
APPENDIX G
PRELIMINARY DESIGN CRITERIA

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

COUNTY OF: Wellington
 TOWNSHIP OF: Woolwich, Guelph-Eramosa
 REGIONAL MUNICIPALITY OF: Waterloo
 CITY OF: Kitchener, Guelph

LIMITS: FROM STA. 20+000 PLAN _____ TO STA. 38+300 PLAN _____

HIGHWAY 7

	PRESENT CONDITIONS	DESIGN STANDARDS	PROPOSED STANDARDS	
HIGHWAY CLASSIFICATION	N/A	RFD 120	RFD 120 ^(a)	
MIN STOPPING SIGHT DIST	N/A	245 m	245 m	
EQUIVALENT MIN 'K' FACTOR	N/A	C - 120 S - 60	C - 120 S - 60	MANAGER, OPERATIONAL SERVICES
GRADES MAXIMUM	N/A	3 %	2.4 %	
MINIMUM RADIUS	N/A	650 m	500 m ^(b)	
PAVEMENT WIDTH	N/A	2 x 7.5 m	2 x 7.5 m	
SHOULDER WIDTH	N/A	3.0 m LT / 3.0 m RT	3.0 m LT / ^(c) 3.0 m RT	MANAGER, ENGINEERING
SHOULDER ROUNDING	N/A	1.0 m	1.0 m ^(d)	
MEDIAN WIDTH	N/A	22 m	22 m	
R.O.W. WIDTH	N/A	100 m	100 m	
POSTED SPEED	N/A	100 km/h	100 km/h ^(e)	MANAGER, CONTRACTS

REGIONAL DIRECTOR, Date of Approval

DRAFT APPROVAL (OPTIONAL)

MANAGER, OPERATIONAL SERVICES

MANAGER, ENGINEERING

MANAGER, CONTRACTS

REGIONAL DIRECTOR, Date of Approval

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

TRAFFIC DATA:

Location	Traffic – AADT		
	Existing Highway 7		New Highway 7
	1999 / 2000	2021 with New Highway 7 in Place	2021
West (KWE to Grand River)	25,300 – 34,400	20,000 – 23,400	42,000 – 46,000
Central (Grand River to Guelph Road 3)	22,000 – 23,000	11,000 – 13,000	30,000 – 32,000
East (Guelph Road 3 to Hanlon Expressway)	20,500 – 26,100	20,000 – 24,000	32,000 – 35,000

Notes:

- a) This four-lane section of Highway 7 will have a functional classification of RFD120 and for purposes of Corridor Control will be designated as a controlled access facility (Class I) with access only available at interchanges
- b) A radius curve less than the standard 650 m radius is proposed for the following curves:
 - 525 m radius – west of the Grand River (Station 20+700±)
 - 600 m / 500 m compound radius curve – north of existing Highway 7 in Guelph (Station 36+800±)
 - This is considered acceptable since both of these locations are within reduced speed zones.
- c) Outside shoulder widths in both the eastbound and westbound direction. (discuss median and outside shoulders, and paved or partially paved)
- d) Shoulder roundings will be constructed to a width of 1.0 m.
- e) The typical posted will be 100 km/h, however, there will be speed reductions in both the City of Kitchener and City of Guelph.

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

Remarks:

1) Scope of Work

The purpose of the project is to prepare an ultimate preliminary design plan for the construction of a new Highway 7 in order to define the right-of-way limits to apply for environmental approval, to designate a corridor so that property can be protected, and to provide a plan for detail design projects.

The following improvements will be carried out on this project:

- a) **Mainline Highway 7** - A 4-lane highway with a 22 m depressed median and interchanges / grade separations where required between the City of Kitchener and the City of Guelph.
- b) **Interchanges**
 - i) Wellington Street

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	UAD 110	UAD 110
MINIMUM STOPPING SIGHT DISTANCE	170 m	170 m ⁽¹⁾
EQUIVALENT MINIMUM 'K' FACTOR	Crest – 40 Sag – 40	Crest – 40 ⁽²⁾ Sag – 40
GRADES MAXIMUM	0.5 %	1.6 %
MINIMUM RADIUS	Tangent	800 m
PAVEMENT WIDTH	2 x 3.50 m	4 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	variable
R.O.W. WIDTH	50 – 80 m	50 – 100 m
POSTED SPEED	60 km/h	60 – 90 km/h

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

ii) Riverbend Drive

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	N/A	RAU 50
MINIMUM STOPPING SIGHT DISTANCE	N/A	65 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest - 50 Sag - 30
GRADES MAXIMUM	N/A	2.3 %
MINIMUM RADIUS	N/A	100 m
PAVEMENT WIDTH	N/A	2 x 3.75 m
SHOULDER WIDTH	N/A	2.0 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	N/A	26 m
POSTED SPEED	N/A	40 km/h

iii) Shirley Avenue

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	N/A	RAU 70
MINIMUM STOPPING SIGHT DISTANCE	N/A	110 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest - 30 Sag - 30
GRADES MAXIMUM	N/A	4.2 %
MINIMUM RADIUS	N/A	420 m
PAVEMENT WIDTH	N/A	2 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	N/A	30 m
POSTED SPEED	N/A	60 km/h

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

iv) Connection to Bridge Street

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	N/A	RLU 70
MINIMUM STOPPING SIGHT DISTANCE	N/A	110 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest - 25 Sag - 25
GRADES MAXIMUM	N/A	4.0 %
MINIMUM RADIUS	N/A	75 m
PAVEMENT WIDTH	N/A	2 x 3.75m
SHOULDER WIDTH	N/A	2.0 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	N/A	20 m
POSTED SPEED	N/A	50 km/h

v) Ebycrest Road (Regional Road 17)

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	RAU 100	RAU 100
MINIMUM STOPPING SIGHT DISTANCE	N/A	185 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest - 70 Sag - 45
GRADES MAXIMUM	2.2%	2.3 %
MINIMUM RADIUS	1500 m	1500 m
PAVEMENT WIDTH	2 x 3.75 m	2 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	20 m	32 m
POSTED SPEED	80 km/h	80 km/h

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

vi) Shantz Station Road (Regional Road 30)

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	Rural	RAU 80
MINIMUM STOPPING SIGHT DISTANCE	N/A	135 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest – 30 ⁽³⁾ Sag – 30
GRADES MAXIMUM	0.5%	4.8 %
MINIMUM RADIUS	100 m	300 m
PAVEMENT WIDTH	2 x 3.50 m	2 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	14 m	20-50 m
POSTED SPEED	60 km/h	60 km/h

vii) Wellington County Road 86 (Elmira Road)

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	RAU 100	RAU 100
MINIMUM STOPPING SIGHT DISTANCE	N/A	185 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	Crest – 70 Sag – 45
GRADES MAXIMUM	3 %	2.5 %
MINIMUM RADIUS	Tangent	Tangent
PAVEMENT WIDTH	2 x 3.50 m	4 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m
SHOULDER ROUNDING	N/A	0.5 m
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	36 m	40 m
POSTED SPEED	80 km/h	80 km/h

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

viii) Woodlawn Road

	PRESENT CONDITIONS	PROPOSED STANDARDS
ROAD CLASSIFICATION	UAU 80	UAU 80
MINIMUM STOPPING SIGHT DISTANCE	415 m	415 m
EQUIVALENT MINIMUM 'K' FACTOR	C -18	C - 18 ⁽⁴⁾
GRADES MAXIMUM	0.4 %	0.4 %
MINIMUM RADIUS	Tangent	Tangent
PAVEMENT WIDTH	15 m	15 m
SHOULDER WIDTH	N/A	N/A
SHOULDER ROUNDING	N/A	N/A
MEDIAN WIDTH	N/A	N/A
R.O.W. WIDTH	30 - 55 m	30 - 55 m
POSTED SPEED	60 km/h	60 km/h

c) Sideroads

i) Woolwich Road 66 (Spitzig Road)

Woolwich Road 66 would pass over future Highway 7 via a new structure. A total of two 3.75 m lanes with 2.5 m shoulders would be protected on a nominal 20 m right-of-way.

ii) Woolwich Road 72 (Greenhouse Road)

Woolwich Road 72 would pass over future Highway 7 via a new structure. A total of two 3.75 m lanes with 2.5 m shoulders would be protected on a nominal 20m right-of-way.

iii) Townline Road

Townline Road would pass over future Highway 7 via a new structure. A total of two 3.75 m lanes with 2.5 m shoulders would be protected on a nominal 20 m right-of-way.

iv) Guelph Road 3

Guelph Road 3 would pass over future Highway 7 via a new structure. A total of two 3.75 m lanes with 2.5 m shoulders would be protected on a nominal 20 m right-of-way.

v) Curtis Drive

Curtis Drive would be closed.

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

d) Wellington Street Interchange Ramps

	PRESENT CONDITIONS	E-S PROPOSED STANDARDS	S-E PROPOSED STANDARDS	E-N PROPOSED STANDARDS	N-E PROPOSED STANDARDS	N-EW PROPOSED STANDARDS
DESIGN SPEED	N/A	80 km/h	80 km/h	80 km/h	80 km/h	80 km/h
MINIMUM STOPPING SIGHT DISTANCE	N/A	135 m	105 m ⁽⁵⁾	135 m	135 m	105 m ⁽¹⁰⁾
EQUIVALENT MINIMUM 'K' FACTOR	N/A	C - 50 S - 30	C - 20 ⁽⁶⁾ S - 20	C - 35 S - 30	C - 25 ⁽⁸⁾ S - 30	C - 20 ⁽¹¹⁾ S - 15
GRADES MAXIMUM	N/A	6.0 %	6.5 %	3.4 %	5.6 %	6.0 %
MINIMUM RADIUS	N/A	250 m	250 m	200 m ⁽⁷⁾	200 m ⁽⁹⁾	90 m ⁽¹²⁾
PAVEMENT WIDTH	N/A	2 x 3.75 m	2 x 3.75 m	4.75 m	4.75 m	4.75 m
SHOULDER WIDTH	N/A	2.5 m RT 1.0 m LT	2.5 m RT 1.0 m LT	2.5 m RT 1.0 m LT	2.5 m RT 1.0 m LT	2.5 m RT 1.0 m LT
SHOULDER ROUNDING	N/A	0.5 m	0.5 m	0.5 m	0.5 m	0.5 m
MEDIAN WIDTH	N/A	N/A	N/A	N/A	N/A	N/A
R.O.W. WIDTH	N/A	N/A	Varies	Varies	N/A	Varies
POSTED SPEED	N/A	60 km/h	60 km/h	60 km/h	60 km/h	60 km/h

	PRESENT CONDITIONS	WELLINGTON ST TO EDNA ST CONNECTION PROPOSED STANDARDS	WELLINGTON ST TO VICTORIA ST CONNECTION PROPOSED STANDARDS
DESIGN SPEED	N/A	80 km/h	60 km/h
MINIMUM STOPPING SIGHT DISTANCE	N/A	135 m	85 m
EQUIVALENT MINIMUM 'K' FACTOR	N/A	C - 30 ⁽¹³⁾ S - 30	S - 20
GRADES MAXIMUM	N/A	4.5 %	4 %
MINIMUM RADIUS	N/A	150 m ⁽¹⁴⁾	130 m
PAVEMENT WIDTH	N/A	2 x 3.75 m	2 x 3.75 m
SHOULDER WIDTH	N/A	2.5 m	2.5 m
SHOULDER ROUNDING	N/A	0.5 m	0.5 m
MEDIAN WIDTH	N/A	N/A	N/A
R.O.W. WIDTH	N/A	Varies	Varies
POSTED SPEED	N/A	60 km/h	60 km/h

Notes:

- (1) The standard minimum stopping sight distance is 215 m for a 110 km/h design speed. The existing Wellington Street profile is being maintained across the Kitchener - Waterloo Expressway, therefore, no improvements to the minimum stopping sight distance are proposed. The existing minimum stopping sight distance provides for a design speed that is approximately equal to the posted speed (60-90 km/h). Wellington Street will be an arterial road and the design speed could be reduced to 90 km/h.

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

- (2) The standard vertical crest and sag curve for a 110 km/h design speed is $K = 90$ and $K = 50$, respectively. The existing Wellington Street profile is being maintained across the Kitchener – Waterloo Expressway, therefore, no improvements to the vertical geometry are being proposed. Wellington Street will be an arterial road and the design speed could be reduced to 90 km/h.
- (3) The standard vertical crest curve for an 80 km/h design speed is $K = 35$. At Shantz Station Road the proposed vertical crest curve over proposed Highway 7 was reduced to $K = 30$ in order to minimize property impacts and maintain the existing Highway 7 intersection. The proposed vertical crest curve provides for a design speed that is greater than the posted speed (60 km/h).
- (4) The standard vertical crest curve for an 80 km/h design speed is $K = 35$. The existing Woodlawn profile is being maintained, therefore, no improvements to the vertical geometry are being proposed.
- (5) The minimum stopping sight distance is 135 m for an 80 km/h design speed. In order to provide the S-E ramp connection between the Kitchener – Waterloo Expressway and proposed Highway 7, as well as fit through an existing structure, the vertical geometry was reduced and as a result the minimum stopping sight distance was reduced. The proposed minimum stopping sight distance provides for a design speed that is greater than the posted speed (60 km/h).
- (6) The standard vertical crest and sag curve for an 80 km/h design speed is $K = 35$ and $K = 30$, respectively. In order to provide the S-E ramp connection between the Kitchener – Waterloo Expressway and proposed Highway 7 as well as fit through an existing structure, the vertical geometry was reduced. The proposed vertical geometry provides for a design speed that is greater than the posted speed (60 km/h).
- (7) The desirable radius for an 80 km/h design speed is 250 m, and the minimum acceptable radius is 200 m. In order to reduce property impacts adjacent to the E-N ramp the minimum radius was used.
- (8) The standard vertical crest curve for an 80 km/h design speed is $K = 35$. In order to cross both the Kitchener – Waterloo Expressway and Wellington Street the N-E ramp vertical geometry was reduced. The proposed vertical geometry provides for a design speed that is greater than the posted speed (60 km/h).
- (9) The desirable radius for an 80 km/h design speed is 250 m, and the minimum acceptable radius is 200 m. In order to cross both the Kitchener – Waterloo Expressway and Wellington Street as well as reduce property impacts adjacent to the N-E ramp the minimum radius was used.
- (10) The minimum stopping sight distance is 135 m for an 80 km/h design speed. In order to provide the N- E/W ramp connection and maintain the existing intersection with Wellington Street the vertical geometry was reduced and as a result the minimum stopping sight distance was reduced. The proposed minimum stopping sight distance provides for a design speed that is greater than the posted speed (60 km/h).
- (11) The standard vertical crest and sag curve for an 80 km/h design speed is $K = 35$ and $K = 30$, respectively. In order to provide the N-E/W ramp connection and maintain the existing intersection with Wellington Street the vertical geometry was reduced.
- (12) The desirable radius for an 80 km/h design speed is 250 m, and the minimum acceptable radius is 200 m. In order to reduce property impacts adjacent to the N-E/W ramp and maintain the existing intersection with Wellington Street the existing 90 m radius was maintained.
- (13) The standard vertical crest curve for an 80 km/h design speed is $K = 35$. In order to reduce property impacts adjacent to the Wellington Street to Edna Street connection and fit through existing structures, the existing vertical crest curve was maintained.
- (14) The desirable radius for an 80 km/h design speed is 250 m, and the minimum acceptable radius is 200 m. In order to reduce property impacts the horizontal radius was reduced. The proposed horizontal radius provides for a design speed that is greater than the posted speed (60 km/h).

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

2) Limits of Project

The limits of the project extend from the Kitchener-Waterloo Expressway (Sta. 20+000) in the City of Kitchener easterly to the Hanlon Expressway (38+300) in the City of Guelph.

3) Adjacent Projects/History

MTO GWP 44-88-00 and 44-88-01 – Upgrading the Hanlon Expressway (Highway 6) between Woodlawn Road (Highway 7) and Highway 401 to a fully controlled access highway.

MTO GWP 65-76-05 – Highway 6 realignment between Maddaugh Road (Highway 6 south) and Wellington Road 34 (at the Hanlon Expressway)

MTO GWP 14-00-00 – Northerly Extension of the Hanlon Expressway (Highway 6) to Highway 6 at Marden Region of Waterloo – construction of Breslau Bypass from Highway 7 southerly.

4) Construction Staging

Staging of construction will be from the Wellington Street interchange in Kitchener easterly to Speedvale Avenue in Guelph. The proposed staging would be as follows:

1. Structures from KWE easterly to and including Regional Road 17.
2. Grading, granular and paving of highway from KWE easterly to Regional Road 17.
3. Complete construction (including structures) from Regional Road 17 easterly to Regional Road 30.
4. Complete construction (including structures) from Regional Road 30 easterly to County Road 86.
5. Complete construction (including structures) from County Road 86 (Elmira Road) easterly then southerly to connection with Hanlon, north of the proposed Speedvale Avenue interchange.

5) Property

Property to accommodate the Highway right-of-way, interchanges, and storm water management facilities will be purchased during detail design after the Environmental Assessment has been approved.

6) Illumination

Specific illumination requirements to be determined during detail design.

7) Traffic Signals

There will be traffic signals within the new Highway 7 corridor at the following locations:

- Wellington Street / N-E/W ramp /Edna Street connector road
- Wellington Street / Bruce Street Extension / KWE ramp terminal
- Woodlawn Road / N-E/W ramp / E-S ramp

Underground provisions at each of the interchange ramp terminal intersection should be considered in detail design.

8) Freeway Traffic Management System

A Freeway Traffic Management System is not being considered on this project.

9) Traffic Counting Stations

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

Specific traffic counting station locations to be determined during detailed design.

10) Structures

Structural Reference Number (SRN)	Description	Structural Reference Number (SRN)	Description
S2	E-S Ramp and Connector Rd. Under CNR	S22	Service Rd. Underpass
S3	E-S Ramp over Kitchener Waterloo Expressway and Wellington St.	S23	Regional Rd. 17 Underpass
S4	E-S Ramp over Wellington – N and S – Wellington Ramps	S24	Woolwich Rd. 66 Underpass
S6	N-E Ramp over E/W-S Ramp	S25 (EBL) / S26 (WBL)	Hopewell Creek Overpass
S7	N-E Ramp over S-E Ramp and Kitchener Waterloo Expressway	S27	Woolwich Rd. 72 Underpass
S8	N-E Ramp over Wellington St. – Shirley Ave. and Connector Rd.	S28	Regional Rd. 30 Underpass
S10	S-E Ramp over Bruce St. Extension	S29	Townline Rd. Underpass
S11	S-E Ramp over Welling St. – Shirley Ave.	S30	Guelph Rd. 3 Underpass
S12	N-E Ramp and N-Wellington St. Ramp over Guelph St.	S31 (EBL) / S32 (WBL)	Ellis Creek Overpass
S13	Bruce St. Extension under CNR	S33	County Rd. 86 Underpass
S19	Riverbend Dr. / Shirley Ave. Overpass	S34 (EBL) / S35 (WBL)	Woodlawn Rd. Underpass
S20 (WBL) / S21 (EBL)	Grand River Overpass		

11) Structural Planning Sheets are appended to this Preliminary Design Criteria.

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

Private/Commercial Entrances

Highway 7 is being planned as a Controlled Access Highway; therefore, there would be no direct access from private or commercial entrances. Access only provided via interchanges.

12) Railways

There will be three crossings of a CN subdivision main line in the City of Kitchener in the vicinity of the KWE interchange.

The 'spur lines' south of Woodlawn Road in Guelph cross the Hanlon Expressway at two locations. It is proposed to close the northerly one of these lines when Highway 7 is constructed.

13) River Crossings

There will be crossings of the Grand River, Hopewell Creek, and Ellis Creek. Structure openings to be confirmed during detail design.

14) Utilities

Local utilities, such as watermains, sewers, telephone, etc., are located within the roadway rights-of-way in urban areas (Kitchener and Guelph). In rural areas the utilities are limited to aerial hydro and telephone lines. Utility authorities will need to be contacted during detail design phase.

The following specific utilities have been identified within the limits of this project:

- Kitchener-Wilmot Hydro Electric: Underground hydro ducts may require relocation at the Wellington Street interchange. Aerial lines located along Wellington Street, Riverbend Drive and Shirley Avenue may require relocation.
- Waterloo North Hydro: Future proposals include building overhead high voltage distribution facilities within the existing Highway 7 right-of-way.
- 305 mm Sanitary Sewer and Watermain: Adjacent to the existing S-E ramp at the Wellington Street interchange.
- Ontario Hydro: Power lines west of Silvercreek Parkway south and north of Woodlawn Road would be adjacent to the highway. Relocation or raising of some poles may be necessary.

There is also an underground section of main feeder lines in the vicinity of the Hanlon Expressway and a twin pole that crosses the Hanlon at Paisley Road and runs northerly between the Hanlon Expressway and Silvercreek Parkway to the G.E. plant north of Woodlawn Road.

15) Pedestrian Trails

Provisions for pedestrian trails within the new Highway 7 right-of-way is not being considered for this project. The Walter Bean Trail will cross the right-of-way under the proposed Grand River bridge.

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

16) Pipe Lines

There are no pipeline crossings on this project.

17) Municipal Drains

There are no municipal drains within the limits of this project.

18) Drainage

Drainage work will consist of roadway ditches, culverts, and flat bottom swales for water quality enhancement and several storm water management facilities.

Preliminary culvert sizing has been completed to ensure compatibility with the recommended profile.

A preliminary stormwater management strategy has been prepared to minimize stormwater impacts.

19) Signing

Signing will be constructed to current standards.

Overhead signing will be provided for the ultimate highway design. Overhead signs should be incorporated with the interchange at the Kitchener-Waterloo Expressway (Highway 85), and with the interchange at the Hanlon Expressway.

20) Sidewalks

There will not be any sidewalks on this project, with the exception of sidewalks on structures.

21) Patrol Yards

The requirement for patrol yards will be investigated during detail design.

22) Landscaping

A detailed landscaping plan will be developed during detail design.

23) Bicycle Transportation

Provisions for bicycle paths within the new Highway 7 right-of-way are not being considered for this project.

24) Transit

Transit is not being considered for this project.

25) Environmental Assessment

This Highway 7 project is subject to the formal requirements of the Environmental Assessment Act. An amendment to the Environmental Assessment Report will be submitted to the Ministry of Environment (MOE) for formal review and approval. This project may not proceed until approval has been received from the MOE. Following this approval, Design and Construction Report(s) will be prepared as required to document detail design and contract preparation.

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

26) Legal Agreements

There are no legal agreements for this project at this time.

27) Connecting Links

Not applicable.

28) Assumptions, Designations, Transfers and Closures

Temporary assumptions of portions of municipal roads will be required to carry out construction. Portions of roadways not required for highway purposes will be reverted to the municipalities upon completion of construction.

Roads affected are:

- Wellington Street
- Riverbend Drive
- Shirley Avenue
- Bridge Street
- Regional Road 17
- Woolwich Road 66
- Woolwich Road 72
- Regional Road 30
- Townline Road
- Guelph Road 3
- Wellington County Road 86
- Curtis Drive
- Woodlawn Road

Riverbend Drive, in Kitchener, at future Highway 7 will be closed. Traffic will be realigned to use a new crossing road. Curtis Drive, in Guelph, will also be closed.

Existing Highway 7 will be transferred to local municipal jurisdiction upon completion of the Highway 7 realignment.

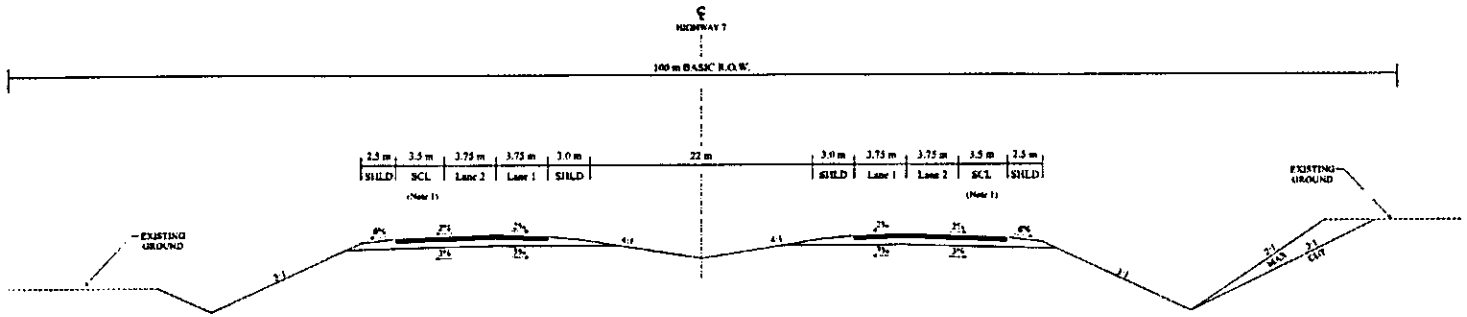
29) Preliminary Design Report

As part of the Environmental Assessment Study, the preliminary design of Highway 7 and associated interchanges was carried out and documented in the Amendment Report.

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

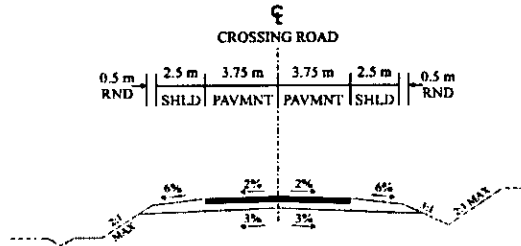
LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

Typical Section



Highway 7 Typical Cross-Section

Note 1: Speed change lanes as required at interchange locations



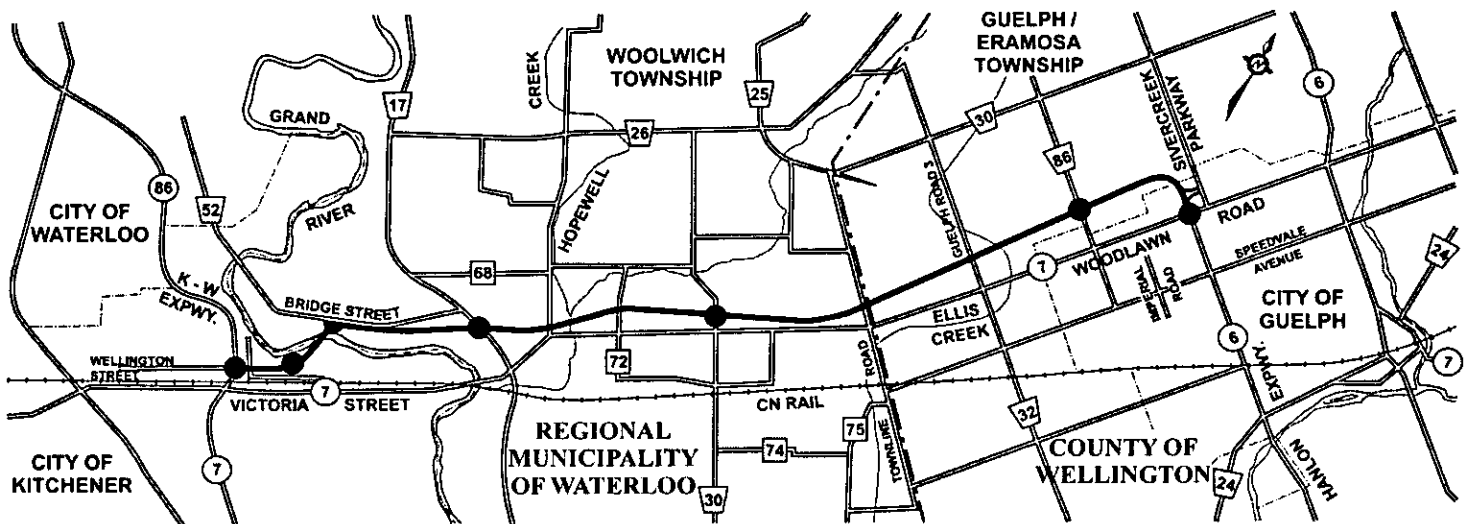
Crossing Road Typical Cross-Section

SOUTHWESTERN REGION

G.W.P. NO: 408-88-00 OPERATIONAL SERVICES: London HWY NO: 7
 TYPE OF PROJECT: G., D., G.B., P., STR., & EI. LENGTH: 18.3 km+

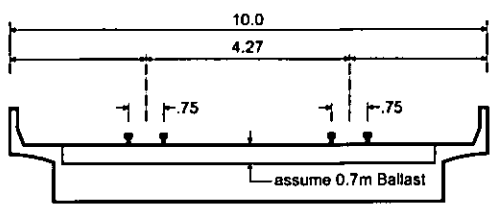
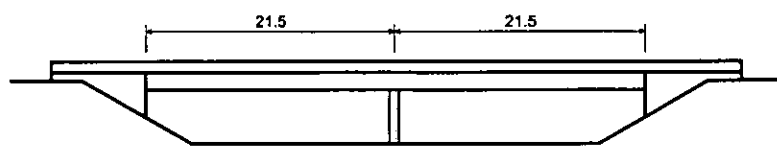
LOCATION: From the Kitchener-Waterloo Expressway (Highway 85) in Kitchener Easterly to the Hanlon Expressway (Highway 6) in Guelph

Key Map



- PROPOSED FULL INTERCHANGE LOCATIONS
- ◐ PROPOSED PARTIAL INTERCHANGE LOCATIONS

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	E-S Ramp and Connector Rd. Under CNR - S2
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	1.5m
S/D RATIO:	~14
CLEARANCE:	4.8m Required * 5.3m Provided
LENGTH:	43m
WIDTH:	10m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	43m x 10m x \$ 1,500/m ² = \$ 645,000
REMARKS:	<p>* Required minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)</p>

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	E-S Ramp over Kitchener Waterloo Expressway and Wellington St. - S3
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.2m
S/D RATIO:	25
CLEARANCE:	4.8m Required 5.0m Provided
LENGTH:	213m
WIDTH:	14.14m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	213m x 14.14m x \$ 1,500/m ² = \$ 4,520,000
REMARKS:	- Curved fly-over ramp. Right shoulder increased to 3.0m maximum because of deficient sight distance

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	E-S Ramp over Wellington - N and S - Wellington Ramps - S4
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	1.5m (CPCI 1200 Girders)
S/D RATIO:	~17
CLEARANCE:	5.0m Required 7.8m Provided
LENGTH:	52m
WIDTH:	13.64m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	52m x 13.64m x \$ 1,200/m ² = \$ 850,000
REMARKS:	

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	N-E Ramp over E/W-S Ramp - S6
BRIDGE TYPE:	Prestressed Concrete Girders
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	1.8m (CPCI 1500 Girders)
S/D RATIO:	~17
CLEARANCE:	5.0m Required 14.7m Provided
LENGTH:	71m
WIDTH:	11.39m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	71m x 11.39m x \$ 1,200/m ² = \$ 970,000
REMARKS:	<ul style="list-style-type: none"> - Curved bridge with chorded girders and variable deck slab overhangs - Right shoulder increased to 3.0m maximum because of deficient sight distance

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	N-E Ramp over E-S Ramp and KWE- S7
BRIDGE TYPE:	Post Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.4m
S/D RATIO:	25
CLEARANCE:	4.8m Required * 5.0m Provided
LENGTH:	164m
WIDTH:	11.39m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	164m x 11.39m x \$ 1,500/m ² = \$ 2,800,000
REMARKS:	<p>* Required minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)</p> <p>- Right shoulder increased to 3.0m maximum because of deficient sight distance</p>

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Ramp N-E over Wellington St. - Shirley Ave. and Connector Rd. - S8
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.4m
S/D RATIO:	25
CLEARANCE:	4.8m Required * 6.0m Provided
LENGTH:	176m
WIDTH:	10.89m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	176m x 10.89m x \$ 1,500/m ² = \$ 2,875,000
REMARKS:	* Required minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)

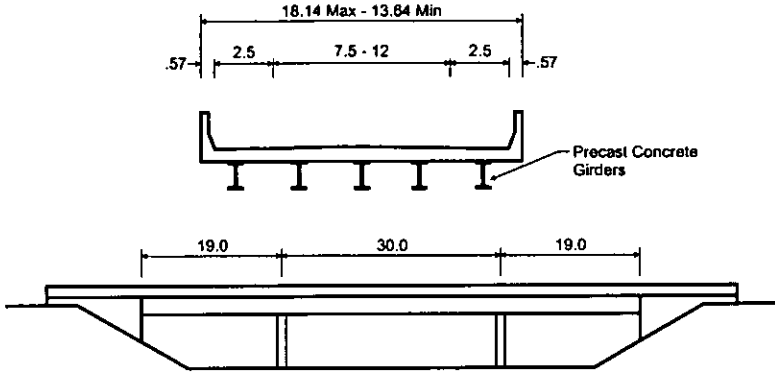
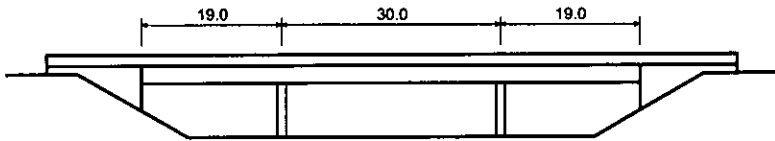
STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	S-E Ramp over Bruce Street Extension - S10
BRIDGE TYPE:	Reinforced Concrete Rigid Frame
CROSS-SECTION:	
ELEVATION:	
30° SKEW	
STRUCTURAL DEPTH:	0.6 - 1.2m
S/D RATIO:	15 - 30
CLEARANCE:	4.8m Required * 7.0m Provided
LENGTH:	19.2m
WIDTH:	22m
UNIT PRICE:	\$ 1,850/m ²
COSTS:	19.2m x 22m x \$ 1,850/m ² = \$ 780,000
REMARKS:	<p>* Revised minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)</p> <p>- Basket weave structure</p>

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	S-E Ramp over Wellington St. - Shirley Ave. - S11
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.0m
S/D RATIO:	25
CLEARANCE:	4.8m Required * 6.5m Provided
LENGTH:	110m
WIDTH:	13.64m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	110m x 13.64m x \$ 1,500/m ² = \$ 2,250,000
REMARKS:	* Revised minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	N-E Ramp and N-Wellington St. Ramp over Guelph St. - S12
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	1.8m (CPCI 1500 Girders)
S/D RATIO:	~17
CLEARANCE:	5.0m Required 12.4m Provided
LENGTH:	68m
WIDTH:	15.89m (average)
UNIT PRICE:	\$ 1,200/m ²
COSTS:	68m x 15.89m x \$ 1,200/m ² = \$ 1,300,000
REMARKS:	

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Bruce Street Extension under CNR - S13
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	1.3m
S/D RATIO:	~14
CLEARANCE:	4.8m Required * 4.8m Provided
LENGTH:	18.5m
WIDTH:	10m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	18.5m x 10m x \$ 1,500/m ² = \$ 280,000
REMARKS:	* Required minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Riverbend / Shirley Overpass - S19
BRIDGE TYPE:	Reinforced Concrete Rigid Frame (Twin)
CROSS-SECTION:	
ELEVATION:	
SKEW	
STRUCTURAL DEPTH:	0.5 - 1.0m
S/D RATIO:	15 - 30
CLEARANCE:	4.8m Required * __m Provided
LENGTH:	2 @ 17m
WIDTH:	2 @ 15.64
UNIT PRICE:	\$ 1,500/m ²
COSTS:	2 x 15.64m x 17m x \$ 1,500/m ² = \$ 800,000
REMARKS:	<p>* Revised minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)</p>

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Grand River Overpass - S20 (WBL), S21 (EBL)
BRIDGE TYPE:	Steel I Girders
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.0m girder + 0.225m slab
S/D RATIO:	25
CLEARANCE:	12.0m Provided
LENGTH:	WBL - 430m; EBL - 450m
WIDTH:	WBL - 14.64m; EBL - 12.14m to 14.64m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	WBL - 430m x 14.64m x \$ 1,500/m ² = \$ 9,500,000 EBL - (65 x 14.64 x 385 x 12.14) x \$ 1,500/m ² = \$ 8,500,000
REMARKS:	<p>EBL Structure</p> <ul style="list-style-type: none"> - SCL is carried only partially across the bridge <p>WBL Structure</p> <ul style="list-style-type: none"> - local flaring of the bridge may be required at the east abutment to accommodate the ramp from Bridge Street

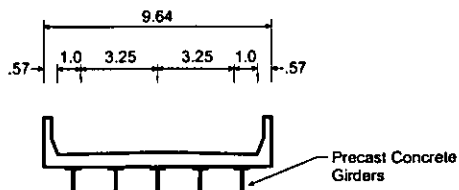
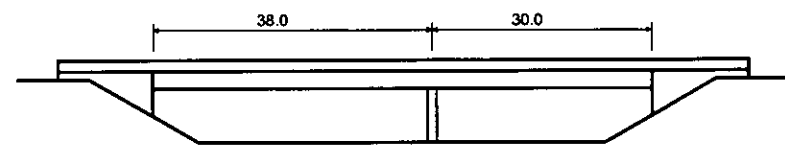
STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Service Road Underpass - S22
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
	0° SKEW
STRUCTURAL DEPTH:	1.9m (CPCI 1600 Girders)
S/D RATIO:	~17
CLEARANCE:	5.0m Required 5.2m Provided
LENGTH:	64m
WIDTH:	11.14m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	64m x 11.14m x \$ 1,200/m ² = \$ 860,000
REMARKS:	

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Regional Road 17 Underpass - S23
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
51° SKEW	
STRUCTURAL DEPTH:	1.7m
S/D RATIO:	26.5
CLEARANCE:	4.8m Required * 5.2m Provided
LENGTH:	144m
WIDTH:	20.14m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	144m x 20.14m x \$ 1,500/m ² = \$ 4,350,000
REMARKS:	* Revised minimum vertical clearance requirements for cast-in-place concrete bridges (CHBDC)

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Woolwich Road 66 Underpass - S24
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
SKIEW	
STRUCTURAL DEPTH:	1.9m (CPCI 1600 Girders)
S/D RATIO:	17
CLEARANCE:	5.0m Required 5.4m Provided
LENGTH:	68m
WIDTH:	9.64m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	68m x 9.64m x \$ 1,200/m ² = \$ 790,000
REMARKS:	

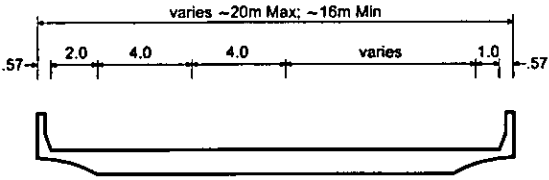
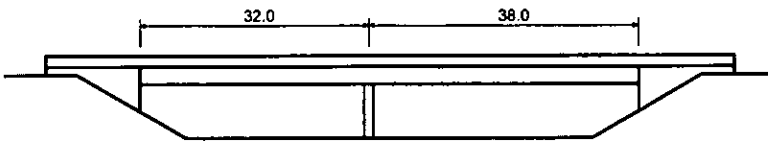
STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Hopewell Creek Overpass - S26 (WBL), S25 (EBL)
BRIDGE TYPE:	Precast Concrete Girders (Twin)
CROSS-SECTION:	
ELEVATION:	Precast Concrete Girders
SKEW:	EBL - 37° WBL - 0°
STRUCTURAL DEPTH:	1.8m (CPCI 1500 Girders)
S/D RATIO:	~ 16.5
CLEARANCE:	4.2m
LENGTH:	2 @ 30m
WIDTH:	2 @ 14.4m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	2(14.14m x 30m) x \$ 1,200/m ² = \$ 1,020,000
REMARKS:	

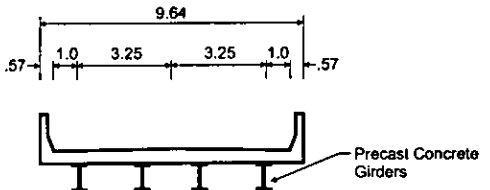
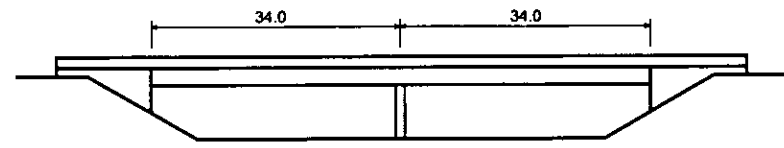
STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Woolwich Road 72 Underpass - S27
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
SKEW	
STRUCTURAL DEPTH:	2.2m (CPCI 1900 Girders)
S/D RATIO:	~ 15.5
CLEARANCE:	5.0m Required 5.0m Provided
LENGTH:	66m
WIDTH:	9.64m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	66m x 9.64m x \$ 1,200/m ² = \$ 764,000
REMARKS:	- Minimum shoulder widths of 1.0m provided for snow storage

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Regional Road 30 Underpass - S28
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
4° SKEW	
STRUCTURAL DEPTH:	1.5m
S/D RATIO:	25
CLEARANCE:	4.8m Required * 4.8m Provided
LENGTH:	70m
WIDTH:	16-20m
UNIT PRICE:	\$ 1,500/m ²
COSTS:	70m x 18m(avg) x \$ 1,500/m ² = \$ 1,890,000
REMARKS:	* Revised minimum vertical clearance requirements for cast-in-place concrete structures (CHBDC)

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Townline Road Underpass - S29
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
	8° SKEW
STRUCTURAL DEPTH:	2.2m (CPCI 1900 Girders)
S/D RATIO:	15.5
CLEARANCE:	5.0m Required 5.0m Provided
LENGTH:	68m
WIDTH:	9.64m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	68m x 9.64m x \$ 1,200/m ² = \$ 790,000
REMARKS:	

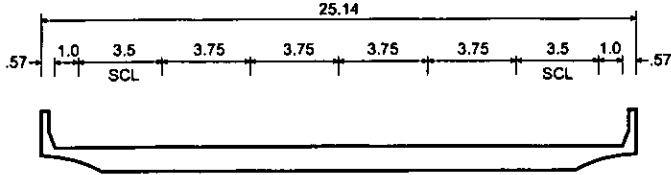
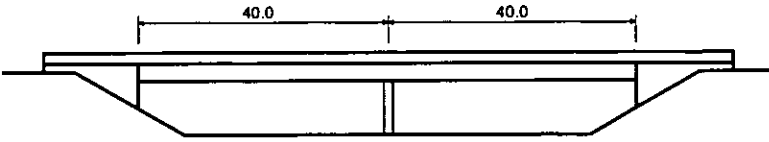
STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Guelph Road 3 Underpass - S30
BRIDGE TYPE:	Post-Tensioned Slab
CROSS-SECTION:	
ELEVATION:	
5° SKEW	
STRUCTURAL DEPTH:	2.2m (CPCI 1900 Girders)
S/D RATIO:	~ 18.0
CLEARANCE:	5.0m Required 5.2m Provided
LENGTH:	75m
WIDTH:	10.14m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	75m x 10.14m x \$ 1,200/m ² = \$ 915,000
REMARKS:	

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Ellis Creek Overpass - S31 (EBL), S32 (WBL)
BRIDGE TYPE:	Precast Concrete Girders (Twin)
CROSS-SECTION:	
ELEVATION:	
0° SKEW	
STRUCTURAL DEPTH:	2.2m (CPCI 1900 Girders)
S/D RATIO:	~17
CLEARANCE:	3.2m
LENGTH:	2 @ 235m
WIDTH:	2 @ 12.14m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	2 x (12.14m x 240m) x \$ 1,200/m ² = \$ 6,995,000
REMARKS:	- Structures overspan environmentally sensitive flood plane

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	County Road 86 Underpass - S33
BRIDGE TYPE:	Precast Concrete Girders
CROSS-SECTION:	
ELEVATION:	
	4° SKEW
STRUCTURAL DEPTH:	2.2m (CPCI 1900 Girders)
S/D RATIO:	~ 18.0
CLEARANCE:	5.0m Required 5.1m Provided
LENGTH:	80m
WIDTH:	25.14m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	80m x 25.14m x \$ 1,200/m ² = \$ 2,415,000
REMARKS:	

STRUCTURAL PLANNING SHEET

HIGHWAY NUMBER:	7 - Kitchener to Guelph
W.P. NUMBER:	408-88-00
DESCRIPTION:	Woodlawn Road Underpass - S34 (EBL); S35 (WBL)
BRIDGE TYPE:	Precast Concrete Girders (Twin)
CROSS-SECTION:	
ELEVATION:	
SKEW	
STRUCTURAL DEPTH:	1.7m (CPCI 1400 Girders)
S/D RATIO:	16
CLEARANCE:	5.0m Required 5.3m Provided
LENGTH:	27.5m
WIDTH:	EBL - 14.14m; WBL - 15.64m
UNIT PRICE:	\$ 1,200/m ²
COSTS:	$(14.14\text{m} + 15.64\text{m}) \times 27.5\text{m} \times \$ 1,200/\text{m}^2 = \$ 985,000$
REMARKS:	