APPENDIX L

Design Criteria

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

APPROVALS

_____

MANAGER, ENGINEERING

CITY OF HAMILTON

_____

MANAGER, ENGINEERING

REGION OF HALTON

_____

DATE

This Design Criteria for the New East-West Arterial Road has been divided into 5 sections as follows:

Section 1: New E-W Road, From Highway 6 to Parkside Drive, excluding the Waterdown North development area (New Construction) – City of Hamilton
Section 2: New E-W Road, through Waterdown North development area (New Construction) – City of Hamilton
Section 3: Parkside Drive, From west of Grindstone Creek to 250m east of Robson Road (Widening) – City of Hamilton
Section 4: New E-W Road, From Parkside Drive to Dundas Street (New Construction) – City of Hamilton
Section 5: Dundas Street, From New E-W Road to Brant Street (Widening) – City of Hamilton / Region of Halton

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

SECTION 1

NEW EAST-WEST ROAD – From Highway 6 to Parkside Drive (excluding Waterdown North)

	PRESENT CONDITIONS	DESIGN [(a)] STANDARDS	PROPOSED[(b)] STANDARDS
ROADWAY CLASSIFICATION	N/A	RAU 80	RAU 80
MIN STOPPING SIGHT DIST	N/A	115-140m	185m
EQUIVALENT MIN 'K' FACTOR	N/A	24 - 36 (Crest) 25 - 32 (Sag - Headlight) 12 - 16 (Sag – Comfort)	100 (Crest) 40 Sag)
GRADES MAXIMUM	N/A	4% (c)	1.0%
MINIMUM RADIUS	N/A	250m (d)	250m
PAVEMENT WIDTH	N/A	3.7m	2 traffic lanes at 3.65m (e)
SHOULDER WIDTH	N/A	3.0m	2.5m (e) (f)
SHOULDER ROUNDING	N/A	0.5m	0.5m (g)
SIDEWALK WIDTH	N/A	N/A	3.0m (h)
MEDIAN WIDTH	N/A	1 - 4m Flush	2m Flush
LANE WIDTHS (thru lane -TL) - right turn - left turn - left turn adjacent to median	N/A	TL less 0.2m TL less 0.2m 3.0m min.	3.50m 3.50m 3.00m
RIGHT TURN LANE - taper ratio or length - parallel length	N/A	17:1 – 24:1 60 - 130m	70m (i) 60m (i)
LEFT TURN LANE - taper ratio or length - parallel length	N/A	15:1 – 48:1 64.2 – 83.9m	130m (j) 50m (j)
R.O.W. WIDTH	N/A	30 - 36m	36m (k)
POSTED SPEED	N/A	60 km/h	50 km/h

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Notes:

a) Design Standards are based on City of Hamilton Standards or (where necessary) TAC Geometric Design Guide for Canadian Roads (1999 Edition).
b) The Proposed Standards meet or exceed City of Hamilton Standards.
c) Based on rolling topography for RAU DS 80km/hr roads. (Table 2.1.3.1 of TAC).
d) Based on maximum superelevation rate of 0.06m/m. Minimum radius for reverse crown is 2000m. Minimum radius for normal crown is 3000m (Table 2.1.2.6 of TAC).
e) Based on Hamilton STD No RD-113.05 for Industrial Rural Cross Section.
f) Includes 1.0m paved shoulder.
g) Rounding to be 1.0m at locations where guide rail is required.
h) Within the limits of the Centre Road Woodlot, a 3.0m wide asphalt multi-use pathway is proposed to be installed behind the limit of grading (approximately 1m from the ultimate right-of-way) on the south side of the road. This pathway will connect with the existing North-South trail leading to Joe Sam's Park.
i) Based on MTO Geometric Design Standards for Ontario Highways, Table E7-1.
j) Based on MTO Geometric Design Standards for Ontario Highways, Table E9-1.
k) City of Hamilton Geometric Design Elements for Minor and Major Arterials specifies a right-of-way width of 30m - 36m.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

SECTION 2

NEW EAST-WEST ROAD – Through Waterdown North Development

	PRESENT CONDITIONS	DESIGN [a] STANDARDS	PROPOSED[b] STANDARDS
ROADWAY CLASSIFICATION	N/A	UAU 60	UAU 60
MIN STOPPING SIGHT DIST	N/A	75 - 85m	135m
EQUIVALENT MIN 'K' FACTOR	N/A	10 - 13 (Crest) 15 - 18 (Sag - Headlight) 8 - 9 (Sag - Comfort)	70 (Crest) 25 (Sag)
GRADES MAXIMUM	N/A	6% (c)	0.7%
MINIMUM RADIUS	N/A	120m (d)	1290m
PAVEMENT WIDTH	N/A	3.5m - 3.7m	1 centre 2-way left turn lane at 3.0m, 2 curb lanes at 3.65m (e)
BOULEVARD WIDTH	N/A	3.0m	3.0m
SIDEWALK WIDTH	N/A	1.2m Min	4.0m (f)
MEDIAN WIDTH	N/A	N/A	N/A
LANE WIDTHS (thru lane -TL) - right turn - left turn - left turn adjacent to median	N/A	TL less 0.2m TL less 0.2m 3.0m min.	3.30m 3.30m 3.00m
RIGHT TURN LANE - taper ratio or length - parallel length	N/A	14:1 – 17:1 40 - 90m	50m (g) 30m (g)
LEFT TURN LANE - taper ratio or length - parallel length	N/A	15:1 – 42:1 50.4 – 62.2m	100m (h) 30m (h)
R.O.W. WIDTH	N/A	30 - 36m	32m (i)
POSTED SPEED	N/A	40 - 50 km/h	50 km/h (j)

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Notes:

a) Design Standards are based on City of Hamilton Standards or (where necessary) TAC Geometric Design Guide for Canadian Roads (1999 Edition).
b) The Proposed Standards meet or exceed City of Hamilton Standards.
c) Based on rolling topography for UAU DS 60km/hr roads. (Table 2.1.3.1 of TAC).
d) Based on maximum superelevation rate of 0.06m/m. Minimum radius for reverse crown is 220m. Minimum radius for normal crown is 1290m (Table 2.1.2.4 of TAC).
e) The 3m continuous left turn lane is proposed to facilitate left turns into the future subdivision roads.
f) A 4.0m wide asphalt multi-use pathway is proposed on the south side of the road only. A sidewalk platform will be incorporated into the north side boulevard, however, no sidewalk is proposed at this time.
g) Based on MTO Geometric Design Standards for Ontario Highways, Table E7-1.
h) Based on MTO Geometric Design Standards for Ontario Highways, Table E9-1.
i) City of Hamilton Geometric Design Elements for Minor and Major Arterials specifies a right-of-way width of 30m - 36m.
j) A posted speed of 50km/h is recommended in order to meet roadside safety clear zone requirements associated with planted boulevards, utility poles and illumination.
k) A roundabout with an inscribed circle diameter of 36m is proposed at the western limit of the Waterdown North development to delineate the transition from a rural cross section to an urban residential development. The roundabout will be designed to accommodate the turning path of a WB-19 design vehicle.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

SECTION 3

PARKSIDE DRIVE WIDENING – From west of Grindstone Creek to 250m east of Robson Road

	PRESENT CONDITIONS	DESIGN [a] STANDARDS	PROPOSED[b] STANDARDS
ROADWAY CLASSIFICATION	RAU 60	UAU 60	UAU 60
MIN STOPPING SIGHT DIST	85m	75 - 85m	135m
EQUIVALENT MIN 'K' FACTOR	15 (Crest) 10 (Sag)	10 - 13 (Crest) 15 - 18 (Sag - Headlight) 8 - 9 (Sag - Comfort)	25 (Crest) 18 (Sag) (c)
GRADES MAXIMUM	5.5%	6% (d)	4.7%
MINIMUM RADIUS	Tangent	120m (e)	250m
PAVEMENT WIDTH	3.5m	3.5m - 3.7m	4 traffic lanes at 3.3m, 1.2 bicycle lanes
BOULEVARD WIDTH	N/A (f)	3.0m	1.5m (g)
SIDEWALK WIDTH	1.5m (h)	1.2m Min	1.5m (i)
MEDIAN WIDTH	No median	N/A	No median
LANE WIDTHS (thru lane -TL) - right turn - left turn - left turn adjacent to median	No turning lanes	TL less 0.2m TL less 0.2m 3.0m min.	3.30m 3.30m 3.00m
RIGHT TURN LANE - taper ratio or length - parallel length	N/A	14:1 – 17:1 40 - 90m	50m (j) 30m (j)
LEFT TURN LANE - taper ratio or length - parallel length	N/A	15:1 – 42:1 50.4 – 62.2m	100m (k) 30m (k)
R.O.W. WIDTH	23 - 26m	30 - 36m	26m (l)
POSTED SPEED	60 km/h (m)	40 - 50 km/h	50 km/h (n)

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Notes:

a) Design Standards are based on City of Hamilton Standards or (where necessary) TAC Geometric Design Guide for Canadian Roads (1999 Edition).

b) The Proposed Standards meet or exceed City of Hamilton Standards for roads with a design speed of 60km/hr. The one exception is the proposed minimum vertical curve at Grindstone Creek, which City standards stipulate should not be less than K=15. It should be noted that the existing curve at Grindstone Creek is a sag of K=10. Since it is proposed to illuminate the road throughout, the proposed sag of K=18 exceeds TAC standards for comfort and will not pose a sight distance or safety concern. See note 'c' for more details.

c) A K=18 sag curve is proposed at the Grindstone Creek crossing. This will result in a grade raise of approximately 1.2m at the structure. A smaller K curve is not recommended due to the relatively sharp (4.5%) grades approaching and leaving the sag curve.

d) Based on rolling topography for UAU DS 60km/hr roads. (Table 2.1.3.1 of TAC).

e) Based on maximum superelevation rate of 0.06m/m. Minimum radius for reverse crown is 220m. Minimum radius for normal crown is 1290m (Table 2.1.2.4 of TAC).

f) Existing shoulder on Parkside Drive is approximately 1m wide.

g) A 1.5m wide boulevard is recommended throughout. In areas of property constraint (south side of Parkside Drive from Boulding Avenue easterly), the boulevard has been eliminated.

h) There is an existing 1.5m sidewalk on the south side of Parkside only, from Boulding Avenue westerly. This sidewalk cannot be maintained in its current location and will need to be replaced.

i) New sidewalks are proposed on both sides of Parkside Drive throughout. In the area where the sidewalk is located adjacent to the curb (south side of Parkside Drive, east of Boulding Avenue), the sidewalk width is increased to 2.0m.

j) Based on MTO Geometric Design Standards for Ontario Highways, Table E7-1.

k) Based on MTO Geometric Design Standards for Ontario Highways, Table E9-1.

l) City of Hamilton Geometric Design Elements for Minor and Major Arterials specifies a right-of-way width of 30m - 36m. However, due to property constraints, it is recommended to maintain a right-of-way width of 26m. The 26m width represents the historic ROW width being protected for along Parkside Drive.

m) Posted speed changes to 50 km/h just west of Grindstone Creek.

n) It is recommended to maintain the posted speed limit at 50km/h throughout in order to meet roadside safety clear zone requirements associated with planted boulevards, utility poles and illumination.

o) Two roundabouts with an inscribed circle diameter of 52m are proposed at the west and east tie-in points between the new East-West Road and Parkside Drive. The roundabouts will be designed to accommodate the turning path of a WB-19 design vehicle.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

SECTION 4

NEW EAST-WEST ROAD – Through Upcountry Estates Development

	PRESENT CONDITIONS	DESIGN [a] STANDARDS	PROPOSED[b] STANDARDS
ROADWAY CLASSIFICATION	N/A	UAU 60	UAU 60
MIN STOPPING SIGHT DIST	N/A	75 - 85m	135m
EQUIVALENT MIN 'K' FACTOR	N/A	10 - 13 (Crest) 15 - 18 (Sag - Headlight) 8 - 9 (Sag - Comfort)	35 (Crest) 30 (Sag)
GRADES MAXIMUM	N/A	6% (c)	1.5%
MINIMUM RADIUS	N/A	120m (d)	300m
PAVEMENT WIDTH	N/A	3.5m - 3.7m	2 traffic lanes at 3.65m
BOULEVARD WIDTH	N/A	3.0m	1.5m (e)
SIDEWALK WIDTH	N/A	1.2m Min	4.0m (f)
MEDIAN WIDTH	N/A	N/A	No median
LANE WIDTHS (thru lane -TL) - right turn - left turn - left turn adjacent to median	N/A	TL less 0.2m TL less 0.2m 3.0m min.	3.30m 3.30m 3.00m
RIGHT TURN LANE - taper ratio or length - parallel length	N/A	14:1 – 17:1 40 - 90m	50m (g) 30m (g)
LEFT TURN LANE - taper ratio or length - parallel length	N/A	15:1 – 42:1 50.4 – 62.2m	100m (h) 30m (h)
R.O.W. WIDTH	N/A	30 - 36m	30m (i)
POSTED SPEED	N/A	40 - 50 km/h	50 km/h (j)

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Notes:

a) Design Standards are based on City of Hamilton Standards or (where necessary) TAC Geometric Design Guide for Canadian Roads (1999 Edition).
b) The Proposed Standards meet or exceed City of Hamilton Standards.
c) Based on rolling topography for UAU DS 60km/hr roads. (Table 2.1.3.1 of TAC).
d) Based on maximum superelevation rate of 0.06m/m. Minimum radius for reverse crown is 220m. Minimum radius for normal crown is 1290m (Table 2.1.2.4 of TAC).
e) As this is a hybrid roadway cross section (west side urban and east side rural), a 1.5m boulevard is proposed on the west side of the road only. A 2.5m shoulder (1m partially paved) is proposed on the east side of the road.
f) A 4m wide asphalt multi-use pathway is proposed on the west side of the road throughout.
g) Based on MTO Geometric Design Standards for Ontario Highways, Table E7-1.
h) Based on MTO Geometric Design Standards for Ontario Highways, Table E9-1.
i) City of Hamilton Geometric Design Elements for Minor and Major Arterials specifies a right-of-way width of 30m - 36m. The 30m requested is sufficient provides sufficient road allowance for the proposed 2-lane roadway.
j) A posted speed of 50km/h is recommended in order to meet roadside safety clear zone requirements associated with planted boulevards, utility poles and illumination.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

SECTION 5

DUNDAS STREET WIDENING – From New East-West Road to Brant Street

	PRESENT CONDITIONS	DESIGN [(a)] STANDARDS	PROPOSED[(b)] STANDARDS
ROADWAY CLASSIFICATION	RAU 100	UAU 80	UAU 80
MIN STOPPING SIGHT DIST	185m	115 - 140m	185m
EQUIVALENT MIN 'K' FACTOR	70 (Crest) 30 (Sag)	24 - 36 (Crest) 25 - 32 (Sag - Headlight) 12 - 16 (Sag - Comfort)	50 (Crest) 50 (Sag)
GRADES MAXIMUM	5.5%	5% (c)	5.5% (d)
MINIMUM RADIUS	4,500m ±	250m (e)	2,130m
PAVEMENT WIDTH	4 traffic lanes at 3.65m (f)	3.7m lanes	See Note (g)
BOULEVARD WIDTH	N/A (h)	3.0m	3.0m (i)
SIDEWALK WIDTH	N/A	1.5m	2.0m (j)
MEDIAN WIDTH	1.2m Flush (f)	2m Raised or Flush	5m Flush
LANE WIDTHS (thru lane -TL) - right turn - left turn - left turn adjacent to median	3.25m 3.25m 3.0m	TL less 0.2m TL less 0.2m 3.0m min.	3.50m 3.50m 3.25m
RIGHT TURN LANE - taper ratio or length - parallel length	76m 70m	17:1 – 24:1 60 - 130m	70m (k) 60m (k)
LEFT TURN LANE - taper ratio or length - parallel length	50m 65m	15:1 – 48:1 64.2 – 83.9m	130m (l) 50m (l)
R.O.W. WIDTH	37 – 46m	N/A	47m (m)
POSTED SPEED	60 - 80 km/h (n)	N/A	60 km/h (o)

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Notes:

a) Design Standards are based on City of Hamilton and Halton Region Standards or (where necessary) TAC Geometric Design Guide for Canadian Roads (1999 Edition).
b) The Proposed Standards meet or exceed City of Hamilton and Halton Region Standards for major arterial roads with a design speed of 80km/hr. The one exception is proposed maximum grade, which City of Hamilton Standards stipulate should not be more than 4.5%. The proposed grade of 5.5% matches the existing grade through the rock cut section of the Niagara Escarpment.
c) Based on rolling topography for UAU DS 80km/hr roads. (Table 2.1.3.1 of TAC). The maximum grade for mountainous topography is 7%.
d) Maintain existing grade through rock cut section of Niagara Escarpment. Maximum grade for mountainous topography is 7%.
e) Based on maximum superelevation rate of 0.06m/m. Minimum radius for reverse crown is 450m. Minimum radius for normal crown is 2130m (Table 2.1.2.4 of TAC).
f) West of Evans Road, the existing pavement consists of 4 traffic lanes at 3.5m each, and a 3.25m centre turning lane.
g) Within the City of Hamilton (from Kerns Road westerly), Dundas Street will comprise of 6 traffic lanes at 3.65m each, plus 1.5m wide dedicated on-road bicycle lanes. Within the Region of Halton (from Kerns Road easterly, Dundas Street will comprise of 4 lanes at 3.65m each, plus 4.2m wide curb lanes in each direction. Based on Halton Region's Transportation Master Plan Regional ROW Dimension Guidelines. The 4.2m curb lane is provided as a shared traffic and bicycle lane.
h) Existing rural section has 3m shoulders, except west of Evans Road where the shoulders are 2.5m wide.
i) The boulevard width may be reduced in areas of property constraint and through the rock cut area of the Niagara escarpment to reduce the amount of rock cut.
j) Within the City of Hamilton, 2.0m sidewalks are provided on both sides of the road. Within the Region of Halton, 1.5m sidewalks will be provided on the south side of Dundas Street only.
k) Based on MTO Geometric Design Standards for Ontario Highways, Table E7-1.
l) Based on MTO Geometric Design Standards for Ontario Highways, Table E9-1.
m) A 47m right-of-way is based on Halton Region's Transportation Master Plan Regional ROW Dimension Guidelines. It is noted that with the exception of a few properties, a 46m right-of-way is currently available.
n) The current posted speed changes between Evans Road and Kerns Road.
o) It is recommended to post the speed limit at 60km/h for the entire stretch of road. The installation of planted boulevards, utility poles and illumination will need to be examined to ensure compliance with roadside safety requirements.

TRAFFIC DATA:

Location:	Distance Km	Existing AADT	2021 AADT	% COMM
East-West Road, from Highway 6 to Parkside Drive	4Km	N/A	9,000	5%
Parkside Drive, from East-West Road to Dundas Street	2Km	7,500	13,000	5%
Dundas Street, from East-West Road to Brant Street	2.6Km	28,000	37,000	8%

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

REMARKS:

1) Scope of Work

The Waterdown/ Aldershot Transportation Master Plan identified the need for a new east-west route within the study area. The following improvements will be carried out as part of this project:

a) Construction of a new East-West Arterial Roadway from Highway 6 to Parkside Drive. The new roadway will be located between Parkside Drive and the greenbelt boundary. East of Centre Street, the new roadway will swing south and tie into Parkside Drive. The new roadway is proposed to be a 2-lane rural cross section, except through the Waterdown North development, where a 3-lane urban section is proposed.
b) Widening of Parkside Drive, from the west of Grindstone Creek to approximately 250m east of Robson Road, to a 4-lane urban cross section.
c) Construction of a new East-West Road connection from Parkside Drive to Dundas Street. The new roadway is proposed to be a 2-lane urban-rural cross section.
d) Widening of Dundas Street from the new East-West Road connection to Brant Street to a seven-lane urban cross-section (6 traffic lanes plus a continuous centre turning lane).

2) Limits of Project

In broad terms, the project limits are from Highway 6 in the west to Brant Street in the east. Specifically, the west project limit is the east leg of the future intersection between the new East-West Road and Highway 6. The east project limit is the east leg of the intersection between Dundas Street and Brant Street. The project is situated in the City of Hamilton and the City of Burlington.

3) Adjacent Projects/History

- A number of residential developments are planned for this area as shown on the attached key plan. These are identified as Waterdown North, Upcountry and Waterdown South.

4) Property

A new corridor will be required for the new East-West Arterial Road. A significant portion of this property may be acquired through the development process for the Waterdown North and Upcountry subdivision sites. The remainder of the property will need to be acquired from private owners. It is recommended to protect for a 30m-36m right-of-way corridor. This will provide flexibility for future expansion (if required), and will accommodate landscaping and illumination. A property request plan will be generated that identifies specific property requirements.

Along Parkside Drive, a 26m right-of-way width is recommended. Some property will be required along Parkside Drive in areas where this width is not currently available in order to accommodate a 4-lane urban cross section. A property request plan will be generated that identifies specific property requirements.

Some property will be required along Dundas Street in areas where a 47m right-of way is not currently available in order to accommodate a 7-lane urban cross section. Additional property, beyond the 47m ROW, may be required at some locations to accommodate grading. A property request plan will be generated that identifies specific property requirements.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

5) Illumination

Full illumination will be provided throughout in urbanized areas. In areas where hydro lines exist (Parkside Drive and Dundas Street), consideration should be given to the joint use of utility poles with luminaires for road lighting to reduce the amount of pole lines and potential obstacles on the roadside.

6) Turning Lanes

Existing turning lanes will be maintained at existing intersections. New turning lanes will be provided as follows:

- NB right on Hwy 6 at the New E-W Road;
- NB and SB left on Centre Road at New E-W Road;
- SB left on Centre Road at Northlawn Ave;
- WB dual left on Dundas Street at Brant Street.
- NB dual left on Brant Street at Dundas Street.

Roundabouts are proposed at the new east and west tie-in connections between Parkside Drive and the New East-West Road. These roundabouts are to have an inscribed circle diameter of 52m and will accommodate a WB-19 design vehicle. A new roundabout is also proposed at the western limit of the Waterdown North development area. This roundabout is to have an inscribed circle diameter of 36m and will also accommodate a WB-19 design vehicle.

7) Traffic Signals

As part of this project, existing traffic signals will be reconstructed at the following locations:

- Dundas Street / Evans Road
- Dundas Street / Brant Street

As part of this project, new traffic signals will be required at the following locations:

- Highway 6 / New E-W Road
- New E-W Road / Centre Road
- New E-W Road / Dundas Street

Traffic signal provisions should be provided at the following locations:

- Dundas Street / Pamela Street
- Dundas Street / Kerns Road

8) Structures

It is expected that the following structural work will be required:

- Replace the existing bridge over Grindstone Creek at Parkside Drive. It is noted that the Regional storm currently overtops this structure by 1.24m. The existing bridge cannot be maintained due to the proposed change in profile at this location (approximately 1.2m grade raise). A wider span structure will be required at this location to ensure no changes to the regional flood line levels. A new structure will also provide an opportunity to eliminate overtopping of the road during the regional storm event, thereby allowing continued access to emergency vehicles. Please refer to page 12 for a typical cross section of the proposed crossing.
- Construct a new structure over Borer's Creek at the new East-West Road crossing. The new bridge should be designed to accommodate the regional storm event without overtopping of the road. Please refer to page 12 for a typical cross section of the proposed crossing.
- Construct a new underground pathway structure north of the Alexander Place nursing home to allow pedestrians

NO: ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

continued access to recreational to the north. Illumination for the underground crossing should be incorporated into the design.

- It is proposed to replace the existing concrete open footing culvert (3.0m x 1.5m x 35m) located approximately 350m east of Evans Road on Dundas Street. It is noted that the regional storm currently overtops the road by 1.03m at this location.
- Retaining walls will be required on the south side of Dundas Street from approximately Station 11+000 to Station 11+150 in the area west of Brant Street.
- Retaining walls will be required on the north side of Dundas Street from approximately Station 11+200 to Station 11+500 in the area west of Brant Street.

9) Private/Commercial Entrances

There are a number of commercial and residential entrances along Parkside Drive and Dundas Street which must be maintained open at all times during construction. All existing driveways will be maintained.

10) Railways

There is an existing at-grade CP Rail crossing Parkside Drive located approximately 125m east of Grindstone Creek. This crossing will be reconstructed, in consultation with CP Rail, due to the widening of Parkside Drive. The proposed crossing will remain at-grade.

11) Utilities

Several underground and above ground utilities will be impacted as a result of this project. The assessment of utility relocation requirements has been initiated; however, the following agencies need to be contacted during the detailed design phase to arrange for (and review) their relocation design in support of the proposed works:

Utility Agency	Contact Name	Phone Number
Horizon Utilities Corporation	Mr. Sam Zaghloul	(905) 522-6611 Ext. 2265
Hydro One Networks Inc.	Mr. Brian McCormick	(416) 345-5000
Burlington Hydro Inc.	Mr. Peter German	(905) 332-2348
Fibrewired Burlington Hydro	Mr. Frank Lasowski	(905) 332-2255
Union Gas	Mr. Brad Davies	(905) 548-3400, Ext. 604
Enbridge Consumers Gas	Ms. Ann Newman	(519) 339-0503
Cogeco Cable	Mr. Dave Watters	(905) 548-8004
Bell Canada	Mr. Jing Dong	(905) 415-0602, Ext. 222

12) Pipe Lines

An Imperial Oil Pipeline and a Sun Canadian Pipeline cross the proposed new East-West Road at approximately Station 10+925. No conflicts have been identified.

13) Drainage

Drainage on the rural sections of the new East-West Road will be conveyed via roadside ditches. Drainage through the Waterdown North development will be conveyed via a stormsewer/catchbasin system. As part of the Waterdown North development, stormwater management ponds will be constructed to handle and treat runoff from the development. It is expected that the SWM ponds will be sized to accept runoff from the new East-West Road.

NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street

Drainage on Parkside is currently conveyed via roadside ditches. It is proposed to urbanize Parkside Drive as part of this project and drainage will be conveyed via a stormsewer/catchbasin system.

It is proposed to urbanize Dundas Street as part of this project. Drainage in this area will be conveyed via a stormsewer/catchbasin system. Small roadside ditches may still be required in areas where the proposed road sits higher than the adjacent land. Stormwater management facilities will be required to address water quality and quantity issues.

14) Streetscaping and Urban Design

A preliminary streetscaping plan will be generated as part of this study. The plan will take into account the concept of clear zone safety, and should reflect any restrictions imposed by utility companies regarding location and height of trees in the vicinity of their power lines.

15) Environmental Assessment

This study has been prepared according to the requirements of the Municipal Class EA (June 2000). The proposed improvements are classified as a “Schedule C” project in the Municipal Class EA. An Environmental Study Report (ESR) will be prepared as part of this study.

16) Closures

Temporary road closures along may be required during construction. A conceptual staging plan will be developed as part of this study and should be refined as part of the detailed design prior to construction. All Emergency Service providers are to be contacted during the design and construction phase to ensure they are aware any potential temporary closures.

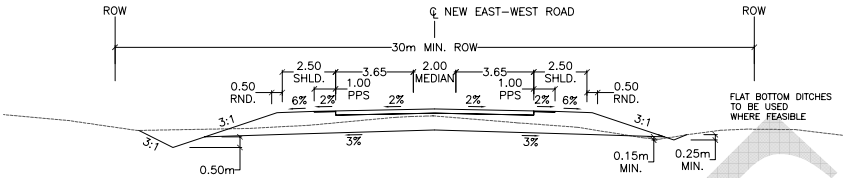
NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

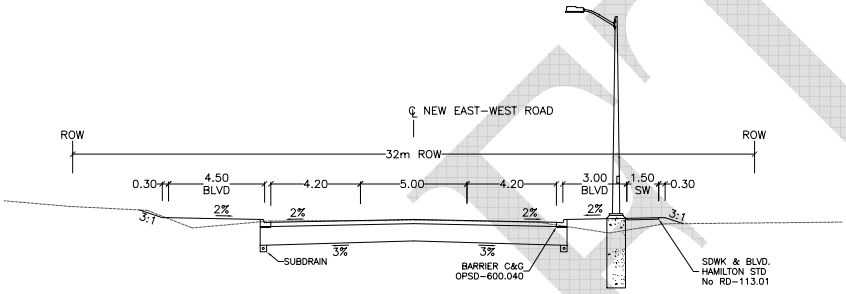
TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

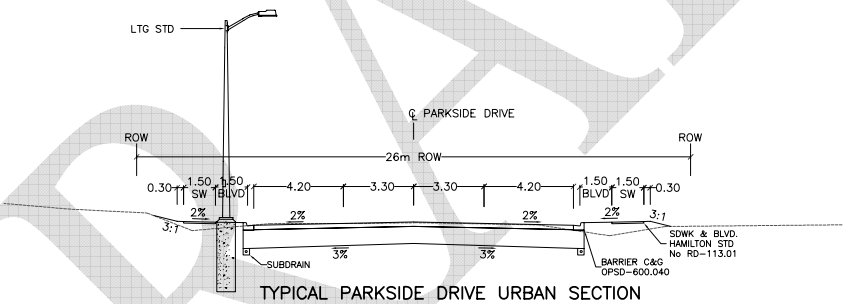
LOCATION: From Highway 6 to Brant Street



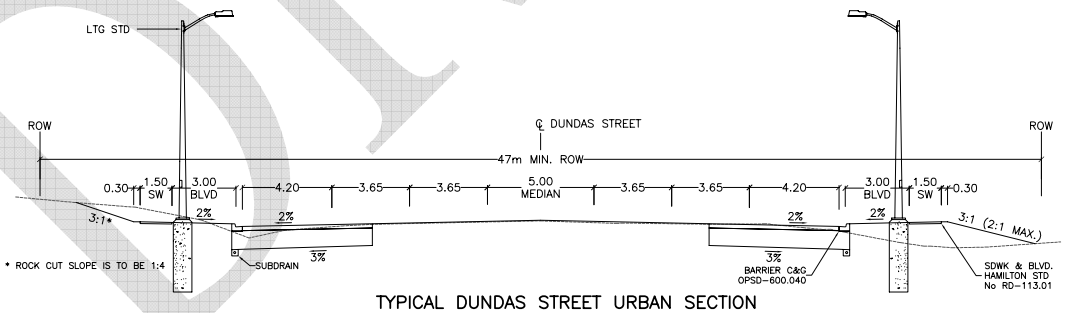
TYPICAL NEW EAST–WEST ROAD RURAL SECTION
FROM HWY 6 TO PARKSIDE DRIVE & PARKSIDE DRIVE TO DUNDAS STREET



TYPICAL NEW EAST–WEST ROAD 3–LANE URBAN SECTION
THROUGH WATERDOWN NORTH DEVELOPMENT



TYPICAL PARKSIDE DRIVE URBAN SECTION
FROM WEST OF GRINDSTONE CREEK TO EAST OF ROBSON ROAD



TYPICAL DUNDAS STREET URBAN SECTION
FROM E–W ROAD TO BRANT STREET

Typical Sections

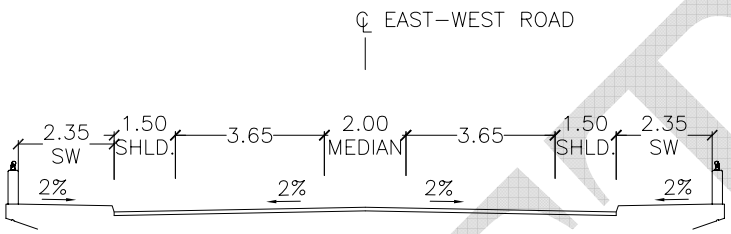
NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

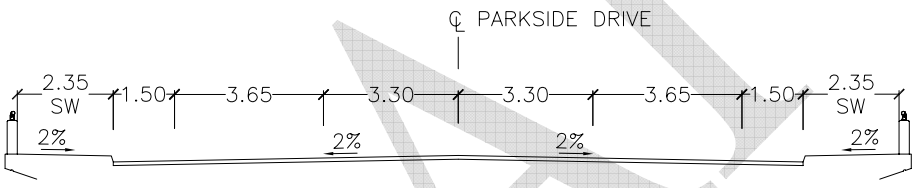
TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street



NEW EAST–WEST ROAD STRUCTURE
AT BORER'S CREEK



PARKSIDE DRIVE STRUCTURE
AT GRINDSTONE CREEK

Typical Structural Sections

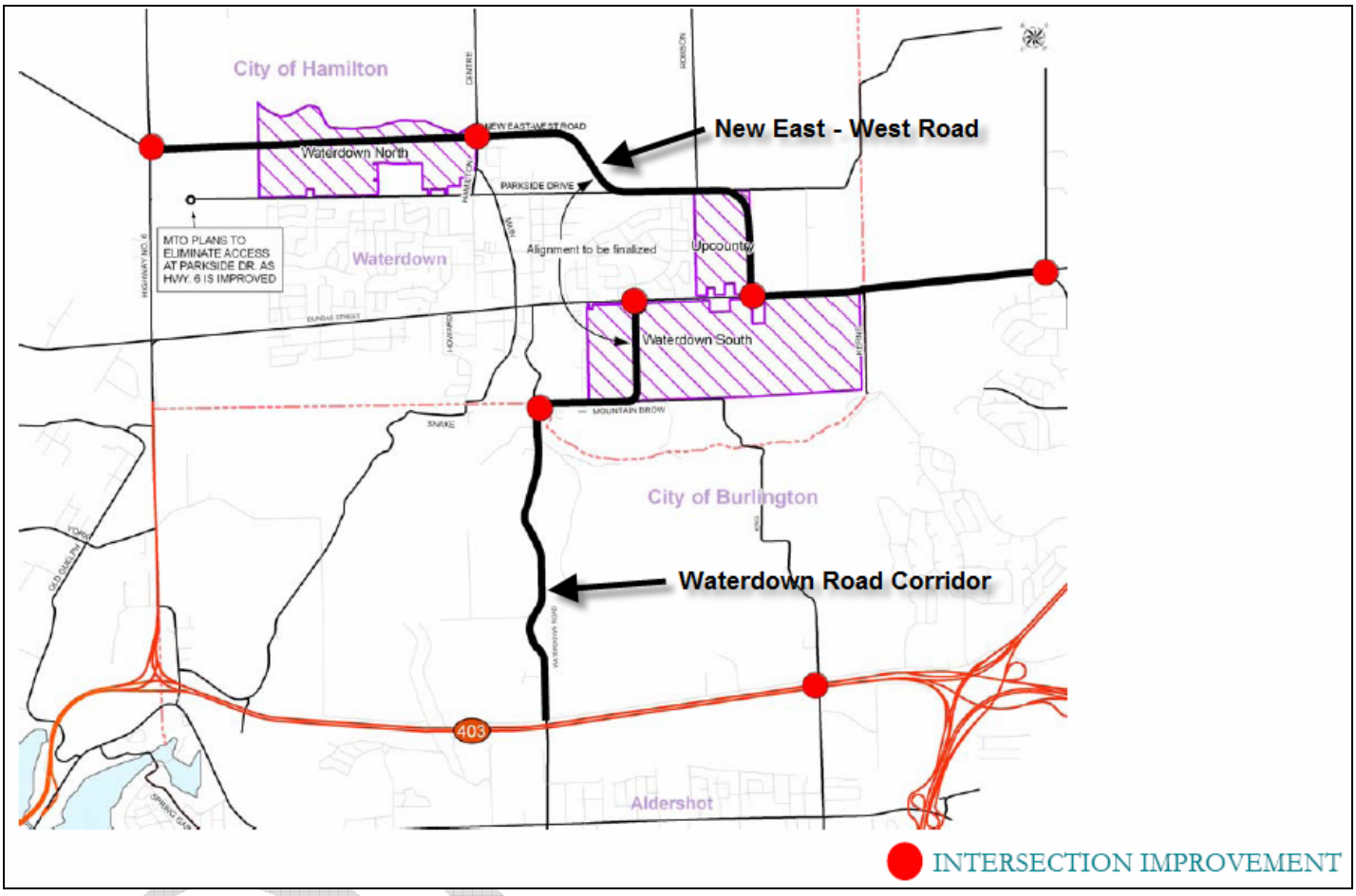
NO:

ROADWAY: East-West Road, Parkside Drive, Dundas Street.

TYPE OF PROJECT: Preliminary Design

LENGTH: 9.5 km

LOCATION: From Highway 6 to Brant Street



Key Map