Mississauga Road, Old Main Street, Bush Street, Olde Base Line Road, and Winston Churchill Boulevard Class EA

Community Working Group Meeting

Wednesday, October 16, 2013

HDR

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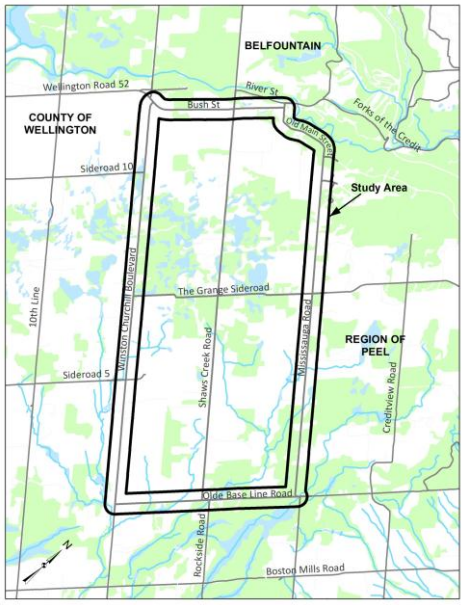
1 Purpose of the Meeting

- Provide a project update
  - What has been done to date
  - What we have heard
- Present
  - Alternative design concepts developed by the study team
  - Evaluation of alternative design concepts
  - Preliminary recommended design concept
- Discuss Next Steps
- Input from CWG

2 Study Area



The Study Area consists of:

- Bush Street
- Winston Churchill Boulevard
- Mississauga Road / Old Main Street
- Olde Base Line Road

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3 Problem Statement

Work to date has confirmed similar issues identified in the 2010 study.

Existing problems on the study area roads (Mississauga Road/Old Main Street, Bush Street, Winston Churchill Boulevard and Olde Base Line Road) consist of:

- Deficient pavement conditions
- Deficient drainage
- Deficient sightlines
- Safety for all road users, including safety of wildlife

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4 Needs Assessment

Assessment done to date has identified issues in the following theme areas:

- Traffic and Road Safety
  - Improve safety for all road users – motorists, cyclists, pedestrians
  - Reduce collisions with animals
  - Address excessive speeds – cars, trucks, motorcycles
- Asset Management and State of Good Repair
  - Address poor conditions of the roadway pavement
  - Address drainage deficiencies
- Maintain Existing Character
  - Retain existing number of travel lanes
  - Retain existing vertical alignments where safe
  - Minimize impacts on natural, heritage, and cultural features

There is a recognition that users may have competing interests and needs

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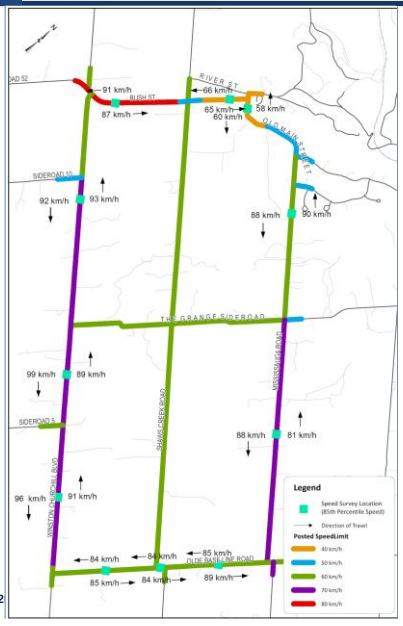
5 Theme #1

Traffic and Road Safety

6 Traffic Speeds



Speed surveys indicate that traffic generally travels at higher speeds than the posted speed limits.

Road segments where the 85th percentile speeds are more than 20 km/h over the posted speed limits include:

- Olde Base Line Road
- Mississauga Road between The Grange Sideroad and Woodlands Court
- Winston Churchill Boulevard
- Bush Street in the Village of Belfountain

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7 Collisions by Road Segment / Intersection

Number of Collisions by causal factor from January 1, 2006 to December 31, 2010 within Study Area

Location	Multiple Motor Vehicles[1]			Single Motor Vehicle and Cyclist(s)[2]			Single Motor Vehicle and Pedestrian(s)[2]			Single Motor Vehicle and Animal(s)[2]			Single Motor Vehicle Only, Involving Off-Road Objects[3]		
	Property Damage Only	Non-Fatal Injury	Fatal	Property Damage Only	Non-Fatal Injury	Fatal	Property Damage Only	Non-Fatal Injury	Fatal	Property Damage Only	Non-Fatal Injury	Fatal	Property Damage Only	Non-Fatal Injury	Fatal
Intersection of Olde Base Line Rd and Mississauga Rd	6	1	-	-	-	-	-	-	-	2	-	-	1	-	-
Mississauga Rd Between Olde Base Line Rd and Bush St	7	-	-	-	1	-	-	-	-	8	-	-	5	1	-
Intersection of Mississauga Rd and Bush St	2	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Bush St Between Mississauga Rd and Winston Churchill Blvd	1	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Intersection of Bush St and Winston Churchill Blvd	1	-	-	-	-	-	-	-	-	1	-	-	2	1	-
Winston Churchill Blvd Between Bush St and Olde Base Line Rd	1	1	-	-	-	-	-	-	-	5	-	-	2	-	-
Intersection of Winston Churchill Blvd and Olde Base Line Rd	1	-	-	-	-	-	-	-	-	2	-	-	-	1	-
Olde Base Line Rd Between Winston Churchill Blvd and Mississauga Rd	1	-	-	-	-	-	-	-	-	8	-	-	2	-	-
Total Collisions	**20**	**2**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**30**	**-**	**-**	**12**	**3**	
	22			**1**			**0**			**30**			**15**		

Notes:
1) 'Multiple Motor Vehicles' collisions include collisions cause by, but did not necessarily collide with multiple motor vehicles.
2) 'Single Motor Vehicle' collisions involving cyclists, pedestrians, or animals, include collisions caused by, but did not necessarily collide with the external factor. (Ex. A collision in which a vehicle swerved to avoid an animal and thus collided with the guardrail, was considered a 'Single Motor Vehicle and Animal' collision).
3) 'Single Motor Vehicles Only, Involving Off-Road Objects' collisions include collisions in which vehicles lost control due to external factors (not including motor vehicles, cyclists, pedestrians, or animals), and the single motor vehicles ended up in the ditch, or collided with stationary objects such as guiderails or posts.

Source: Collision information provided by Peel Region's Safety group.

Highest number of collisions are on:

- Mississauga Road between Olde Base Line Road and The Grange Sideroad
- Olde Base Line Road between Winston Churchill Boulevard and Mississauga Road

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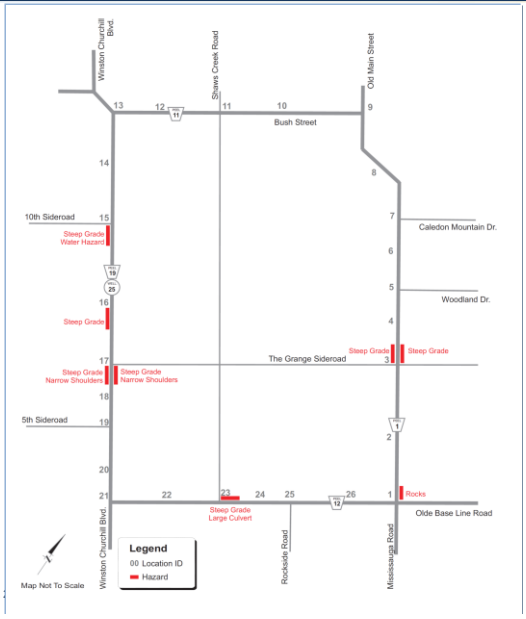
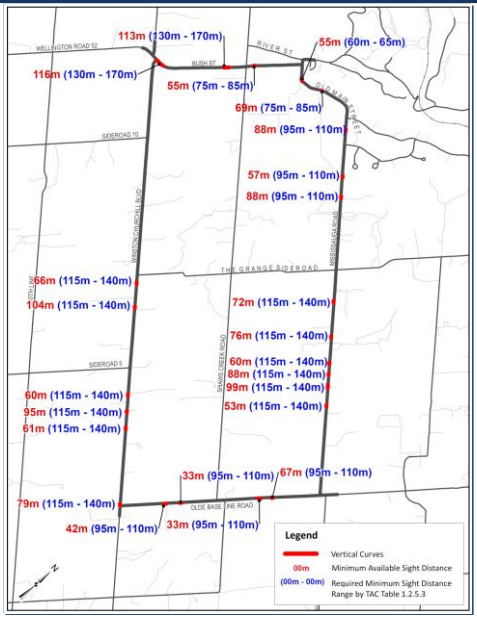
8 Roadside Hazards



Roadside hazards include hydro poles, steep slopes, and rock cuts. The Study will consider options to improve safety at roadside hazard locations.

9 Vertical Alignment: Stopping Sight Distance Deficiencies



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10 Sight Distances at Driveways

At many driveways, sight distances are inadequate.

Fully Meets Minimum Standards	Yes	No	TOTAL
Stopping Sight Distance	163 (88%)	21 (12%)	184 (100%)
Minimum Turning Sight Distance	83 (45%)	101 (55%)	184 (100%)
Desirable Turning Sight Distance	60 (33%)	124 (67%)	184 (100%)

Based on Transportation Association of Canada (TAC) design standards.
Stopping Sight Distance is based on drivers on the main road approaching driveways.
Turning Sight Distance is based on drivers turning left or right from their driveways.

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11 Theme #2

Asset Management and State of Good Repair

12 Pavement and Drainage Conditions

- The preliminary findings from the geotechnical investigations completed to date reveal that structural capacity and strength of all roads are in poor condition and are expected to continuously deteriorate.
- The main cause to pavement distress is attributed to variable granular thickness along roadways with a non-uniform base and sub-base materials.
- Shoulder granular is also thinner than the sub-base below the roadway which affects the drainage of the base leading to frost heave and rutting.
- Some of the pavement deficiencies identified throughout the study area include:
  - Wheel tracking and rutting
  - Transverse and longitudinal meander and mid-lane cracking
  - Alligator pavement edge cracking

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13 Pavement and Drainage Conditions by Roadway

Roadway	Existing Conditions / Pavement Deficiencies	
Mississauga Road/Old Main Street	•Granular thickness of base and sub-base highly variable •"Bathtub" construction – granular under shoulder is thinner than under the roadway •Wheel tracking rutting •Slight alligator pavement edge cracking	•Moderate alligator transverse cracking •Longitudinal meander and mid-lane cracking •Inadequate / sub-standard ditches •Ponding and vegetation along shoulders
Bush Street	•Granular thickness of base and sub-base highly variable	•Centreline and transverse cracking •Deficient structural capacity and stability
Winston Churchill Boulevard	•Granular thickness of base and sub-base highly variable •Deficient structural capacity and stability •Medium severity raveling	•High severity large area alligator cracking •Localized depressions •Shallow bedrock does not allow for drainage under roadway
Olde Base Line Road	•Granular thickness of base and sub-base highly variable •Medium and high severity cracking •Frost heave and temperature related deterioration	•Localized depressions •Water logging due to top permeable layers and bottom relatively impermeable silty clay •Shallow bedrock does not allow for drainage under roadway

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14 Geotechnical Recommendations

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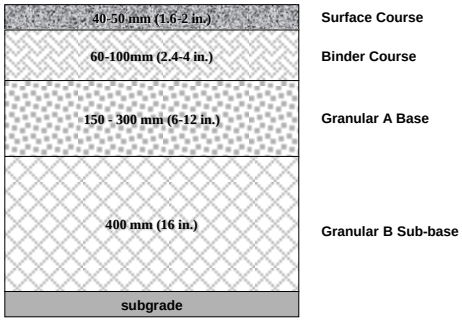
15 Recommended Pavement Structures

Geotechnical Investigations completed to date have recommended the following typical pavement structure to address the deficient pavement conditions:



* Note: The pavement recommendations will be confirmed in the subsequent phases of this study.

Pavement structure granular materials must conform to OPSS (Ontario Provincial Standard Specification) specifications.

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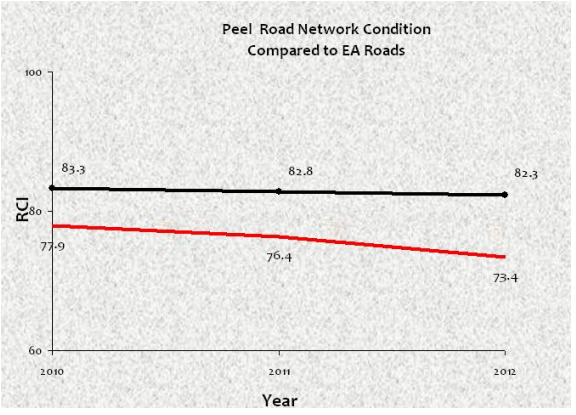
16 Ride Condition Index (RCI)



- Black line represents projected network RCI for all Regional Roads.
- Red line represents projected RCI for the roads in the study area.

- The Ride Condition Index (RCI) is a quantitative number that represents the overall condition and quality of a Regional road network.
- The RCI aggregates the rating of many types of road defects including cracking, rutting, potholes and surface quality into one measurable number.
- Study area roads are below the network average and are deteriorating faster than the network average and will likely be below the level of service (72) for roads in the next 3- 5 years.

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17 Theme #3

Maintain Existing Character

18 Key Design Principles

- Maintain two lane cross-section
- Minimize profile changes
- Maximize utilization of right-of-way space
- Minimize property impacts
- Minimize impacts to existing driveways
- Promote Active Transportation

19 Existing and Proposed Posted Speeds

In general, a reduction in posted speeds throughout the study area is proposed.

This will address deficient stopping sight distance and driveway sightlines, while minimizing changes to the existing profiles

20 Belfountain Village Design Domain

Design Element	TAC Standards	Existing	Recommended Cross-Section
Speed Limit	Minimum 50 km/h design speed required for 40 km/h posted speed	Existing alignment generally conforms with design standards	Retain 40 km/h posted speed limit. Design conforms with design standards
Number of lanes based on existing and future traffic	2	2	2
Travel Lane width	3.3 - 3.7m	3.2-3.7m	3.3m
Shoulder / buffer width	1.5 m paved shoulder	0.5-2.7m shoulder (of which 0.2-2.0 m is paved)	1.0m splash strip separates 1.5 m sidewalk and 3.0 m multi-use trail from parking and vehicle zones
Cycling facility	1.5m minimum (paved)	None	3.0 m multi-use trail on one side of the street
Drainage	Adequate drainage is required	Inadequate drainage	Underground infrastructure to provide adequate drainage

21 Bush Street Design Domain

Design Element	TAC Standards	Existing	Recommended Design
Speed Limit	Minimum 60-90 km/h design speed required for 50-80 km/h posted speed	Deficient. Vertical alignment provides design speed of 50 km/h	50-70 km/h posted speed limit with a 60-80 km/h design speed
Number of lanes based on existing and future traffic	2	2	2
Travel Lane width	3.5 - 3.7m	3.2-3.8m	3.5m
Shoulder / buffer width	1.5 m paved shoulder	1.3-3.5 m shoulder (of which 0.2-1.5 m is paved)	1.7 m paved shoulder
Cycling facility	1.5 m wide (paved)	None	1.7 m paved shoulder
Drainage	Adequate drainage is required	Substandard ditches are damaging the pavement	Proper ditches to provide adequate drainage and protect the pavement

22 Mississauga Road Design Domain

Design Element	TAC Standards	Existing	Recommended Design
Speed Limit	Minimum 60-80 km/h design speed required for 50-70 km/h posted speed	Deficient. Vertical alignment provides design speed of 30 – 50 km/h	50-60 km/h posted speed limit with a 60-70 km/h design speed
Number of lanes based on existing and future traffic	2	2	2
Travel Lane width	3.3 - 3.7m	3.3-3.5m	3.5m
Shoulder / buffer width	1.5 m paved shoulder	0.5-2.3 m shoulder (of which 0-2.3 m is paved)	1.7 m paved shoulder
Cycling facility	1.5 m wide (paved)	None	1.7 m paved shoulder
Drainage	Adequate drainage is required	Substandard ditches are damaging the pavement	Underground infrastructure to provide adequate drainage

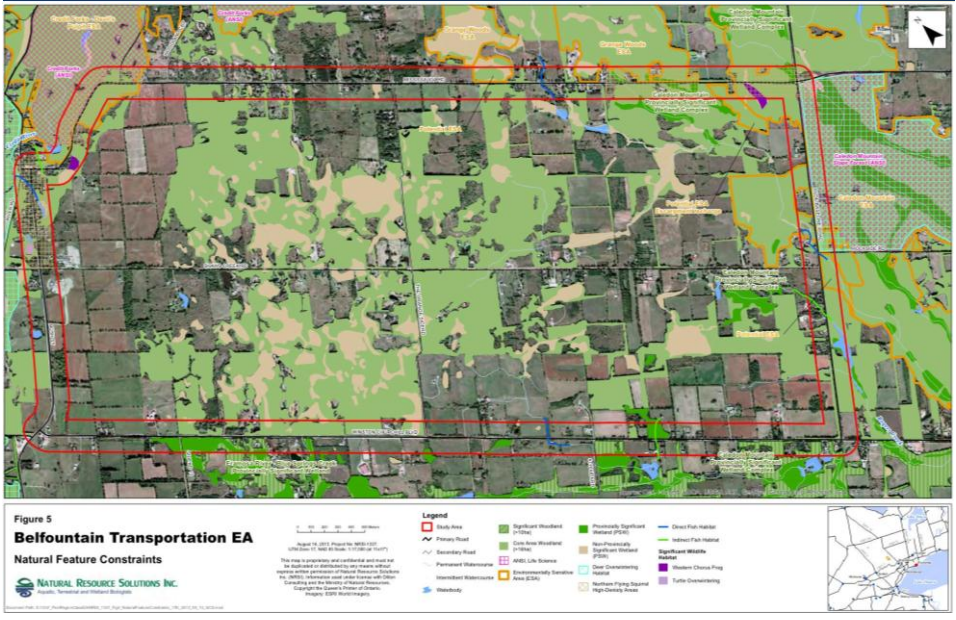
23 Winston Churchill Boulevard Design Domain

Design Element	TAC Standards	Existing	Recommended Design
Speed Limit	Minimum 70-80 km/h design speed required for 60-70 km/h posted speed	Deficient. Vertical alignment provides design speed of 40 – 60 km/h	60 km/h posted speed limit with a 70 km/h design speed
Number of lanes based on existing and future traffic	2	2	2
Travel Lane width	3.5 - 3.7m	3.1-3.6m	3.5m
Shoulder / buffer width	1.5 m paved shoulder	1.2-3.0 m shoulder (of which 0-1.0 m is paved)	1.7 m paved shoulder
Cycling facility	1.5 m wide (paved)	None	1.7 m paved shoulder
Drainage	Adequate drainage is required	Substandard ditches are damaging the pavement	Underground infrastructure to provide adequate drainage

24 Olde Base Line Road Design Domain

Design Element	TAC Standards	Existing	Recommended Design
Speed Limit	Minimum 70 km/h design speed required for 60 km/h posted speed	Deficient. Vertical alignment provides design speed of 30 – 50 km/h	50 km/h posted speed limit with a 60 km/h design speed
Number of lanes based on existing and future traffic	2	2	2
Travel Lane width	3.3 - 3.7m	3.4-3.5m	3.5m
Shoulder / buffer width	1.5 m paved shoulder	0.4-0.8 m unpaved shoulder	1.7 m paved shoulder
Cycling facility	1.5 m wide (paved)	None	1.7 m paved shoulder
Drainage	Adequate drainage is required	Substandard ditches are damaging the pavement	Underground infrastructure to provide adequate drainage

25 Natural Feature Constraints and Mitigation

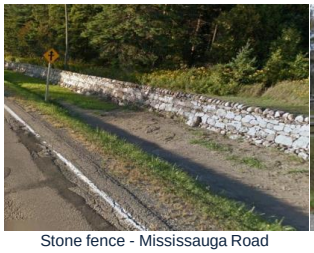


26 Archaeological Assessment


Stone wall, cedar fence on Winston Churchill Boulevard


Boulder fence and cedar rail fence, Shaw's Creek and Olde Base Line


Cedar fence along Bush


Stone fence - Mississauga Road at The Grange


Winston Churchill Boulevard – low/wet and sloping beyond the road


Northwest view towards Bush – potential for archaeological significance in field

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27 Built / Cultural Heritage

Mississauga / Bush

- 48 identified resources
- 4 designated under Ontario Heritage Act
- 23 listed by Town of Caledon
- Another 11 listed with high significance

Olde Baseline / Winston Churchill

- 21 identified resources
- None designated under Ontario Heritage Act


Belfountain Community Cemetery


Modern fence and fields adjacent to Olde Base Line Rd looking west


Belfountain Village Church


Belfountain Community Hall

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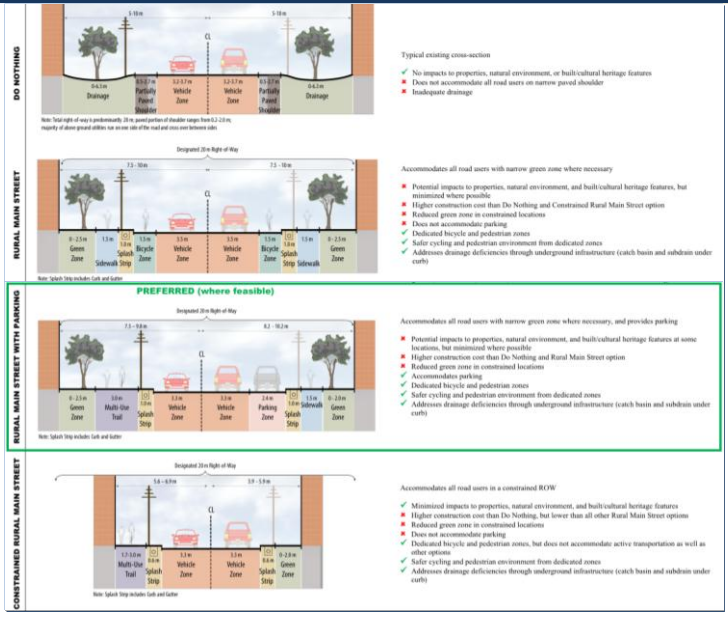
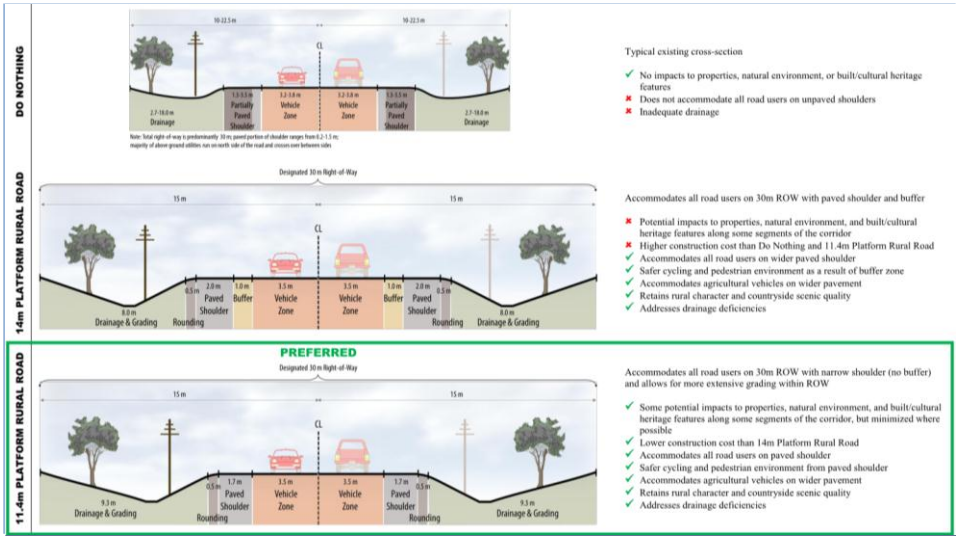
Preliminary Design / Evaluations

29

Belfountain Village Cross-Section

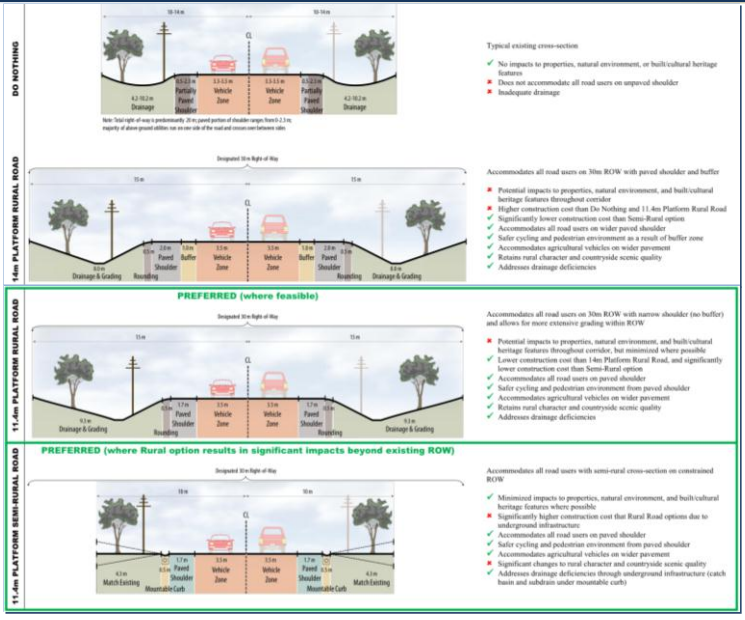


30 Bush Street Cross-Section



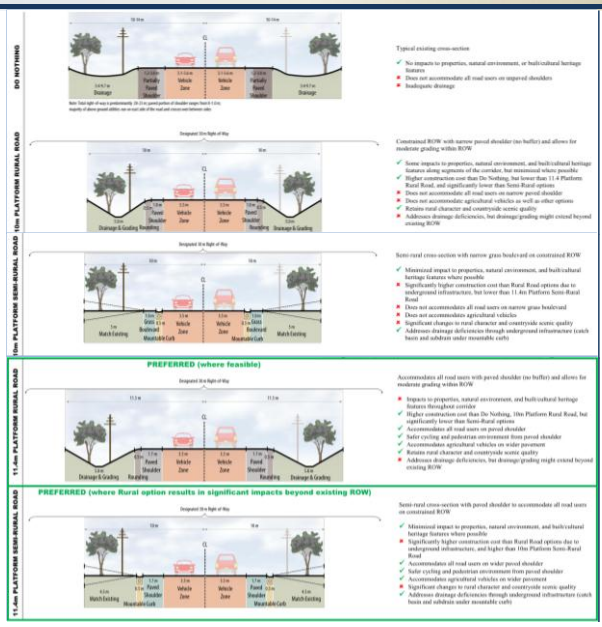
31 Bush Street Plan and Profile

32 Mississauga Road Cross-Section



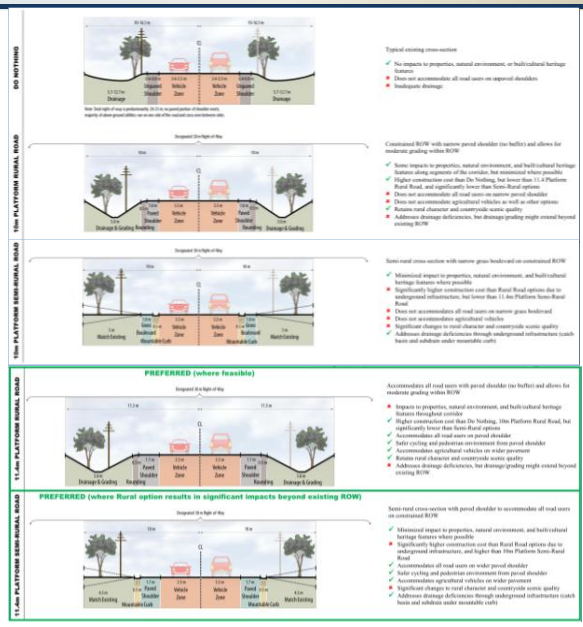
33 Mississauga Road Plan and Profile

34 Winston Churchill Boulevard Cross-Section



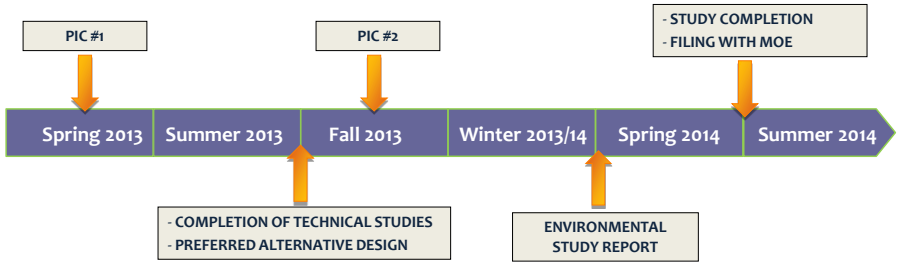
35 Winston Churchill Boulevard Plan and Profile

36 Olde Base Line Road Cross-Section



37 Olde Base Line Road Plan and Profile

38 Next Steps / Schedule



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