and application of a number of conservation strategies for any listed bridge subject to repair or replacement, including those subject to environmental assessment.

The Argyle Street Bridge over the Grand River in Caledonia is listed in the Ontario Heritage Bridge Program. Listing in the Ontario Heritage Bridge Program is intended to be a serious statement of heritage status; however, listing does not confer outright protection.

A report on the cultural heritage of the Argyle Street Bridge and the surrounding area has been completed by Archaeological Services Inc.

# BACKGROUND INFORMATION

Ontario

## EXISTING BRIDGE CONDITIONS

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**Truck Weight Limit at End of Bridge**
Heavy Trucks are Not Permitted
To Cross Over Bridge


**Concrete Arch Hanger in Poor Condition**
Typical Areas with Concrete Fallen Off
And Exposed Reinforcing Steel at Bottom


**Concrete Railing in Fair Condition**
Typical Damage on Railing With
Numerous Areas of Missing Concrete


**Concrete Arch in Fair Condition**
Typical Surface on Arches
And Cracks at End of Arches


**Concrete Arch Beam in Poor Condition**
Typical Areas of Missing Concrete
With Exposed Reinforcing Steel


**Concrete Arch Beam in Poor Condition**
Exposed Reinforcing Steel
Where Hanger is Attached


**Concrete Arch Beam in Poor Condition**
Typical Diagonal Crack
At End of Main Arch Beam


**Concrete Floor Beam in Fair Condition**
Areas of Sprayed Concrete
Repair At Bottom of Floor Beam


**Concrete Floor Beam in Fair Condition**
Areas of Missing Concrete
At Bottom of Floor Beam


**Underside of Deck in Poor Condition**
Numerous Areas of Sprayed Concrete
Repairs on Under Side of Deck


**Underside of Deck in Poor Condition**
Typical Areas of Missing Concrete
With Rusted Exposed Reinforcing
Steel on Under Side of Deck


**Abutment (Structure End) in Fair Condition**
Typical Areas of Loose
Concrete at End of Structure


**Piers (Foundation) in Good Condition**
Concrete Patch Repair From
Last Rehabilitation Work and
Erosion at Isolated Pier Locations

# REGULATORY WEIGHT RESTRICTIONS

Ontario

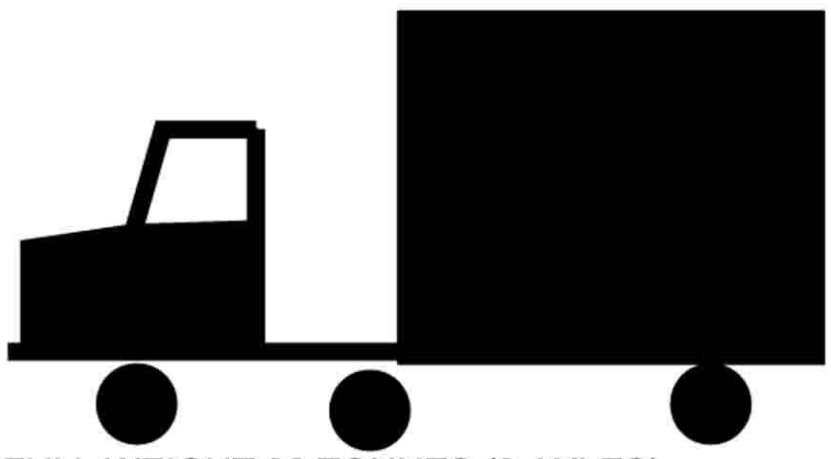
MORRISON HERSHFIELD

EMPTY WEIGHT 7 TONNES

18 TONNES

FULL WEIGHT 15 TONNES (MAX)
UNLESS 3+ AXLES

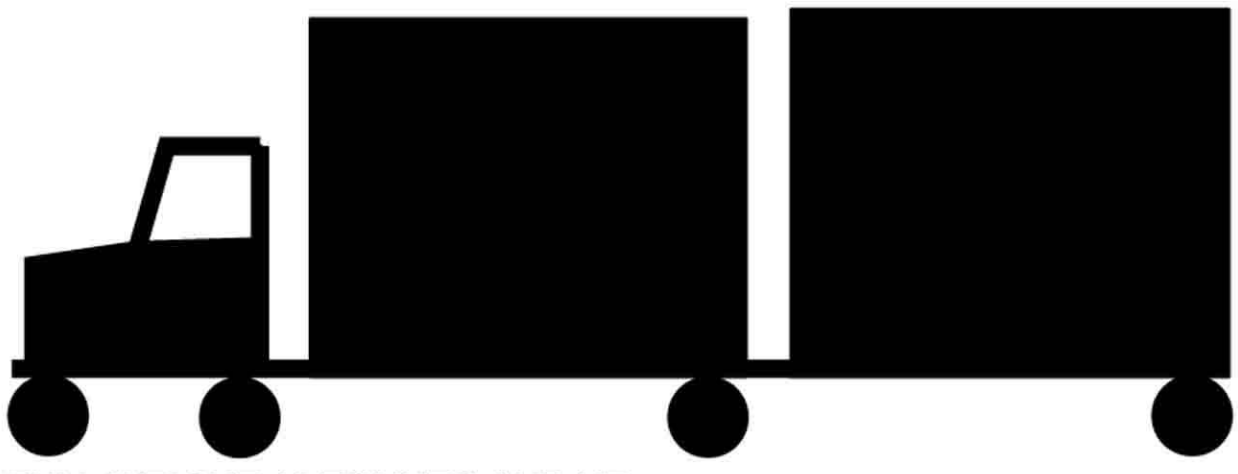
EMPTY WEIGHT 15 TONNES



32 TONNES

FULL WEIGHT 32 TONNES (3 AXLES)
4+ AXLES 33 TONNES AND UP

EMPTY WEIGHT 22 TONNES



45 TONNES

FULL WEIGHT 40 TONNES AND UP

ALL EMPTY AND FULL WEIGHTS ARE APPROXIMATE

Ontario

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# INFRASTRUCTURE PROTECTION


## EDUCATION


## ENFORCEMENT

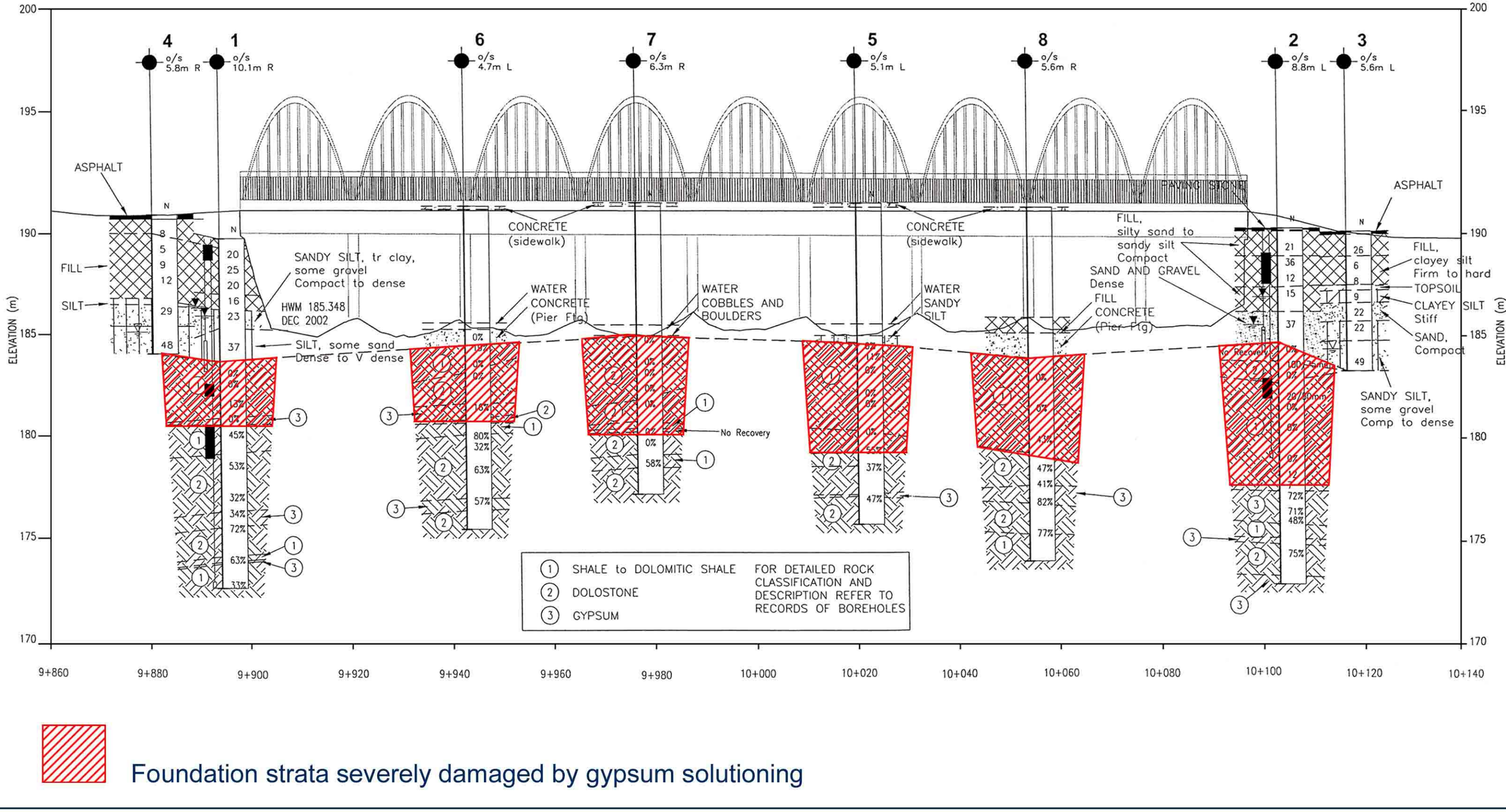

## COMPLIANCE

# BACKGROUND INFORMATION

Ontario

## FOUNDATION CONCERNS

MORRISON HERSHFIELD




Foundation strata severely damaged by gypsum solutioning

# BACKGROUND INFORMATION

Ontario

## STAKEHOLDER CONSULTATIONS

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**MINISTRY OF TRANSPORTATION SOUTHWESTERN REGION**

**MORRISON HERSHFIELD LIMITED**

**FIRST NATIONS**

- Six Nations of the Grand River Territory
- Mississaugas of the New Credit

**HALDIMAND COUNTY**

- Physical Services Department
- Engineering and Infrastructure
- Economical Development
- Cultural/Heritage

**CALEDONIA CHAMBER OF COMMERCE**

**CALEDONIA BUSINESS IMPROVEMENT ASSOCIATION**

**MINISTRIES & AGENCIES**

- Department of Fisheries and Oceans
- Grand River Conservation Authority
- Ministry of Culture
- Ministry of Natural Resources and Others

**HERITAGE STAKEHOLDERS**

**EMERGENCY SERVICES**

- Haldimand County Ambulance Services
- Haldimand County Fire Services
- Ontario Provincial Police Haldimand County Detachment
- Hamilton CACC Operations
- Brant County Ambulance Services

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# ARGYLE STREET BRIDGE

# LONG-TERM STRATEGY

# ENVIRONMENTAL ASSESSMENT PROCESS

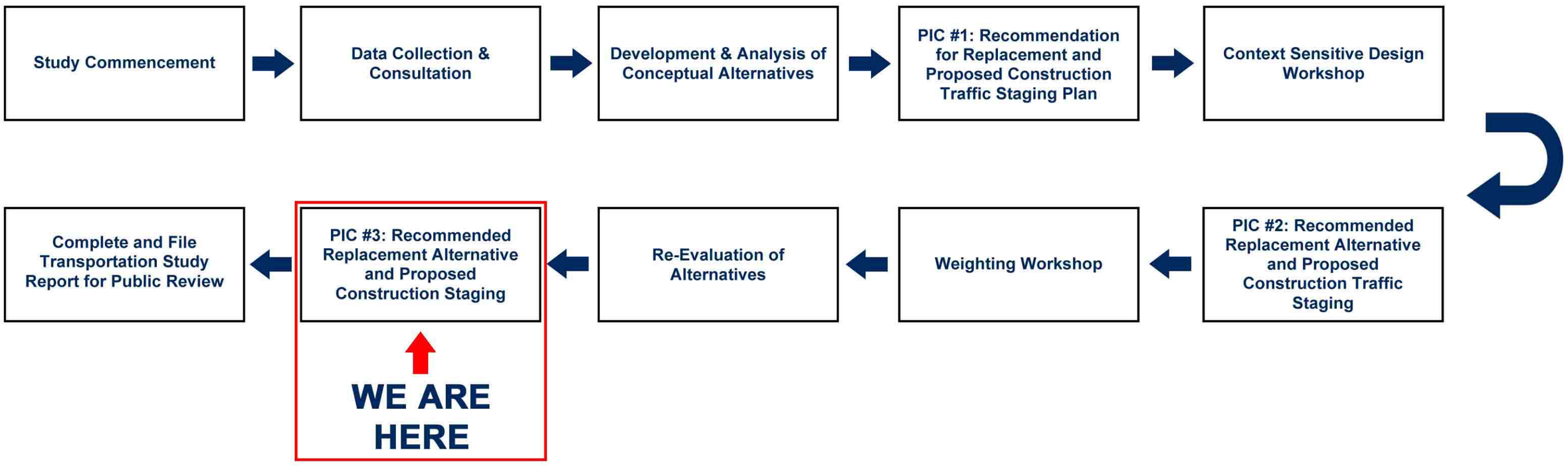
Ontario

Morrison Hershfield

## ENVIRONMENTAL ASSESSMENT PROCESS

This project is being conducted in accordance with the requirements of the Ministry of Transportation (MTO) Class Environmental Assessment for Provincial Facilities (amended 2000). The MTO Class EA is a process approved by the Ministry of the Environment for the planning and design of provincial road projects. The Class EA process includes several opportunities for public involvement and review of the final Transportation Environmental Study Report (TESR), which involves the following:

- A TESR will be prepared and filed with the Regional Office of the Ministry of the Environment, and other locations (typically municipal offices and libraries) for a minimum 30-day public review period.
- At the same time, a public notice indicating the submission of the TESR will be published in the local newspapers and mailed to those included on the study mailing list. The public notice for the TESR will identify any additional location(s) where the document can be viewed.



# PURPOSE & BACKGROUND

Ontario

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## PRELIMINARY DESIGN (PD) AND CLASS ENVIRONMENTAL ASSESSMENT (EA) STUDY FOR THE ARGYLE STREET BRIDGE LONG-TERM STRATEGY

### Purpose

- The 1st purpose of today's PIC is to provide an update on the PD and Class EA Study, present the recommended bridge replacement alternative and a revised construction traffic staging plan to the public to obtain input relating to the PD and Class EA Study recommendations.

### Background

- Argyle Street Bridge is a provincially significant heritage bridge that provides a crucial connecting link across the Grand River for Caledonia and the surrounding community.
- In 2002, following a biennial inspection of the bridge, MTO posted Regulatory Load Postings on the bridge.
- In November of 2002, MTO retained Morrison Hershfield to complete a PD and Class EA Study to determine the long-term strategy (i.e. rehabilitation or replacement) of the bridge.
- MTO held 2 Public Information Centres (PIC) for the PD and Class EA Study:
  - PIC # 1 - June 2003 - the project team recommended bridge replacement and traffic staging via the Highway 6 By-Pass.
  - PIC #2 - June 2005 - the project team presented the recommended replacement alternative, a 3 lane, 5 span, steel arch signature bridge. MTO also presented a revised traffic staging plan that provided for a single lane of traffic across the bridge during the first construction season and two lanes of traffic during the second construction season.
- Around the time of the 2nd PIC, amendments to the Ontario Heritage Act (OHA) were passed. These amendments sent an important signal that provincially owned heritage resources should be conserved.
- The project schedule was delayed while MTO and the Ministry of Culture (MCL) determined how the study should proceed in light of the amendments to the OHA.
- MTO and MCL worked together to develop a plan to address the heritage concerns within the Class EA process. This plan included:
  (i) Holding a Weighting Workshop to allow stakeholders the opportunity to collectively assign weights to each of the factor groups, and their sub-factors, used in the evaluation of the long-term alternatives (i.e. rehabilitation or replacement); and
  (ii) Completion of a re-evaluation of the long-term alternatives using the weightings developed through the Weighting Workshop.
- The MTO completed these additional processes and determined the recommended alternative is consistent with the recommendation presented at the 2nd PIC (replacement with a 3 lane, 5 span, signature arch bridge).

# PUBLIC INFORMATION CENTRE #1 SUMMARY

Ontario

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## PIC # 1 SUMMARY

PIC #1 was held on June 23rd, 2003 in Caledonia at the Royal Canadian Legion Hall. The MTO presented 2 rehabilitation alternatives, 7 replacement alternatives and 6 detouring options. At that time, the MTO also presented the recommendations to replace the bridge and detour all traffic to the Highway 6 By-Pass.

Seventy (70) people attended the PIC. Forty-six written submissions were received, providing comments on the design alternatives presented, the proposed construction staging and detour options, and concerns for additional studies that should be considered.

Of the written submissions received, the following issues represent those most frequently identified by the attendees:

Of the comments received, 60% favoured replacing the existing bridge

Maintaining the heritage component of the existing bridge was very important and that the appearance of a new bridge should be equally important

Minimizing the time for construction and the associated disruption to the town was very important. To the extent possible, “business as usual” should be maintained in the town

Closing Argyle Street during construction was unacceptable. Traffic and pedestrian access across the bridge during construction is needed

Impacts to emergency services must be addressed and communicated to the residents

Cost should not be an issue in addressing the concerns of the local residents

Strategies for replacing the bridge must consider the future needs of the town

Minimize impacts to the Grand River

Following the evaluation of the comments and concerns received from the 1st PIC, the project team determined that enhanced construction traffic staging plans could be developed to address concerns relating to the traffic staging; however additional consultation was required for the replacement bridge design. For this reason, MTO held a Context Sensitive Design Workshop.

# CONTEXT SENSITIVE DESIGN WORKSHOP

Ontario

## APRIL 18 AND 19, 2005

MORRISON HERSHFIELD

### WHO PARTICIPATED?

Participants from a broad spectrum of stakeholders and the public worked with the engineering design team to develop, review and evaluate the heritage component of the structure replacement. The participants included representatives from:

- Ministry of Culture
- Grand River Conservation Authority
- Haldimand County
- Mississaugas of the New Credit First Nation
- Six Nations Confederacy
- Six Nations Elected Council
- Local Historical Society
- Municipal Heritage Committee
- Caledonia Chamber of Commerce
- Caledonia Business Improvement Association
- 3 Caledonia citizen representatives

# CONTEXT SENSITIVE DESIGN WORKSHOP

Ontario

MORRISON HERSHFIELD

## APRIL 18 AND 19, 2005

### WHAT WAS ACCOMPLISHED?

- Provided the opportunity for the Ministry, stakeholders, and public to work together as a team to develop solutions
- Stakeholders and local residents gained an understanding of the staging requirements, existing structural deficiencies, and environmental issues
- A total of 14 alternatives were developed by the working groups and each working group presented their alternatives for critiquing and discussion
- The groups also looked into possible bridge attributes that might improve the aesthetics of a new bridge design such as scenic lookouts, handrails, and lighting
- The 14 alternatives were grouped into 3 families, and three replacement alternatives were selected for presentation to the public in the 2nd PIC

# PUBLIC INFORMATION CENTRE #2

Ontario

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## PIC #2 SUMMARY

On June 15th, 2005, the public and other stakeholders were invited to the 2nd Public Information Centre (PIC) held at the Community Centre in Caledonia.

3 Replacement Alternatives were presented with the aid of computer video renderings for public input on the 2nd PIC. These included:

Alternative 1: A 9 span beam arch bridge to replicate the existing bridge;

Alternative 2: A 5 span modern arch bridge; and

Alternative 3: A 5 span modern arch bridge with a prominent centre arch span as a unique feature.

Two hundred and six (206) people attended the PIC. Seventy-two (72) questionnaires were collected at the PIC and a further five (5) questionnaires were received by mail and/or fax following the PIC for a total of seventy seven.

Of the written submissions received, the following issues represent those most frequently identified by the attendees:

| |
|---|
| Of the comments received, 65% favoured replacing the existing bridge |
| Alternative 2 was the recommended alternative, which received the most support |
| The need for a barrier between pedestrians and traffic on the bridge |
| The need to review the traffic staging to mitigate business losses |
| The need to reduce the time that traffic is disrupted during construction |
| A suggestion that parking be provided at the south end of the bridge to allow people to walk across the bridge to access downtown businesses during construction |

Based on comments received, the project team recommended Alternative 2, i.e. 3 lane, 5 span, steel arch, signature bridge be carried forward to detail design.

# ONTARIO HERITAGE ACT

Ontario

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## ONTARIO HERITAGE ACT

- Around the time of the 2nd PIC, amendments to the Ontario Heritage Act (OHA) were passed. These amendments sent an important signal that provincially owned heritage resources should be conserved.
- The project schedule was delayed while MTO and the Ministry of Culture (MCL) determined how the study should proceed in light of the amendments to the OHA.
- MTO and MCL worked together to develop a plan to address the heritage issues within the Class EA process. This plan included:
  - (i) Holding a Weighting Workshop to allow stakeholders the opportunity to collectively assign weights to each of the factor groups, and their sub-factors, used in the evaluation of the long-term alternatives (i.e. rehabilitation or replacement); and
  - (ii) Completion of a re-evaluation of the long-term alternatives using the weightings developed through the Weighting Workshop.

# FACTOR WEIGHTING WORKSHOP

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## FACTOR WEIGHTING WORKSHOP

The Weighting Workshop was held in Caledonia on September 26, 2007. Participants included representatives from Caledonia Chamber of Commerce, OPP, Six Nations, Ministry of Culture, Grand River Conservation Authority, Caledonia Business Improvement Association, International Council on Monuments and Sites, Haldimand County Engineering, Planning, Culture and Emergency Services and MTO.

The purpose of the Weighting Workshop was to allow stakeholders to collectively assign weightings to each of the factors, and sub-factors, used in the re-evaluation of the long-term alternatives. The factor groups included:

1. **Natural Environment** – impacts to fish, wildlife and vegetation;
2. **Socio- Economic Environment** – impacts on land use, emergency services and the disruption to the community;
3. **Cultural Environment** – includes heritage significance of the bridge, landscape and streetscape, and impacts to archaeology within the vicinity of the bridge; and
4. **Transportation & Engineering** – current and future traffic operations, geometrics of the bridge and bridge approaches, structural engineering and cost.

Through the Weighting Workshop, the following weightings were developed:

| | |
|---|---|
| Natural Environment | 13.25% |
| Socio-Economic Environment | 31.25% |
| Cultural Environment | 28.25% |
| Transportation & Engineering | 27.25% |
| Total | 100% |

# FACTOR WEIGHTING WORKSHOP

Ontario

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## EVALUATION FACTORS & SUB-FACTORS USED TO EVALUATE LONG-TERM ALTERNATIVES

| | | | |
|---|---|---|---|
| **1.0** | **Natural Environment Factor Group** | | |
| 1.1 | Fisheries and Aquatic Ecosystems | 1.1.1<br>1.1.2 | Fish and Aquatic Habitat<br>Fish and Aquatic Community |
| 1.2 | Terrestrial Ecosystems | 1.2.1<br>1.2.2 | Wildlife Habitat and Wildlife<br>Vegetation |
| **2.0** | **Socio-Economic Environment Factor Group** | | |
| 2.1 | Land Use Planning Policies, Goals, Objectives | 2.1.1<br>2.1.2 | First Nations Land Claims<br>Municipal (regional and local) land use planning goals and objectives |
| 2.2 | Land Use/Community – Long Term | 2.2.1<br>2.2.2 | Urban Residential<br>Commercial / Industrial / Local Businesses / Economy |
| 2.3 | Community Disruption – Short-Term | 2.3.1<br>2.3.2<br>2.3.3<br>2.3.4<br>2.3.5 | Duration of Construction Disruption to the traffic and downtown area/economy (during initial construction and subsequent rehabilitations)<br>Degree of Traffic Disruption between the north and south sides of Caledonia (during initial construction and subsequent rehabilitations)<br>Impact to Police and Emergency Services (Fire and Ambulance) (allows EMS unimpeded crossing of bridge during initial construction and subsequent rehabilitations)<br>Accommodation for pedestrians and cyclists during construction (during initial construction and subsequent rehabilitations)<br>Navigation (during construction) |
| 2.4 | Land Use/Resources | 2.4.1<br>2.4.2 | First Nations or Treaty Rights and Interests and Use of Land and Resources for Traditional Purposes<br>Parks and Recreational Areas |
| 2.5 | Tourism | 2.5.1 | Tourism |
| **3.0** | **Cultural Environment Factor Group** | | |
| 3.1 | Cultural Heritage – Heritage Bridge in the Nationally Designated Grand River Heritage Watershed | 3.1.1<br>3.1.2 | Bridge listed on the Ontario Heritage Bridge List and the Grand River Heritage Bridge Inventory<br>Heritage Community Landmark/Gateway |
| 3.2 | Cultural Heritage – Built Heritage and Cultural Landscapes | 3.2.1<br>3.2.2<br>3.2.3 | Buildings, Structures or Resources of Heritage Value<br>Cultural Heritage Landscapes<br>Cultural Heritage Streetscape |
| 3.3 | Cultural Heritage – Archaeology | 3.3.1<br>3.3.2 | Pre-Historic and Historic First Nations Archaeological Sites and Burial Sites<br>Historic Euro-Canadian Archaeological Sites |
| **4.0** | **Transportation & Engineering Factor Group** | | |
| 4.1 | Traffic Operations – Long Term | 4.1.1<br>4.1.2 | Traffic capacity and operations<br>Accommodation for pedestrians and cyclists |
| 4.2 | Geometrics | 4.2.1<br>4.2.2 | Permanent Alignment<br>Operational Safety (lane widths, etc.) |
| 4.3 | Structural Engineering | 4.3.1<br>4.3.2<br>4.3.3<br>4.3.4 | Structural Durability and Future Maintenance Requirements<br>Structural Foundation Performance<br>Hydraulic Capacity (ability to handle 100 year storm flow)<br>Constructability (Ease to build, construction access, etc. and initial and subsequent construction/rehabilitations) |
| 4.4 | Construction Cost | 4.4.1<br>4.4.2<br>4.4.3<br>4.4.4 | Construction Cost for Bridge excluding property, engineering costs and second construction event.<br>Construction Cost for Detour and Construction Staging during second construction event.<br>Property Cost<br>Life Cycle Cost |

# EVALUATION OF ALTERNATIVES

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## LONG-TERM ALTERNATIVES EVALUATED

The following alternatives were considered over a 50 year planning horizon in the arithmetic re-evaluation utilizing the weightings developed at the Factor Weighting Workshop:

| BRIDGE REHABILITATION ALTERNATIVES | |
|---|---|
| **Rehabilitation Alternative 1 (RH1)** | **Existing 9 span bridge**<br>**20 year rehabilitation strategy**<br>Provide a single lane of traffic on Argyle Street over the river in the southbound direction, and detour northbound traffic to the Highway 6 By-Pass.<br>**Followed by:**<br>**30 year rehabilitation strategy** (includes full deck replacement).<br>Provide Bailey Bridge (2 lanes) to detour traffic. |
| **Rehabilitation Alternative 2 (RH2)** | **Existing 9 span bridge**<br>**30 year rehabilitation strategy** (includes full deck replacement).<br>Provide a Bailey Bridge (2 lanes) to detour traffic on Argyle Street in the vicinity of the bridge.<br>**Followed by:**<br>**20 year rehabilitation strategy**.<br>Provide a single lane of traffic over the bridge in the southbound direction and detour northbound traffic to the Highway 6 By-Pass |
| **Rehabilitation Alternative 3 (RH3)** | **Build a new 1-lane bridge adjacent to the existing bridge**<br>**And**<br>**Existing 9 span bridge**<br>**30 year rehabilitation strategy** (includes full deck replacement).<br>Provide a 1 lane of traffic on new bridge in the southbound direction and detour northbound traffic on Highway 6 By-Pass.<br>**Followed by:**<br>**20 year rehabilitation strategy**.<br>Provide 1 lane of traffic over the new bridge in the southbound direction and 1 lane of northbound traffic over the old bridge. |
| **Rehabilitation Alternative 4 (RH4)** | **Build a new 2-lane bridge adjacent to the existing bridge**<br>**And**<br>**Existing 9 span bridge**<br>**30 year rehabilitation strategy** (includes full deck replacement).<br>Detour 2 lanes of traffic on new bridge.<br>**Followed by:**<br>**20 year rehabilitation strategy**.<br>Provide 2 lanes of traffic over new bridge while both lanes on old bridge rehabilitated. |
| **Replacement Alternative 1 (RP1)** | **New 9 span bridge of similar design to the existing bridge - with structural steel arches (rather than concrete) and a 3-lane cross section**. Use Bailey Bridge (2 lanes) to detour traffic for 2 years.<br>**Followed by:**<br>**20 year Rehabilitation Strategy**. Keep 1 or 2 lanes open and detour any remaining traffic via the Highway 6 By-Pass. |
| **Replacement Alternative 2 (RP2)** | **New 5 span bridge with structural steel arches and a 3 lane cross-section**.<br>**Followed by:**<br>**20 year Rehabilitation Strategy**.<br>Keep 1 or 2 lanes open and detour any remaining traffic via the Highway 6 By-Pass. |
| **Replacement Alternative 3 (RP3)** | **New 5 span bridge with structural steel arches and a 3 lane cross-section**. Use Bailey Bridge (2 lanes) to detour traffic for 2 years.<br>Followed by:<br>**20 year rehabilitation strategy**<br>Keep 1 or 2 lanes open and detour any remaining traffic via the Highway 6 By-Pass. |
| **Replacement Alternative 4 (RP4)** | **New 5 span conventional MTO girder bridge**<br>Followed by:<br>**20 year rehabilitation strategy**<br>Keep 1 or 2 lanes open and detour any remaining traffic via the Highway 6 By-Pass. |

# NET EFFECTS ANALYSIS

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## NET EFFECTS ANALYSIS

On October 17, 2007, the MTO, Ministry of Culture and Haldimand County representatives developed net effects for each of the factor groups factors and sub-factors.

The representatives identified the impact of the long-term alternative on the sub-factors, identified mitigation measures and then identified the net effects of that alternative on the sub-factor. The net effects were used in the scoring of the long-term alternatives.

For Example:

Under the Transportation & Engineering Factor Group, one of the factors is “Geometrics” with a sub-factor of “Lane Widths”

| SUB-FACTOR & CRITERIA | POTENTIAL EFFECTS | MITIGATION MEASURES | NET EFFECT |
|---|---|---|---|
| **Lane Widths**<br>Provide side clearance to obstacles/hazards<br>Provide protection for obstacles/hazards including guide rail and crash cushions<br>Access for emergency service vehicles<br><br>***Applicable Standards & Specifications***<br>*Provincial Transportation Highway Improvement Act (PTHIA), MTO Geometric Design Manual, Ontario Provincial Standards and Specifications (OPSS) and Ontario Provincial Standard Drawings (OPSD).* | **Rehabilitation Alternatives**<br>Require the existing cross section be maintained, resulting in no improvement to:<br>• Clearance to hazards<br>• Protection of bridge<br>• Snow removal operation<br>• Emergency response | **Rehabilitation Alternatives**<br>Provide protection to hazards such as barrier and end treatments, where possible. However, the application of protection measures will be limited and not meet current standards. | **Rehabilitation Alternatives**<br>Minor improvements to protection of hazards and bridge structure. |
| | **Replacement Alternatives**<br>Provide an additional lane on the bridge, and will be constructed to meet current standards:<br>• Providing shoulders (1.5m clearance) from travel way to hazard/ standard barrier reducing the potential for collisions and damage to the new structure.<br>• Allows for provision of crash protection at ends of barrier.<br>• Collisions or any other temporary emergency condition that results in a short-term lane closure should not impact emergency response times due the ability of a new bridge to provide refuge areas (i.e. additional lane and shoulder area).<br>• Snow removal operations improved due to additional space. | **Replacement Alternatives**<br>Replacement Alternatives will be built to current standards therefore no mitigation measures required. | **Replacement Alternatives**<br>Replacement alternatives will provide:<br>• Additional traffic capacity over the bridge<br>• Improved clearance to hazards<br>• Improved protection of bridge<br>• Improved snow removal operation<br>• Improved emergency response |

# SCORING WORKSHOP

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## SCORING WORKSHOP

On October 23, 2007, the MTO, Ministry of Culture and Haldimand County applied scores to the factor group's factor and sub-factor's utilizing the weightings developed at the Weighting Workshop, considering the net effects developed on October 17, 2007 and applying the following scoring:

| SCORE | IMPACT/EFFECT |
|---|---|
| 1 | No Impact/Effect |
| 0.67 | Low Impact/Effect |
| 0.33 | Moderate Impact/Effect |
| 0 | High Impact/Effect |

Based on above, the attendees evaluated and scored the 8 long-term alternatives (rehabilitation and replacement). This scoring resulted in the highest score for rehabilitation and replacement as follows:

| | |
|---|---|
| Rehabilitation of the Existing Bridge (RH2) | 69.34 |
| Replacement with a 5 Span Steel Arch Bridge (RP2) | 80.49 |

Based on the above, the highest scoring long-term alternative is replacement of the Argyle Street Bridge with a 3 lane, 5 span, steel arch signature bridge.

Although RP2 and RP3 are the same bridge replacement design, RP3 provides a 2 lane modular bridge (i.e. Bailey Bridge) and RP2 provides a single lane of traffic across the bridge throughout construction.

Based on concerns identified by the community relating to the impacts of a single lane of traffic throughout construction (2 construction seasons), the Ministry is recommending RP3.

# RECOMMENDED LONG-TERM ALTERNATIVE

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## RECOMMENDED REPLACEMENT ALTERNATIVE

This alternative provides a 3 lane, 5 span, steel arch, signature bridge (RP3).

This alternative is recommended for the following reasons:

- 3 lane cross section can be accommodated;
- Provides standard shoulder and sidewalk widths;
- Provides look-out points on bridge for pedestrians;
- Design is aesthetically pleasing with an open view concept;
- Adequate hydraulic capacity will be provided under new bridge, as required by the bridge code;
- Bridge durable and easily maintained; and
- Includes hand rail providing separation between traffic and pedestrians.

# PROVINCIAL POSITION

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## PROVINCIAL POSITION
## LONG-TERM STRATEGY

MTO and MCL share the following common positions:

- Both support the Environmental Assessment process and acknowledge the resulting long-term strategy recommendation to replace the Argyle Street Bridge;
- Both are concerned about the potential loss of this significant heritage bridge, which has provincial, and national heritage value;
- Both acknowledge that the province is currently in the process of developing new standards & guidelines with respect to provincially owned heritage properties/structures;
- Both recognize that new standards and guidelines have the potential to impact the recommended long-term strategy;
- As a result of the above, both agree that the impact of such standards and guidelines on the long-term strategy must be considered, prior to the commencement of the detailed design (anticipated no earlier than 2011); and
- Both agree that all of the above will be documented in the Transportation and Environmental Study Report (TESR).

# RECOMMENDED LONG-TERM ALTERNATIVE

Ontario

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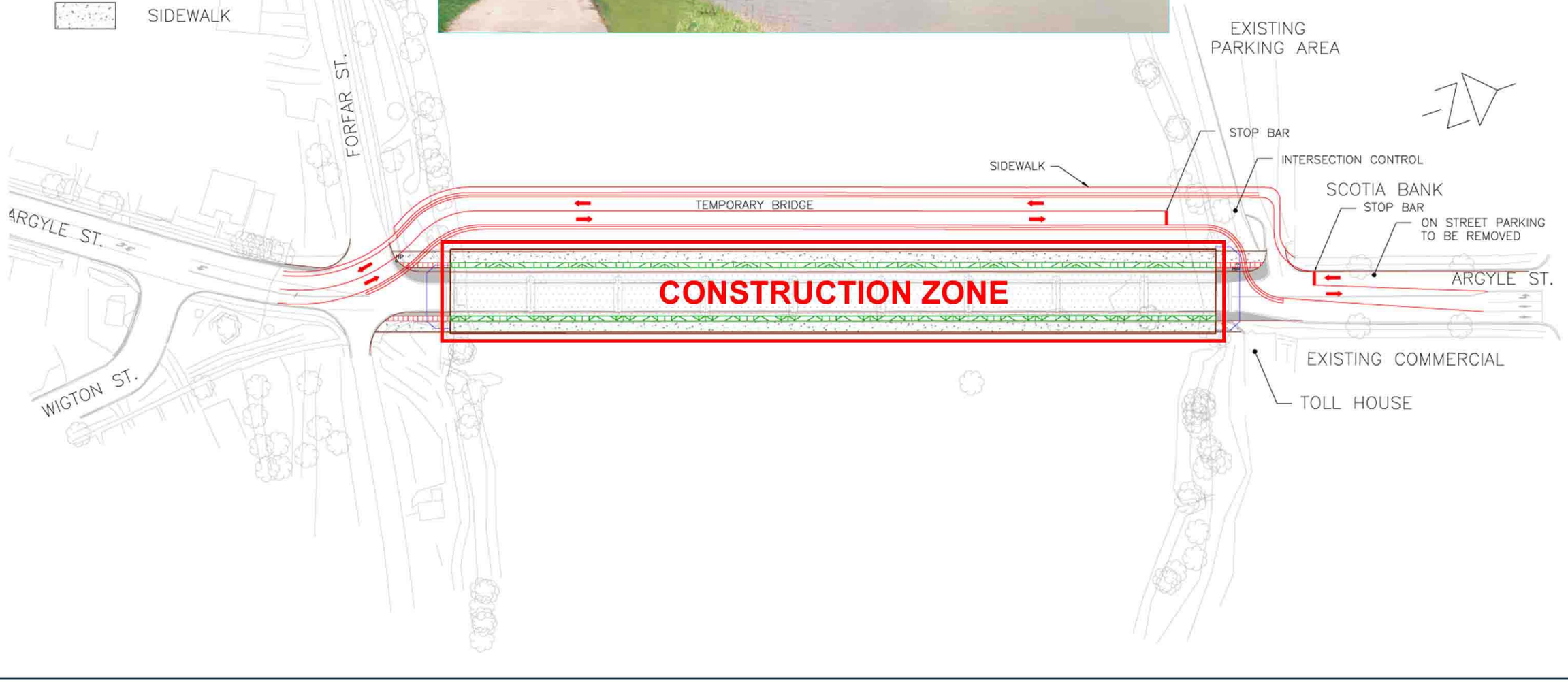
## RECOMMENDED CONSTRUCTION TRAFFIC STAGING DURING BRIDGE REPLACEMENT

LEGEND:

- PAVEMENT WIDENING
- NEW BRIDGE DRIVING SURFACE
- ARCH END PROTECTION
- ARCH
- SIDEWALK



# RECOMMENDED LONG-TERM ALTERNATIVE

Ontario

## CONSTRUCTION TRAFFIC STAGING PLAN

MORRISON HERSHFIELD

- Throughout construction 2 lanes of traffic will be provided on a temporary modular bridge (i.e. Bailey Bridge) located beside the existing bridge.

# RECOMMENDED LONG-TERM ALTERNATIVE

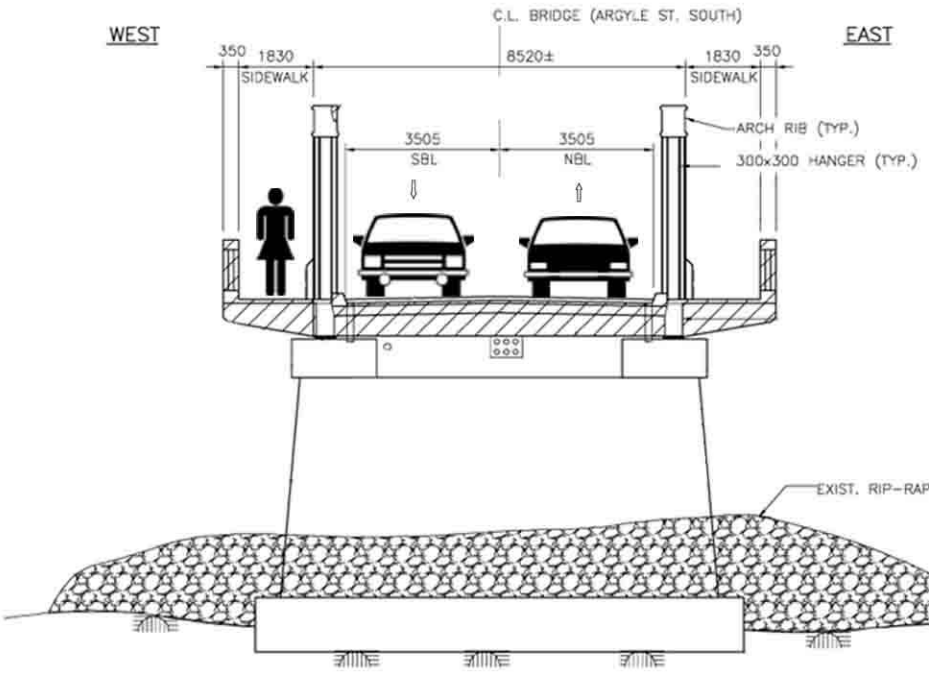
Ontario

MORRISON HERSHFIELD

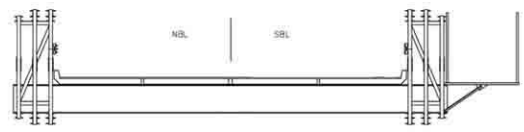
## CONSTRUCTION TRAFFIC STAGING PLAN

## Existing Traffic and New Temporary Bridge

### STAGE 1



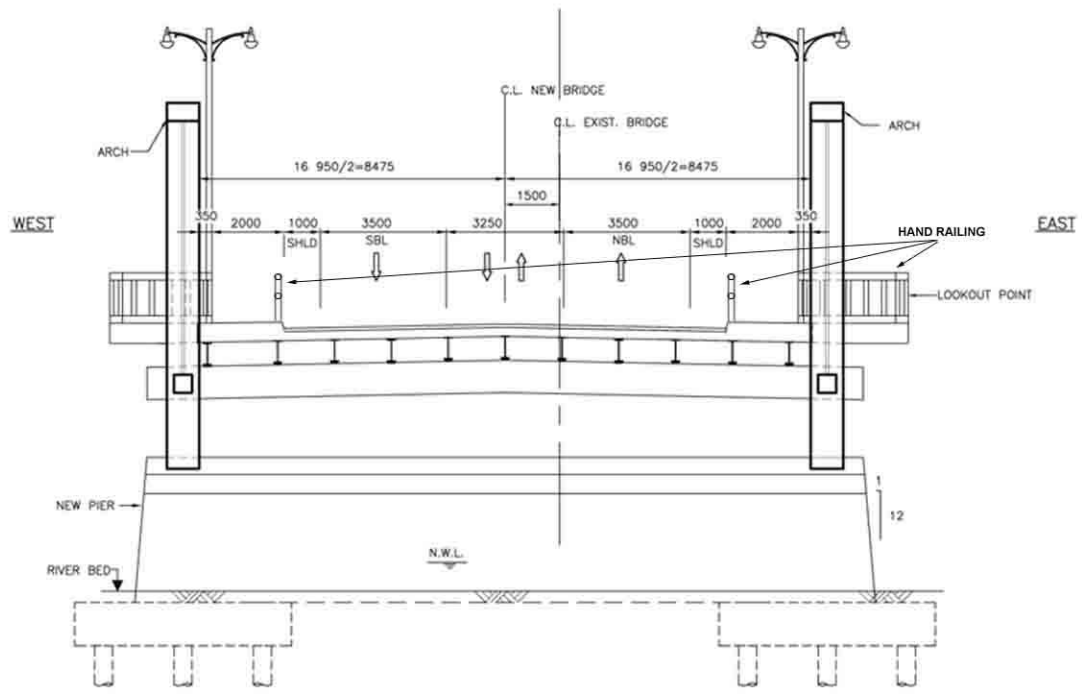

**Existing Bridge**



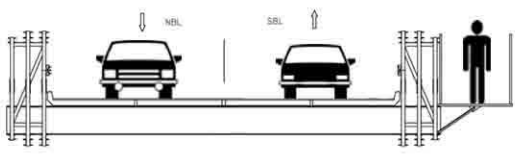

**Construction Zone**

Construct the temporary modular bridge beside the existing Argyle Street Bridge.

### STAGE 2



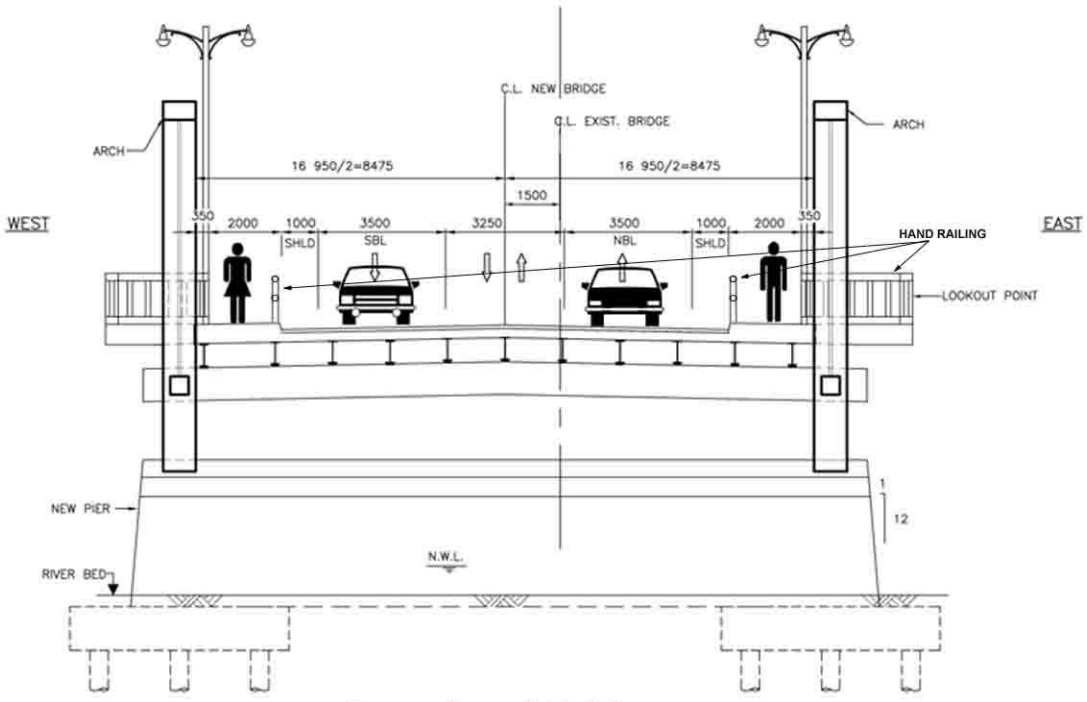

**Construction Zone**




**In Use**

Detour both lanes of traffic on Argyle Street to the temporary bridge.

### STAGE 3




**Completed Bridge**

# HALDIMAND COUNTY COUNCIL

Ontario

MORRISON HERSHFIELD

## HALDIMAND COUNTY COUNCIL RESOLUTIONS

In August 2004, Haldimand County Council passed the following resolutions regarding the project:

1. Haldimand County agrees in principle, based on current information provided by the Ministry of Transportation, to a replacement bridge at the same location as the existing bridge;

2. Haldimand County agrees that the structure should include heritage features if a replacement bridge is the Ministry's recommended option;

3. Haldimand County prefers a three lane cross section for the proposed structure if a replacement structure is selected;

4. Haldimand County does not intend to carry out a separate Environmental Assessment (EA) for the project;

5. Haldimand County does not propose to cost share the full cost difference with MTO on a widened structure; and

6. The detour alternatives proposed to date are not satisfactory to Haldimand County and MTO should research further options, including utilization of a widened structure as a detour during the construction phase.

# HALDIMAND COUNTY COUNCIL

Ontario

MORRISON HERSHFIELD

## 3 LANES RECOMMENDED

In November of 2004, Haldimand County carried out a traffic study[1] (the Study) to examine the existing and future conditions in the Argyle Street Bridge corridor.

The bridge is unable to accommodate the anticipated 10 year traffic volume in the Argyle Street Bridge corridor. The Study determined that the morning and evening traffic conditions would deteriorate significantly if there were no improvements to the corridor.

The Study recommends that the anticipated traffic growth over the next 10 years can be accommodated by widening the Argyle Street Bridge to 3 lanes.

Haldimand County Council, in their resolution of May 9, 2005, has endorsed the recommendation of the Traffic Study that the Argyle Street Bridge be widened to 3 lanes to accommodate the future traffic requirements in Caledonia. Haldimand County has agreed to be a Contributory Funding Partner in the cost of constructing a new 3 lane bridge.

A copy of the Traffic Study is available for review at this Information Station.

[1] *Argyle Street Bridge Traffic Study*, Haldimand County. Paradigm Transportation Solutions Limited. November 2004. 30 pp.

Ontario

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## HALDIMAND COUNTY COUNCIL

On November 19, 2007, Haldimand County staff presented the Ministry's recommendations for:

(i) Replacement of the Argyle Street Bridge with a 3 lane, 5 span, steel arch, signature bridge; and

(ii) Provision of 2 lane modular bridge (i.e. Bailey Bridge) throughout construction.

On November 26, 2007, Haldimand County Council passed the following resolutions:

(i) Haldimand County adopts the Ministry of Transportation's preferred alternative;

(ii) Haldimand County adopts the Ministry of Transportation's preferred Alternative #3 which is a 3 lane, 5 arch replacement structure with a two lane Bailey Bridge detour; and

(iii) Haldimand County adopts that Haldimand County's cost is nine percent (9%) or max. of $1.3 million.

# LONG TERM BRIDGE REPLACEMENT

Ontario

MORRISON HERSHFIELD

## NEXT STEPS
## LONG-TERM STRATEGY

- MTO will review, consider and respond to the comments received from this Public Information Centre.
- Stakeholders are encouraged to complete comment sheets before leaving this Public Information Centre. Alternatively, please submit your comments to MTO by December 21, 2007.
- MTO will complete the Long-Term Strategy Transportation and Environmental Study Report (TESR) and anticipates publishing the TESR for public review in early 2008.
- Following completion of the study, the Ministry will look to incorporate this work into the Ministry's 5 year program considering provincial priorities.
- Following construction of the long-term strategy, the Ministry intends to transfer ownership of the bridge to Haldimand County.
- In the meantime, the Ministry is proceeding with the detail design for a short-term repair of the Argyle Street Bridge.

# SHORT-TERM REPAIR PROJECT

Ontario

MORRISON HERSHFIELD

# ARGYLE STREET BRIDGE

# SHORT-TERM REPAIR PROJECT

# ENVIRONMENTAL ASSESSMENT PROCESS

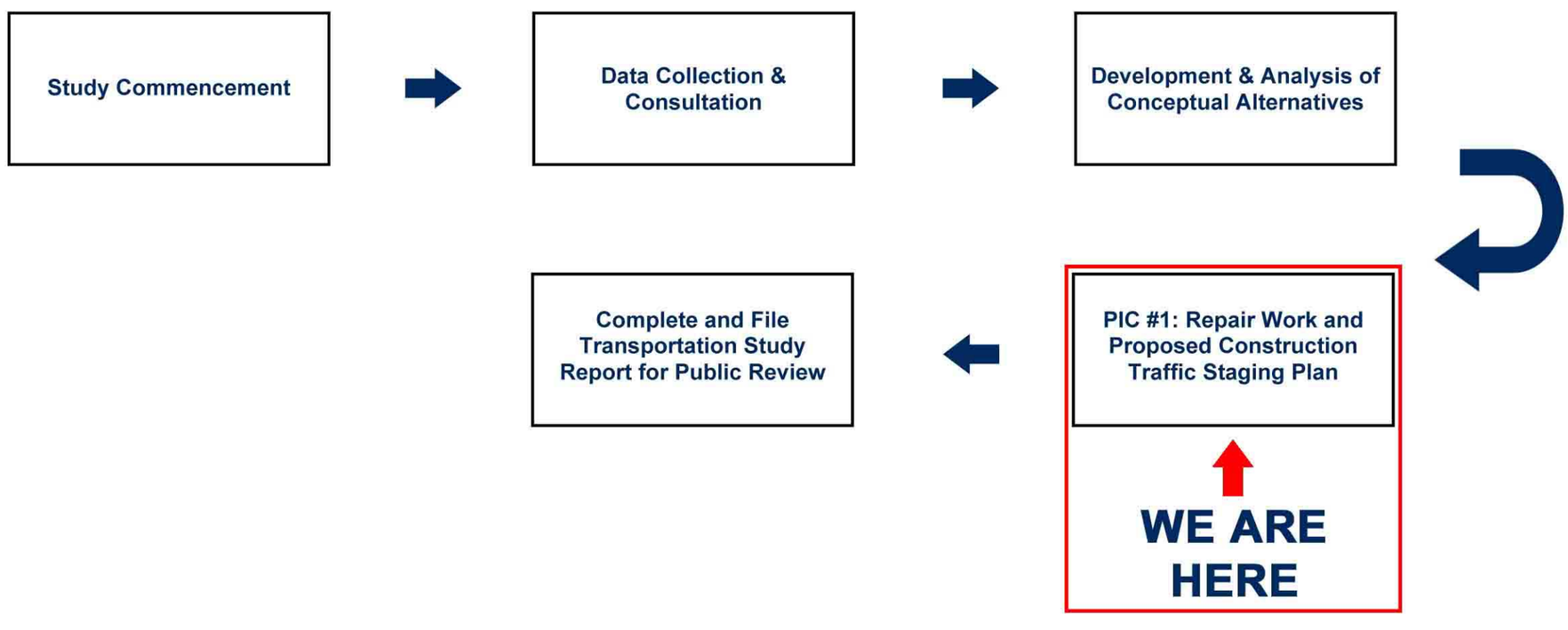
Ontario

## ENVIRONMENTAL ASSESSMENT PROCESS

MORRISON HERSHFIELD

This project is being conducted in accordance with the requirements of the Ministry of Transportation (MTO) Class Environmental Assessment for Provincial Facilities (amended 2000). The MTO Class EA is a process approved by the Ministry of the Environment for the planning and design of provincial road projects. The Class EA process includes several opportunities for public involvement and review of the final Transportation Environmental Study Report (TESR), which involves the following:

- A TESR will be prepared and filed with the Regional Office of the Ministry of the Environment, and other locations (typically municipal offices and libraries) for a minimum 30-day public review period.
- At the same time, a public notice indicating the submission of the TESR will be published in the local newspapers and mailed to those included on the study mailing list. The public notice for the TESR will identify any additional location(s) where the document can be viewed.



# SHORT-TERM REPAIR PROJECT

Ontario

MORRISON HERSHFIELD

## SHORT-TERM REPAIR

### Purpose

The 2nd purpose of today's PIC is to present the short-term repair and the recommended construction traffic staging plan to the public to obtain input relating to the short-term repair project.

### Rationale

The Ministry is proposing to proceed with a short-term repair of the Argyle Street Bridge to:

- Address the condition of the bridge;
- Provide MTO the time required to obtain approvals/clearance to construct the long-term bridge replacement;
- Provide MTO the time to complete additional pre-engineering works (i.e. detail design) for the recommended long-term bridge replacement; and
- Allow the Ministry to revisit the Regulatory Load Postings.

### Work Includes

The proposed repair work includes:

- Partial replacement of selected arch hangers;
- Strengthening of tie girders;
- General repair of arches and other members.

The proposed repair work will **not** include:

- Deck replacement; or
- Foundation works.

### Traffic Staging Plan

The recommended traffic staging plan during the repair works, includes:

- Provision of a single lane across the Argyle Street bridge in a southbound direction, with trucks restricted;
- Northbound traffic to be detoured to the Highway 6 By-Pass; and
- Provision for emergency services.

### Construction Schedule

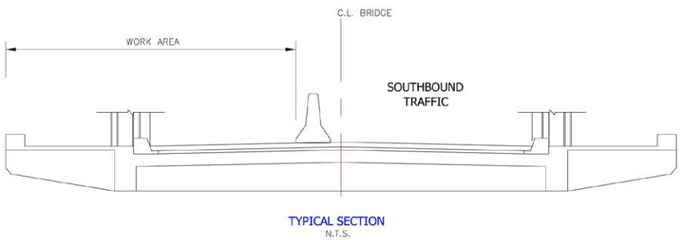
- MTO anticipates that the duration of construction will be one construction season (i.e. April to November).
- Periodic night work will be required:
  - Noise by-law exemption has been requested from Haldimand County; and
  - Night work will be restricted to quieter operations (concrete removal not permitted) and not permitted on end spans.
- Anticipate night time bridge closure for one week.

# SHORT-TERM REPAIR PROJECT

Ontario

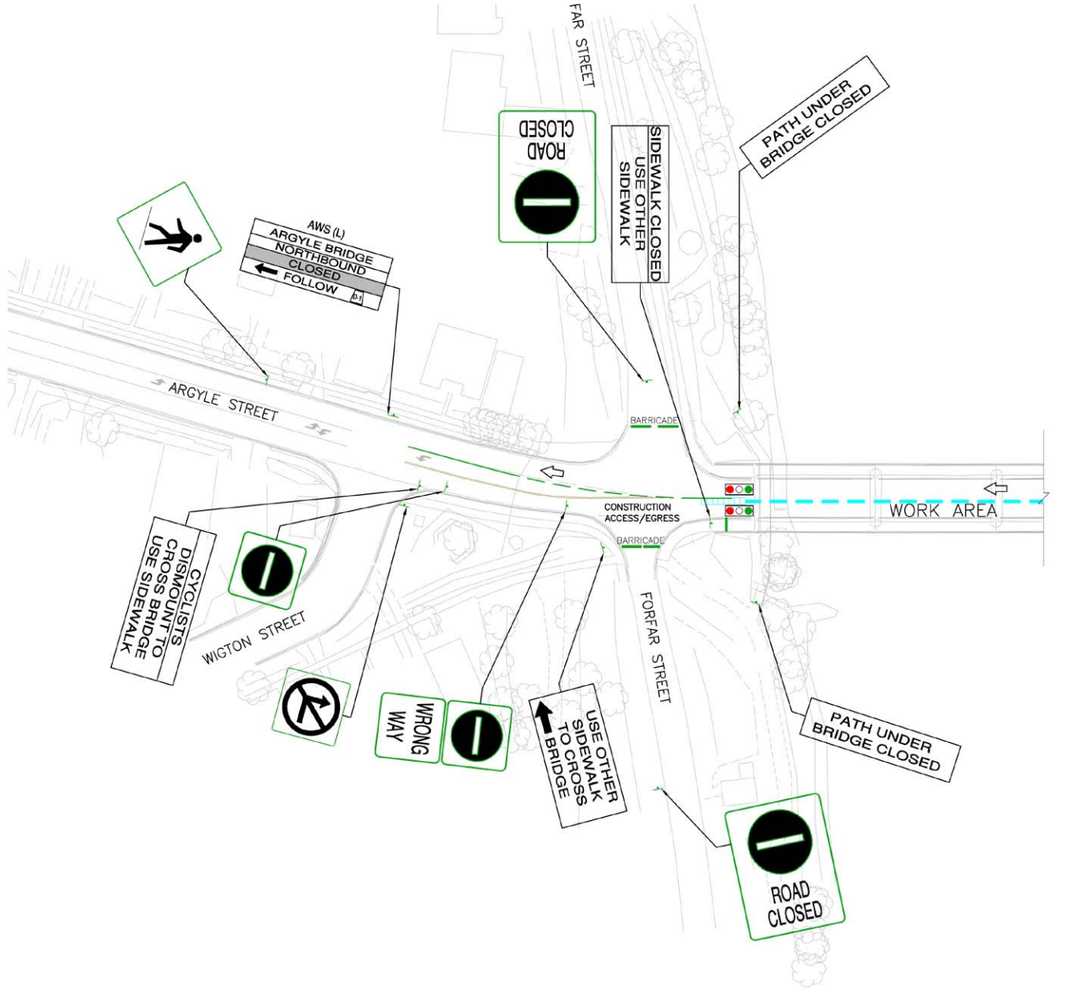
## CONSTRUCTION TRAFFIC STAGING PLAN FOR BRIDGE REPAIR - STAGE 1

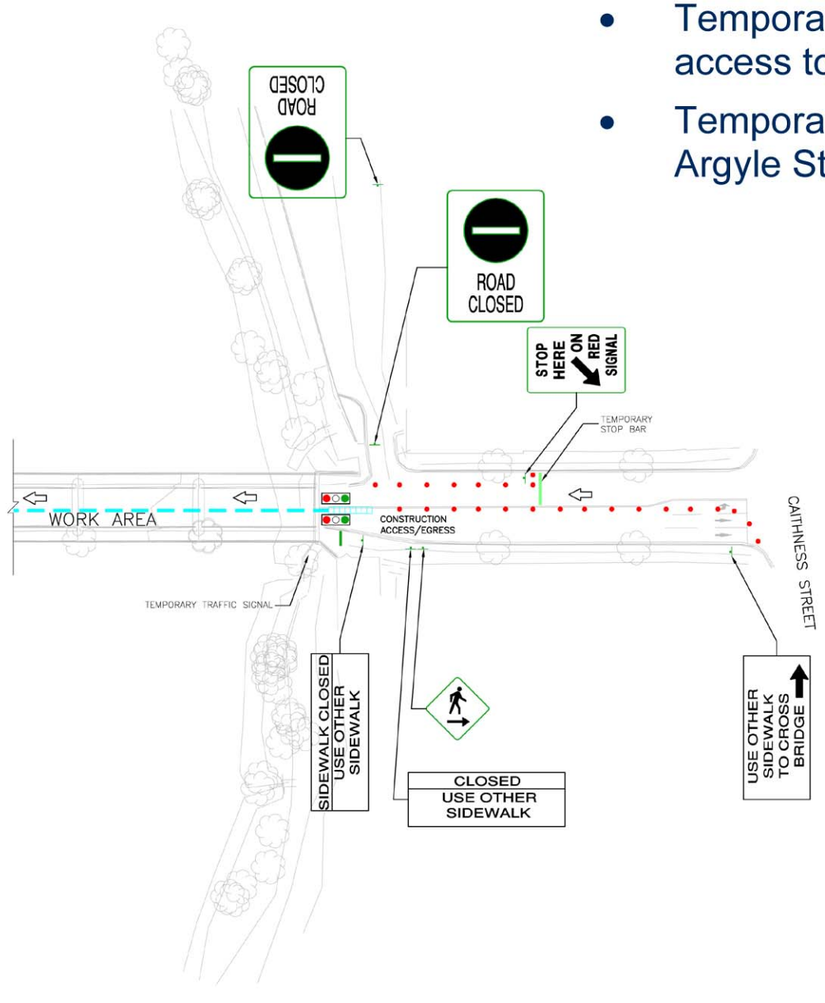
MORRISON HERSHFIELD





- Single lane of traffic across Argyle Street Bridge
- Temporary closure of Forfar Street at Argyle Street
- Temporary closure of Argyle Street access to parking lot NW of bridge
- Temporary closure of east sidewalk on Argyle Street Bridge

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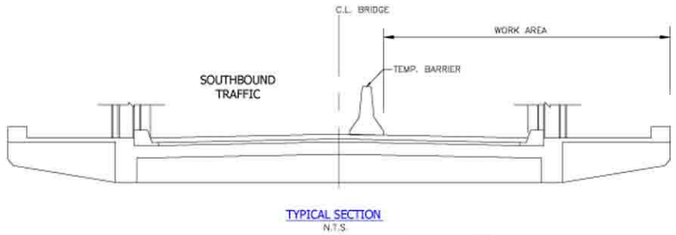
# SHORT-TERM REPAIR PROJECT

Ontario

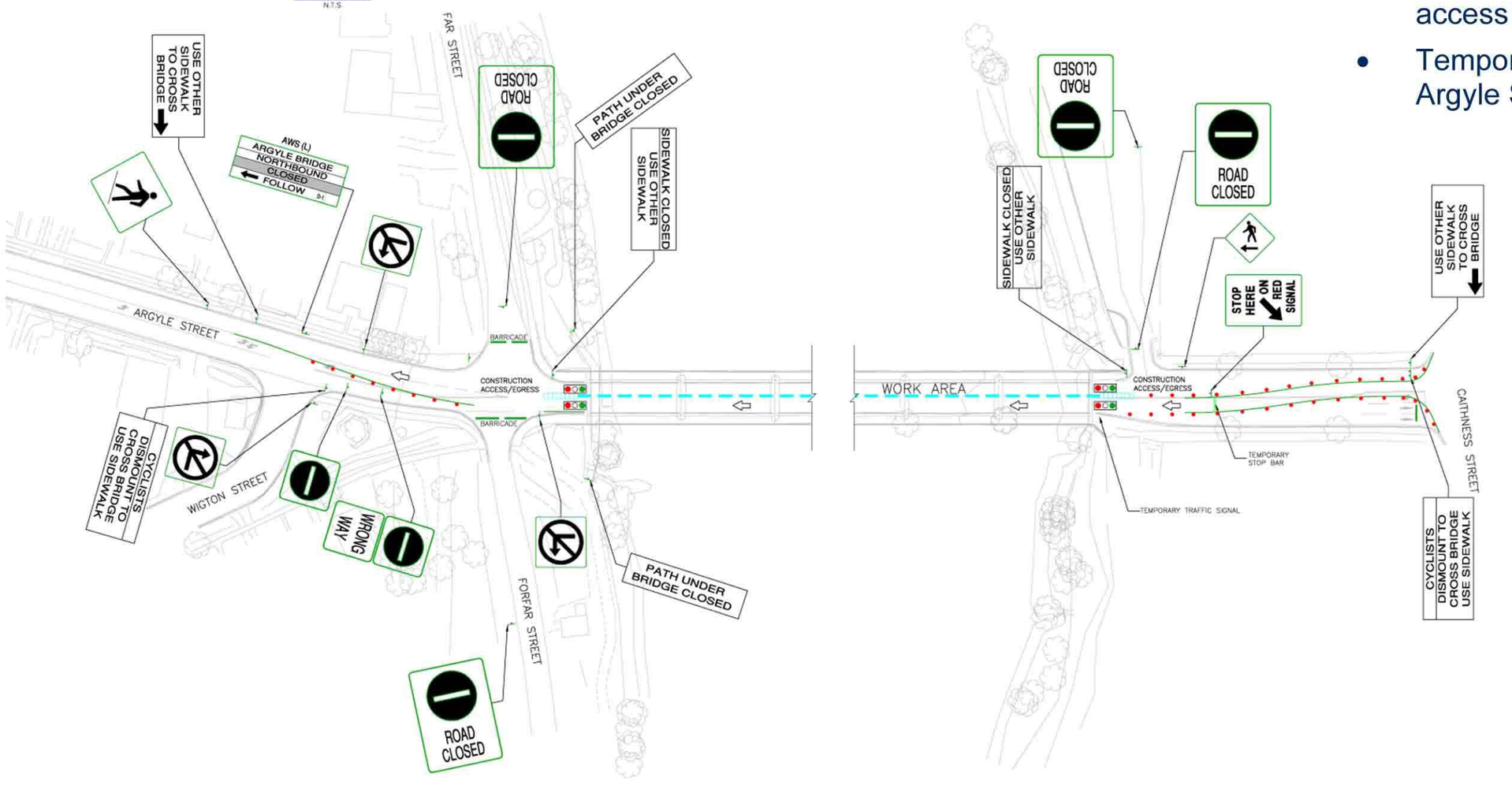
MORRISON HERSHFIELD

## CONSTRUCTION TRAFFIC STAGING PLAN FOR BRIDGE REPAIR - STAGE 2





- Single lane of traffic across Argyle Street Bridge
- Temporary closure of Forfar Street at Argyle Street
- Temporary closure of Argyle Street access to parking lot NW of bridge
- Temporary closure of west sidewalk on Argyle Street Bridge



# SHORT-TERM REPAIR PROJECT

Ontario

## CONSTRUCTION TRAFFIC STAGING PLAN
## NORTHBOUND TRAFFIC DETOUR - STAGE 1 & 2

MORRISON HERSHFIELD

### Advance Notification, Directional & Detour Signs will be Placed at Appropriate Locations

- Northbound traffic detoured to Highway 6 By-Pass
- Southbound traffic still crosses Grand River on the Argyle Street Bridge

# SHORT-TERM REPAIR PROJECT

Ontario

## CONSTRUCTION TRAFFIC STAGING PLAN
## DETOUR NORTHBOUND & SOUTHBOUND - STAGE 3 - PERIODIC NIGHT CLOSURES

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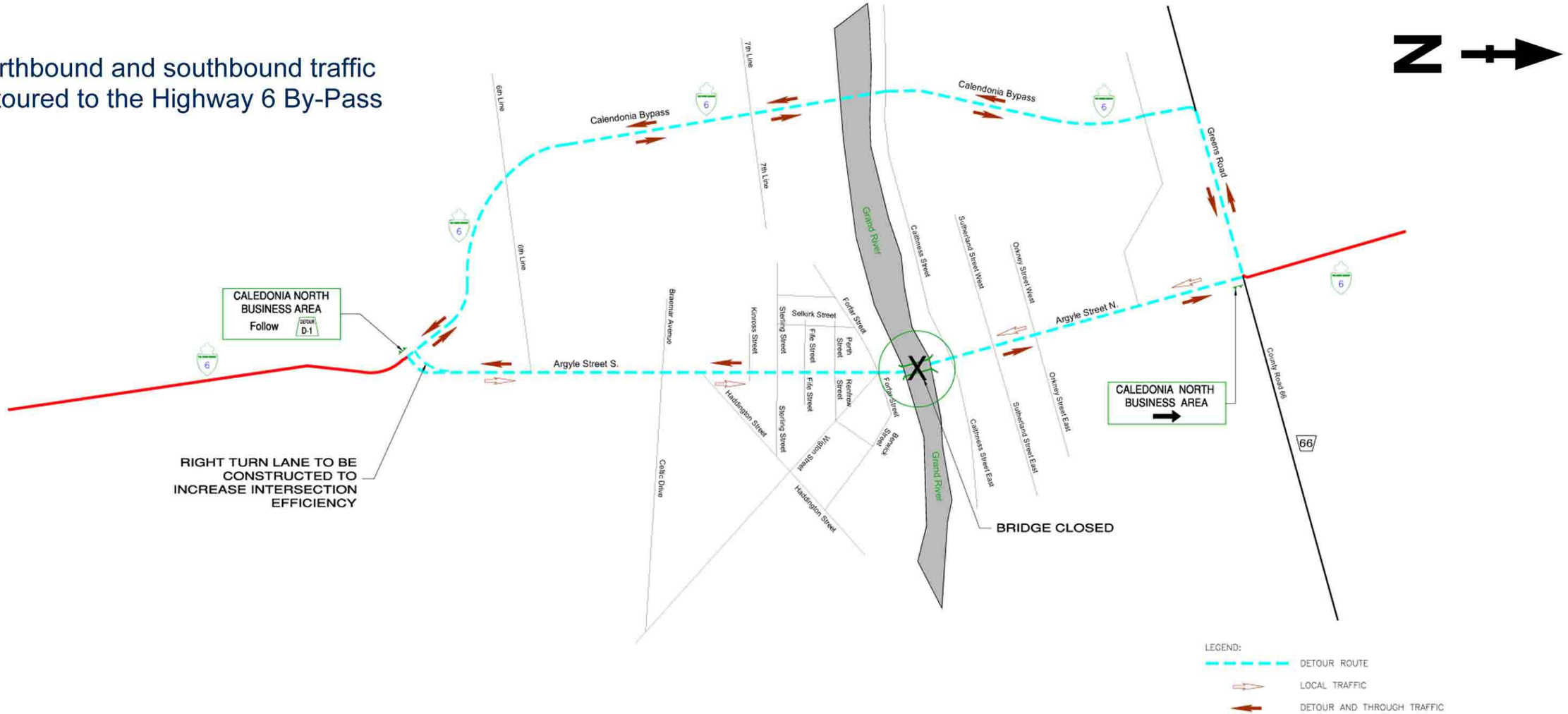
### Advance Notification, Directional & Detour Signs will be Placed at Appropriate Locations

- Northbound and southbound traffic detoured to the Highway 6 By-Pass



# SHORT-TERM REPAIR PROJECT

Ontario

MORRISON HERSHFIELD

## HALDIMAND COUNTY COUNCIL

On December 10, 2007, MTO presented to Haldimand County Council the short-term repairs and the construction traffic staging plan.

Council indicated their support for the repairs and the construction staging plan.

# SHORT-TERM REPAIR PROJECT

Ontario

MORRISON HERSHFIELD

## NEXT STEPS
## SHORT-TERM BRIDGE REPAIR

- MTO will review, consider, and respond to comments received from this Public Information Centre.
- Stakeholders are encouraged to complete comment sheets before leaving this Public Information Centre. Alternately, please submit your comments to MTO by December 21, 2007.
- MTO will then complete the Short-Term Repair Transportation and Environmental Study Report (TESR) and anticipates publishing the TESR for public review in early 2008.
- Subject to Environmental Clearance, the Ministry anticipates construction initiation for the bridge repair in the spring of 2008.
- MTO will maintain ownership of the bridge until construction of the long-term strategy.
- MTO will re-evaluate the Regulatory Load postings upon completion of construction.

# THANK YOU

Ontario

MORRISON HERSHFIELD

## Thank You for Attending

## The Preliminary Design (PD) and Class Environmental Assessment Study Long Term Strategy

## Detail Design (DD) and Class Environmental Assessment Project Short Term Bridge Repair

## If You Have Any Questions, Please Speak to Any MTO or MH Staff Present

## We Also Encourage You to Fill Out a Comment Card