

**Highway 404
From North of Queensville
Sideroad to Woodbine Ave.
/Ravenshoe Rd.**

W.P. No. 2005-07-00

**Contract Documents
90% Review Re-Submission**

Date: October 1, 2010

AECOM



**HIGHWAY 404
W.P. No. 2005-07-00**

PROPOSED WORK

Proposed Work

Group WP	WP Type	Contract No.	District	Highway
2005-07-00	COMP		Toronto	404

Included WP's :
2005-07-00 GRAD
2005-07-40 ELEC
2005-07-00 STRU

Type of Contract : Contract

Cost Centre :

Region : Central

Length : 5.4

Improvement Type : Grading, Drainage, Granular Base, Hot Mix Paving, Electrical, Structural

Location : From North of Queensville Sideroad to Woodbine Avenue-Ravenshoe Road

Regional Municipalities : Region of York

Municipalities : Town of East Gwillimbury

Electoral Districts : York-Simcoe

Secondary Highways :

Development Road :

Other Roads : Woodbine Avenue, Ravenshoe Road, Boag Road, Holborn Road

Proposed Work

Group WP	WP Type	Contract No.	District	Highway
2005-07-00	COMP		Toronto	404

Estimated Cost :

1)	Salaries and Wages (Engineering) :	\$0.00
2)	Transportation and Communications :	\$0.00
3)	Services :	
	Tender :	\$0.00
	Sundry :	\$91,190.00
	Miscellaneous :	\$0.00
		\$91,190.00
4)	Supplies by MTO :	\$32,800.00
5)	Acquisitions/Constructions :	
	Tender :	\$0.00
	Force Account Contingencies :	\$0.00
	Utilities and Work by Others :	\$1,470,000.00
		\$1,470,000.00
6)	Transfer Payments and Recoverables :	
	Transfer Payments :	\$0.00
	Less Recoverables :	\$0.00
		\$0.00
7)	Total Estimated Cost :	\$1,593,990.00

Recoverables From :

Contract Information :



**HIGHWAY 404
W.P. No. 2005-07-00**

SCHEDULES

General SSP List

Group WP 2005-07-00	WP Type COMP	Contract No.	District Toronto	Highway 404
SSP #		SSP #		
100S02		113S06		
100F08M		114S03		
100S14		118S01		
100S59		118S03		
100S60		118S04		
100S61		118S05		
100S64		118S06		
100S65		199F12		
101S18		199S17		
101F21		199S18		
103F17M		199F31		
103S20		199F33M		
103F31		199F34M		
103S35		199S38		
103S38		199F43		
103S39		199S44		
103F48		199S48		
103F49		199S53		
103S52		199S54		
104S02		199S55		
104S03		199S56		
105S10		199F57		
105S12		199S60		
105S14		199F61M		
105S20		199S62		
109S41				
109S42				
109S49				
109S52				
110F10				
110S11				
110S12				
110S13				
110F14				
111S09				
111F10M				
112S06				
112S07				
113S03				
113S05				

SSP/Item List

Group WP	WP Type	Contract No.	District	Highway
2005-07-00	COMP		Toronto	404
SSP #	Items		SSP #	Items
206F02M	7		915S02	264
206S03	6, 113, 126		915S03	264
305F01	8			
314S03	17, 18, 118, 119, 130			
351S02	20			
353S02	21			
399S41	121, 133			
407S06	28, 29, 30, 31, 32, 33, 34			
511S01	58, 59			
532S02	62, 64, 66, 122			
532F03M	62, 64, 122			
532S04	62			
532S09	61			
543F01M	73			
543S03M	74			
552S02	77, 78			
552S04	76			
553S03	79, 80			
553S05	81			
553F06	81			
553S08	81			
559S01	83			
577F02	85, 86			
599S19	83, 89, 90			
599S24	89, 90			
599S29	81, 82			
601S01	187			
614F01M	149, 165			
615S02	169			
617F01	153, 173			
620S04	174, 175, 176, 177, 178			
621S01	179, 180			
622F01M	181			
623S01	182, 185			
623S02M	183, 184			
682S07	144			
905S04	234, 249			
911S07	262			
911S09	262			
915S01	263			

NSP List

Group WP	WP Type	Contract No.	District	Highway	
2005-07-00	COMP		Toronto	404	
NSP #	Title		Iss. Date	Imp. Date	Items
00000001	Contractor's Release to City of Toronto Work's Yard Form		4/27/2006	4/27/2006	
00000002	Nursery Stock Suppliers Form		4/27/2006	4/27/2006	
00000003	Prevention of Asian Long Horned Beetle Infestation and Management of Host Trees		4/27/2006	4/27/2006	
00000004	Migratory Bird Protection - General		3/19/2010	3/19/2010	
EC1	General Environ Protection		5/29/2010	5/29/2010	
EC10	Protection of Migratory Birds		5/29/2010	5/29/2010	
EC11	Wildlife Protection - General		5/29/2010	5/29/2010	
EC13	Solid Waste Management		5/29/2010	5/29/2010	
EC14	Air Quality Protection - General		5/29/2010	5/29/2010	
EC15	Restriction of Open Burning		5/29/2010	5/29/2010	
EC16	Archaeology		5/29/2010	5/29/2010	
EC17	Equipment Refueling, Maintenance and Washing		5/29/2010	5/29/2010	
EC18	Spill Prevention and Response Contingency Plan		5/29/2010	5/29/2010	
EC2	Contractor Environ Protection Plan		5/29/2010	5/29/2010	
EC3	Erosion and Sedimentation Control - General		9/27/2010	9/27/2010	
EC4	Erosion and Sedimentation Control Plan		5/29/2010	5/29/2010	
EC5	Protection of Fisheries and Aquatic Habitat		5/29/2010	5/29/2010	
EC6	Watercourse/Fisheries Protection During Work in Watercourse and on Banks		5/29/2010	5/29/2010	
EC8	Protection of Groundwater		5/29/2010	5/29/2010	
EC9	Protection of Vegetation - General		5/29/2010	5/29/2010	
ELOP1	Electrical Operational Constraints - Power Coordination		5/20/2010	5/20/2010	
ELOP2	Electrical Operational Constraint - York Region Standards		5/20/2010	5/20/2010	
ENV0001	Management of Excess Earth with Salt Impact		4/4/2008	4/4/2008	
OC1	CTOD Sign Relocation		5/29/2010	5/29/2010	
OC10	Minimum Lane Width and Offset of TCB		5/29/2010	5/29/2010	
OC11	Winter Shutdown		5/29/2010	5/29/2010	
OC12	Protection of Structure		5/29/2010	5/29/2010	
OC13	Construction Access		5/29/2010	5/29/2010	
OC15	Temporary Boag Road Closure		5/29/2010	5/29/2010	
OC16	Pre-loading Fill		5/29/2010	5/29/2010	
OC17	Earth Hauling		5/29/2010	5/29/2010	
OC2	Construction Noise and Illumination for Nightwork		9/29/2010	9/29/2010	

NSP List

Group WP 2005-07-00	WP Type COMP	Contract No.	District Toronto	Highway 404
NSP #	Title	Iss. Date	Imp. Date	Items
OC3	Time Restriction at South Limit	3/10/2010	3/10/2010	
OC4	Relocation of Mailboxes	3/9/2010	3/9/2010	
OC5	Maintain Access to Exist Entrances	3/9/2010	3/9/2010	
OC6	Emergency Service Contact List	3/11/2010	3/11/2010	
OC7	Road Occupancy Permit	3/11/2010	3/11/2010	
OC8	Interim Completion Date	3/11/2010	3/11/2010	
G50	Clearing - Wood Chips	9/28/2010	9/28/2010	1, 2, 3
G27	Dewatering	5/29/2010	5/29/2010	6
G29	Subgrade Inspection	5/29/2010	5/29/2010	6
G36	Earth Excavation - Ballast Soil Cover	6/21/2010	6/21/2010	6
G43	Cobbles-Boulder Excavation	9/28/2010	9/28/2010	6, 113, 126
G45	Excavation (Backfill to Sub- excavation)	9/28/2010	9/28/2010	6, 113, 126
G33	Superpave Padding Mix	5/29/2010	5/29/2010	12, 116
G07	Hot Mix payment in m2	3/9/2010	3/9/2010	13, 14, 15, 16, 115, 116, 117, 128, 129
G56	Concrete Pavement - Bus Platform	9/28/2010	9/28/2010	19
350	Amendment to OPSS 350 (July 2007)	2/17/2009	2/17/2009	19, 132
G19	Precast Concrete Curb	5/29/2010	5/29/2010	23
G38	Raised Concrete Slab Island	7/8/2010	7/8/2010	25
G53	Subdrain (Geotextile Type)	9/28/2010	9/28/2010	26
G15	Oil Grit Separator System	5/29/2010	5/29/2010	35
G20	Pipe Sewer-Culvert Construction in Stages	5/29/2010	5/29/2010	36, 37, 38, 39, 40, 41, 44, 45, 46, 47, 48
G25	Clay Seal Liner for SWM Ponds & Outlet Pipe	5/29/2010	5/29/2010	49
G37	Concrete Gutter outlet & Spillway Removal	6/21/2010	6/21/2010	54
G30	Removal of Existing Gates	5/29/2010	5/29/2010	57
G52	Rip Rap in Ponds (Geotextile)	9/28/2010	9/28/2010	58
G44	Gravel Sheeting	9/28/2010	9/28/2010	59
G14	PM Obliterating (by grinding)	3/9/2010	3/9/2010	61
G48	PM Permanent Paint - York	9/28/2010	9/28/2010	62
G35	Pavement Marking Symbol - Wheelchair symbols	6/21/2010	6/21/2010	63
G31	PM General - York	5/29/2010	5/29/2010	64
G46	PM Durable Inlaid - York	9/28/2010	9/28/2010	64
G47	PM Durable - York	9/28/2010	9/28/2010	64
00000005	NSSP for Pavement Marking Durable/Pavement Marking Durable Symbol.	4/6/2010	4/6/2010	64, 65
53200001	PV Draft 1 - March, 2002	3/1/2002	3/1/2002	66
G13	Fibric on Highway Fence	3/9/2010	3/9/2010	68

NSP List

Group WP	WP Type	Contract No.	District	Highway	
2005-07-00	COMP		Toronto	404	
NSP #	Title		Iss. Date	Imp. Date	Items
G28	Wildlife Fence Attachment		5/29/2010	5/29/2010	71
G39	GMS - Contact for Bike Route Sign Pick-up		7/13/2010	7/13/2010	74
G51	Bike Route GMS		9/28/2010	9/28/2010	74
99995019	Advance Notification/Warning/Detour Route TC-64 Signs		7/1/2001	7/1/2001	75
G42	Median Snow Plow Marker		9/28/2010	9/28/2010	76
G12	Stinson Reflective Markers on TCB		3/9/2010	3/9/2010	81
G03	TCB Left in Place		3/9/2010	3/9/2010	82
G55	Snow Plow-Object Markers for SBEAT		9/28/2010	9/28/2010	83
G02	Permanent Rock Check		3/9/2010	3/9/2010	87
G54	Snow Plow-Object Markers for EA		9/28/2010	9/28/2010	89, 90
G10	Geogrid		3/9/2010	3/9/2010	91
G11	Geotextile		3/9/2010	3/9/2010	91
G01	Snow Fence		3/9/2010	3/9/2010	92
G26	Concrete Toe Wall		5/29/2010	5/29/2010	93
G16	Outlet Structure		5/29/2010	5/29/2010	94
G06	Ramp Closure Gate		3/9/2010	3/9/2010	95
G18	Swing Gate at Pond Access		5/29/2010	5/29/2010	96
G17	Wildlife Passage Substrate		5/29/2010	5/29/2010	97
G23	Monitoring Wells		5/29/2010	5/29/2010	98
G24	Well Decommissioning		5/29/2010	5/29/2010	99
G41	Concrete Block Spillway		7/8/2010	7/8/2010	100
G34	Seeding & Cover - Mix Requirements		5/29/2010	5/29/2010	103, 104
G08	Landscaping		3/9/2010	3/9/2010	105, 106, 107, 108, 109, 110, 111
G09	Landscaping Maintenance & Warranty		3/9/2010	3/9/2010	112
G49	Stripping Balance for Slope Flattening (Rigid)		9/28/2010	9/28/2010	126
G04	Contrast PM-Black Base		3/9/2010	3/9/2010	134
G40	Water Blasting for Pavement Markings on Concrete Pavement		5/29/2010	5/29/2010	134, 135
G05	Contrast PM-White Paint		3/9/2010	3/9/2010	135
G22	GO Pylon Sign		5/29/2010	5/29/2010	141
G21	GO Pre-fabricated Shelter-Concrete Slab		5/29/2010	5/29/2010	142
GO615	Steel Poles, Base Mounted		5/20/2010	5/20/2010	150
62301	Emergency Vehicle Pre-emption Equipment		5/23/2010	5/23/2010	186
YR60201	Electrical Handholes		5/20/2010	5/20/2010	188
YR60301	Rigid Ducts, Direct Buried		5/20/2010	5/20/2010	189, 190
YR60302	Rigid Ducts by Subsurface Installation		5/20/2010	5/20/2010	191

NSP List

Group WP 2005-07-00	WP Type COMP	Contract No.	District Toronto	Highway 404
NSP #	Title	Iss. Date	Imp. Date	Items
YR60401	Low Voltage Cables in Ducts	5/20/2010	5/20/2010	192, 193
YR60402	Extra Low Voltage Cables in Ducts	5/20/2010	5/20/2010	194
YR60403	Traffic Signal Cables, in Ducts	5/20/2010	5/20/2010	195, 196
YR60404	Steel Messenger Cables, Aerial (Temporary)	5/20/2010	5/20/2010	198
YR60405	ACSR Cables, Aerial (Temporary)	5/20/2010	5/20/2010	199
YR60901	Ground Wires	5/20/2010	5/20/2010	200, 201
YR60902	Ground Electrodes	5/20/2010	5/20/2010	202, 203
YR61001	Removal of Electrical Equipment	5/20/2010	5/20/2010	204
YR61401	Supply Control Cabinet Assembly	5/20/2010	5/20/2010	205
YR61501	Wood Poles, Direct Buried in Earth (Temporary)	5/20/2010	5/20/2010	206
YR61502	Sectional Steel Poles, Base Mounted	5/20/2010	5/20/2010	207
YR61503	Guy Anchors (Temporary)	5/20/2010	5/20/2010	208
YR61601	Concrete Footings in Earth	5/20/2010	5/20/2010	209
YR61602	Concrete Pads	5/20/2010	5/20/2010	210
YR61701	Roadway Lighting Luminaires and Bracket Assemblies	5/20/2010	5/20/2010	211, 212
YR62001	Single Member Arms and Signal Hangers	5/20/2010	5/20/2010	213
YR62002	Double Arm Brackets	5/20/2010	5/20/2010	214
YR62003	Highway Type Signal Heads	5/20/2010	5/20/2010	215, 216
YR62004	Special Type Signal Heads	5/20/2010	5/20/2010	217, 218
YR62005	Pedestrian Type Signal Heads	5/20/2010	5/20/2010	219
YR62201	Traffic Signal Controllers	5/20/2010	5/20/2010	220
YR62301	Loop Detectors	5/20/2010	5/20/2010	221
YR62302	Traffic Counting Station	5/20/2010	5/20/2010	222
YR62303	Pedestrian Pushbuttons	5/20/2010	5/20/2010	223
09020010	Earth Excavation for Structure	9/30/2010	9/30/2010	224, 239
09020030	Dewatering Structure Excavations	3/5/2010	3/5/2010	225, 240
09040035	Mass Concrete	3/5/2010	3/5/2010	226, 241, 256
09040000	Form Liner	3/5/2010	3/5/2010	228, 229, 230, 231, 243, 244, 245, 246
09040085	Concrete in Substructure	3/5/2010	3/5/2010	228, 243
09040135	Concrete in Approach Slabs	3/5/2010	3/5/2010	232, 247
09130040	Embedded Work in Structure (Utility)	3/5/2010	3/5/2010	235, 250
99990462	Precast Concrete Arch Culvert - Reinforced	3/5/2010	3/5/2010	260
99995823	Temporary Flow Passage System	3/5/2010	3/5/2010	261
G32	Signboard for Steel Breakaway Signs	5/29/2010	5/29/2010	264



HIGHWAY 404
W.P. No. 2005-07-00

REFERENCE REPORTS

Services Sundry (4)

Group WP	WP Type	Contract No.	District	Highway
2005-07-00	COMP		Toronto	404
Description	U.O.M.	Quantity	Unit Price	Total
Removal of Sediment from Straw Bales	each	348	\$120.00	\$41,760.00
Removal of Sediment from Silt Fence	m	4,443	\$10.00	\$44,430.00
Regional Police - Traffic Control	lump sum	1	\$5,000.00	\$5,000.00
Grand Total:				\$91,190.00

Supplies by MTO to Contractors (5)

Group WP	WP Type	Contract No.	District	Highway
2005-07-00	COMP		Toronto	404

(A) The MTO supplies the following materials F.O.B. haulage vehicle at a point within the limits of the contract which shall be as requested by the contractor but subject to the approval of the engineer:

Description	Supply Point	U.O.M.	Quantity	Unit Price	Total
Sub Total:					\$0.00

(B) The MTO supplies the following materials as indicated below:

Description	Supply Point	U.O.M.	Quantity	Unit Price	Total
Ground Mounted Signs	MTO Provincial Sign Shop 1927 Kipling Ave. Rexdale, ON	each	162	\$200.00	\$32,400.00
Major Contract Identification Signs (MCIS)	MTO Sign Shop 1927 Kipling Ave. Rexdale, ON	each	2	\$200.00	\$400.00
Date and Site Figures	1201 Wilson Ave. Building D Downsview, ON	each	6		
Sub Total:					\$32,800.00
Grand Total:					\$32,800.00

Acquisitions/Constructions of Physical Assets (6)

Group WP	WP Type	Contract No.	District	Highway	
2005-07-00	COMP		Toronto	404	
Force Accounts and Contingencies		U.O.M.	Quantity	Unit Price	Total
Asphalt Bonus		lump sum	1		
Concrete Bonus		lump sum	1		
				Sub Total:	\$0.00
Utilities and Work by Others			Work Order	Utility Order	Total
Hydro One Distribution - Relocations			D-5632		\$50,000.00
Hydro One Transmission - Tower Relocations			D-5682		\$1,420,000.00
Enbridge Gas - Relocation					
Bell Canada - Relocations					
				Sub Total:	\$1,470,000.00
				Grand Total:	\$1,470,000.00

Recoverables (9)

Group WP 2005-07-00	WP Type COMP	Contract No.	District Toronto	Highway 404
-------------------------------	------------------------	---------------------	----------------------------	-----------------------

Recoverables to Ministry :

Description	Recover From	Agreem't Type	Acq/Const of Physical Assets (*)	Others (**)	Total
N/A					
				Sub Total:	\$0.00

Recoverables to Province :

Description	Recover From	Agreem't Type	Acq/Const of Physical Assets (*)	Others (**)	Total
N/A					
				Sub Total:	\$0.00
				Grand Total:	\$0.00

* comprises: Tender, Force Accounts and Contingencies

** comprises: Engineering and Engineering Expenses, Supplies, Equipment, Services



TENDER CLOSING DATE IS 11:00 A.M. LOCAL (TORONTO) TIME

TENDER

FOR Grading, Drainage, Granular Base, Hot Mix Paving,
Electrical, Structural

- (A) NECESSARY AVAILABLE FINANCIAL RATING IS \$
NECESSARY AVAILABLE MAXIMUM WORKLOAD RATING IS \$

AT

HWY. 404 - From North of Queensville Sideroad to Woodbine
Avenue-Ravenshoe Road

5.4 km

Central Region

UNDER CONTRACT NO.

- (B) THIS CONTRACT IS APPLICABLE TO QUALIFIED CONTRACTORS ONLY

BY

NAME OF FIRM OR INDIVIDUAL (HEREAFTER REFERRED TO AS "CONTRACT CONTRACTOR")

ADDRESS

NAME OF PERSON SIGNING FOR FIRM

OFFICE OF PERSON SIGNING FOR FIRM

Table of Contents

	Page
<u>Contract Tender Items List</u>	
<u>Instructions for Tenderers</u>	<u>1</u>
<u>Conflict of Interest</u>	<u>7</u>
<u>Schedule of Provisions, Plans, Standard Drawings and Specifications</u>	<u>11</u>
<u>General Conditions</u>	<u>17</u>
<u>Tax Compliance Declaration</u>	<u>18</u>
<u>Special Provisions</u>	
<u>Notice to Contractor</u>	<u>19</u>
<u>Contractor's Release to City of Toronto Work's Yard Form</u>	<u>19</u>
<u>Nursery Stock Suppliers Form</u>	<u>20</u>
<u>Prevention of Asian Long Horned Beetle Infestation and Management of Host Trees</u>	<u>21</u>
<u>Migratory Bird Protection - General</u>	<u>23</u>
<u>General Environ Protection</u>	<u>25</u>
<u>Protection of Migratory Birds</u>	<u>25</u>
<u>Wildlife Protection - General</u>	<u>26</u>
<u>Solid Waste Management</u>	<u>27</u>
<u>Air Quality Protection - General</u>	<u>27</u>
<u>Restriction of Open Burning</u>	<u>28</u>
<u>Archaeology</u>	<u>28</u>
<u>Equipment Refueling, Maintenance and Washing</u>	<u>29</u>
<u>Spill Prevention and Response Contingency Plan</u>	<u>29</u>
<u>Contractor Environ Protection Plan</u>	<u>30</u>
<u>Erosion and Sedimentation Control - General</u>	<u>31</u>
<u>Erosion and Sedimentation Control Plan</u>	<u>32</u>
<u>Protection of Fisheries and Aquatic Habitat</u>	<u>33</u>
<u>Watercourse/Fisheries Protection During Work in Watercourse and on Banks</u>	<u>35</u>
<u>Protection of Groundwater</u>	<u>37</u>
<u>Protection of Vegetation - General</u>	<u>37</u>
<u>Electrical Operational Constraints - Power Coordination</u>	<u>39</u>
<u>Electrical Operational Constraint - York Region Standards</u>	<u>40</u>

Management of Excess Earth with Salt Impact	41
CTOD Sign Relocation	42
Minimum Lane Width and Offset of TCB	42
Winter Shutdown	43
Protection of Structure	44
Construction Access	44
Temporary Boag Road Closure	45
Pre-loading Fill	45
Earth Hauling	46
Construction Noise and Illumination for Nightwork	46
Time Restriction at South Limit	47
Relocation of Mailboxes	47
Maintain Access to Exist Entrances	48
Emergency Service Contact List	49
Road Occupancy Permit	49
Interim Completion Date	50
PROTECTION OF PUBLIC TRAFFIC - Restrictions on Construction Operations	50
OCCUPATIONAL HEALTH AND SAFETY ACT COMPLIANCE - List of Designated Substances	56
AMENDMENT TO OPSS 313, April 2007 - Placing Hot Mix Before Winter Shutdown	58
AMENDMENT TO OPSS 313, APRIL 2007 - Asphaltic Concrete Payment Adjustment for Surface Smoothness	59
AMENDMENT TO OPSS 313, APRIL 2007 - Additional HMA Definition and Construction Criteria	73
AMENDMENT TO OPSS 313, APRIL 2007 AND OPSS 1151, APRIL 2007 - Anti-Stripping Additive Requirements	75
USE OF AIR COOLED IRON BLAST FURNACE SLAG AS GRANULAR MATERIAL	77
INFORMATION TO BIDDERS REGARDING AGGREGATE SOURCES - General	80
AMENDMENT TO OPSS 1151, APRIL 2007 - HMA Mix Design and Additional Materials Requirements	81
ENVIRONMENTALLY SENSITIVE AREAS	83
ENVIRONMENTAL EXEMPTIONS AND PERMITS	85
CONSTRUCTION NOISE CONSTRAINTS - Noise Sensitive Areas	85
IDENTIFICATION OF LOCAL REGULATORY AUTHORITIES	86
OTHER CONTRACTORS WITHIN OR ADJACENT TO THE LIMITS OF THE CONTRACT	88
GENERAL REQUIREMENTS OF SAMPLES FOR QUALITY ASSURANCE, REFEREE AND OTHER TESTING BY THE OWNER OR THE OWNER'S AGENT	89
AVAILABLE DIGITAL INFORMATION, DURING ADVERTISING AND CONSTRUCTION	90

CLEARING - Item No. 1, 2	92
CLOSE CUT CLEARING - Item No. 3	
EARTH EXCAVATION (GRADING) - Item No. 6	92
EARTH EXCAVATION (GRADING) - Item No. 6, 113, 126	95
EARTH DITCH CLEANOUT - Item No. 7	96
GRANULAR SEALING - Item No. 8	96
SUPERPAVE 19.0 - Item No. 12, 116	99
SUPERPAVE 12.5 - Item No. 13	99
SUPERPAVE 12.5 FC2 - Item No. 14, 115, 128	
SUPERPAVE 19.0 - Item No. 15, 116, 129	
SUPERPAVE 25.0 - Item No. 16, 117	
CONCRETE PAVEMENT - Item No. 19	105
CONCRETE PAVEMENT - Item No. 19, 132	105
PRECAST CONCRETE CURB - Item No. 23	125
RAISED CONCRETE SLAB ISLAND - Item No. 25	126
PIPE SUBDRAINS - Item No. 26	127
OIL-GRIT SEPARATOR SYSTEM - Item No. 35	127
200 MM PIPE SEWER - Item No. 36	128
300 MM PIPE SEWER - Item No. 37	
500 MM PIPE SEWER - Item No. 38	
600 MM PIPE SEWER - Item No. 39	
800 MM PIPE SEWER - Item No. 40	
1200 MM PIPE SEWER - Item No. 41	
500 MM PIPE CULVERT - Item No. 44	
700 MM PIPE CULVERT - Item No. 45	
800 MM PIPE CULVERT - Item No. 46	
900 MM PIPE CULVERT - Item No. 47	
1000 MM PIPE CULVERT - Item No. 48	
CLAY SEAL - Item No. 49	129
REMOVAL OF CONCRETE CURB AND GUTTER - Item No. 54	130
REMOVAL OF FENCE - Item No. 57	130
RIP RAP - Item No. 58	131
GRAVEL SHEETING - Item No. 59	132
PAVEMENT MARKING OBLITERATING - BY GRINDING - Item No. 61	132
PAVEMENT MARKING - Item No. 62	132
PAVEMENT MARKING - Item No. 62	133
PAVEMENT MARKING, DURABLE - Item No. 64, 122	
PAVEMENT MARKING SYMBOLS - Item No. 63	134
PAVEMENT MARKING, DURABLE - Item No. 64	134
PAVEMENT MARKING, DURABLE - Item No. 64	137

PAVEMENT MARKING SYMBOLS, DURABLE - Item No. 65	
PAVEMENT MARKING, TEMPORARY - Item No. 66	138
HIGHWAY FENCE - Item No. 68	140
CHAIN LINK FENCE - Item No. 71	141
TRAFFIC CONTROL SIGNING - Item No. 73	142
GROUND MOUNTED SIGNS - Item No. 74	148
ADVANCED NOTIFICATION/WARNING/DETOUR ROUTE TC-64 SIGNS - Item No. 75	160
DELINEATOR POSTS - Item No. 76	161
TEMPORARY CONCRETE BARRIER - Item No. 81	162
TEMPORARY CONCRETE BARRIER LEFT IN PLACE - Item No. 82	163
STEEL BEAM ENERGY ATTENUATING TERMINAL SYSTEM - Item No. 83	164
HEAVY-DUTY SILT FENCE BARRIERS - Item No. 85	164
STRAW BALE FLOW CHECK DAMS - Item No. 86	
PERMANENT ROCK FLOW CHECKS - Item No. 87	165
ENERGY ATTENUATOR - PERMANENT, SINGLE SIDED - Item No. 89	167
ENERGY ATTENUATOR - TEMPORARY, NARROW - Item No. 90	
GEOGRID - Item No. 91	168
SNOW FENCE - Item No. 92	169
CONCRETE IN TOE WALL - Item No. 93	170
OUTLET STRUCTURES - Item No. 94	171
RAMP CLOSURE GATES - Item No. 95	173
SWING GATES - Item No. 96	177
WILDLIFE PASSAGE SUBSTRATE - Item No. 97	180
MONITORING WELLS - Item No. 98	181
WELL DECOMMISSIONING - Item No. 99	182
CONCRETE BLOCK SPILLWAY - Item No. 100	184
SEED AND MULCH - Item No. 103	189
SEED AND BONDED FIBRE MATRIX - Item No. 104	
SHRUBS, 600 MM HEIGHT - Item No. 105	192
CONIFEROUS TREES, 1.25 M HEIGHT - Item No. 106	
CONIFEROUS TREES, 1.5 M HEIGHT - Item No. 107	
CONIFEROUS TREES, 2.0 M HEIGHT - Item No. 108	
DECIDUOUS TREES, 2.5 M HEIGHT - Item No. 109	
DECIDUOUS TREES, 50 MM CALIPER - Item No. 110	
DECIDUOUS TREES, 60 MM CALIPER - Item No. 111	
MAINTENANCE AND WARRANTY FOR LANDSCAPE PLANTING - Item No. 112	202
EARTH EXCAVATION (GRADING) - Item No. 126	204
PAVEMENT MARKING, BLACK BASE CONTRAST MARKING - Item No. 134	204

PAVEMENT MARKING, BLACK BASE CONTRAST MARKING - Item No. 134	206
PAVEMENT MARKING, SPRAY FIELD REACTED POLYMERIC - Item No. 135	
PAVEMENT MARKING, SPRAY FIELD REACTED POLYMERIC - Item No. 135	207
GO BUS PYLON ID SIGN - Item No. 141	210
GO BUS PREFABRICATED PLATFORM SHELTER - Item No. 142	213
DISTRIBUTION ASSEMBLIES - Item No. 149	235
SUPPLY CONTROL CABINET ASSEMBLIES - Item No. 165	
STEEL POLES, BASE MOUNTED - Item No. 150	237
ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES - Item No. 153, 173	237
TRAFFIC SIGNAL CONTROLLERS - Item No. 181	238
PREFABRICATED LOOPS - Item No. 183	246
TRAFFIC COUNTING STATION - Item No. 184	
EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT - Item No. 186	252
ELECTRICAL HANDHOLES - Item No. 188	253
RIGID DUCTS, DIRECT BURIED - Item No. 189	254
RIGID DUCTS, DIRECT BURIED (TEMPORARY) - Item No. 190	
RIGID DUCTS BY SUBSURFACE INSTALLATION - Item No. 191	256
LOW VOLTAGE CABLES, IN DUCTS - Item No. 192	257
LOW VOLTAGE CABLES, IN DUCTS (TEMPORARY) - Item No. 193	
EXTRA LOW VOLTAGE CABLES, IN DUCTS - Item No. 194	258
TRAFFIC SIGNAL CABLES, IN DUCTS - Item No. 195	259
TRAFFIC SIGNAL CABLES, IN DUCTS (TEMPORARY) - Item No. 196	
STEEL MESSENGER CABLES, AERIAL (TEMPORARY) - Item No. 198	260
ACSR CABLES, AERIAL (TEMPORARY) - Item No. 199	261
GROUND WIRES - Item No. 200	261
GROUND WIRES (TEMPORARY) - Item No. 201	
GROUND ELECTRODES - Item No. 202	263
GROUND ELECTRODES (TEMPORARY) - Item No. 203	
REMOVAL OF ELECTRICAL EQUIPMENT - Item No. 204	263
SUPPLY CONTROL CABINET ASSEMBLIES - Item No. 205	265
WOOD POLES, DIRECT BURIED IN EARTH (TEMPORARY) - Item No. 206	266
SECTIONAL STEEL POLES, BASE MOUNTED - Item No. 207	267
GUY ANCHORS (TEMPORARY) - Item No. 208	267
CONCRETE FOOTINGS IN EARTH - Item No. 209	268
CONCRETE PADS - Item No. 210	268
ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES - Item No. 211	269
ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES (TEMPORARY) - Item No. 212	

SINGLE MEMBER ARMS AND SIGNAL HANGERS - Item No. 213	270
DOUBLE ARM BRACKETS - Item No. 214	270
HIGHWAY TYPE SIGNAL HEADS - Item No. 215	270
HIGHWAY TYPE SIGNAL HEADS (TEMPORARY) - Item No. 216	
SPECIAL TYPE SIGNAL HEADS - Item No. 217	271
SPECIAL TYPE SIGNAL HEADS (TEMPORARY) - Item No. 218	
PEDESTRIAN TYPE SIGNAL HEADS - Item No. 219	272
TRAFFIC SIGNAL CONTROLLERS - Item No. 220	273
LOOP DETECTORS - Item No. 221	275
TRAFFIC COUNTING STATION - Item No. 222	276
PEDESTRIAN PUSHBUTTONS - Item No. 223	276
EARTH EXCAVATION FOR STRUCTURE - Item No. 224, 239	277
DEWATERING STRUCTURE EXCAVATIONS - Item No. 225, 240	278
MASS CONCRETE - Item No. 226, 241, 256	279
CONCRETE IN SUBSTRUCTURE - Item No. 228, 243	279
CONCRETE IN SUBSTRUCTURE AND RETAINING WALLS - Item No. 229, 244	
CONCRETE IN DECK - Item No. 230, 245	
CONCRETE IN BARRIER WALLS - Item No. 231, 246	
CONCRETE IN SUBSTRUCTURE - Item No. 228, 243	280
CONCRETE IN APPROACH SLABS - Item No. 232, 247	281
EMBEDDED WORK IN STRUCTURE (UTILITY) - Item No. 235, 250	281
PRECAST CONCRETE ARCH CULVERT - REINFORCED - Item No. 260	282
TEMPORARY FLOW PASSAGE SYSTEM - Item No. 261	284
STEEL COLUMN BREAKAWAY SIGN SUPPORT STRUCTURES - Item No. 264	286

Schedule Of Material	287
Liquidated Damages	288

General

Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
1	0201-0010	SP Clearing	ha (P)	9.71		
2	0201-0020	SP Clearing	each (P)	147		
3	0201-0050	SP Close Cut Clearing	ha (P)	5.40		
4	0201-0070	Grubbing	ha (P)	9.71		
5	0201-0080	Grubbing	each (P)	147		
6	0206-0010	SP Earth Excavation (Grading)	m3 (P)	194,112		
7	0206-0015	SP Earth Ditch Cleanout	m (P)	91		
8	0305-0010	SP Granular Sealing	m2 (P)	41,176		
9	0308-0010	Tack Coat	m2 (P)	167,269		
10	0313-1370	Hot Mix Asphalt Miscellaneous	m2 (P)	451		
11	0313-1375	Superpave 12.5 FC2	t	5,491		
12	0313-1376	SP Superpave 19.0	t	17,192		
13	0313-1382	SP Superpave 12.5	m2 (P)	8,000		
14	0313-1384	SP Superpave 12.5 FC2	m2 (P)	12,304		
15	0313-1385	SP Superpave 19.0	m2 (P)	14,324		
16	-3032	SP Superpave 25.0	m2 (P)	8,645		
17	0314-0071	SP Granular A	t	57,975		
18	0314-0130	SP Granular B, Type I	t	80,822		
19	0350-0010	SP Concrete Pavement	m2 (P)	1,998		
20	0351-0010	SP Concrete in Sidewalk	m2 (P)	53		
21	0353-0011	SP Concrete Curb and Gutter	m (P)	1,322		
22	0353-0020	Concrete Gutter Outlets	each (P)	3		

23	-3530	SP	Precast Concrete Curb	each (P)	5		
24	0355-0010		Interlocking Concrete Pavers	m2 (P)	332		
25	-3509	SP	Raised Concrete Slab Island	m2 (P)	174		
26	0405-0010	SP	Pipe Subdrains	m (P)	12,190		
27	0405-0015		Closed Circuit Television Inspection	m	2,200		
28	0407-0010	SP	600 mm x 600 mm Manholes Catch Basins and Ditch Inlets	each (P)	3		
29	0407-0040	SP	1200 mm Manholes Catch Basins and Ditch Inlets	each (P)	10		
30	0407-0060	SP	1500 mm Manholes Catch Basins and Ditch Inlets	each (P)	4		
31	0407-0080	SP	1800 mm Manholes Catch Basins and Ditch Inlets	each (P)	6		
32	0407-0090	SP	1800 mm Manholes Catch Basins and Ditch Inlets, Over 4 m	each (P)	1		
33	0407-0100	SP	2400 mm Manholes Catch Basins and Ditch Inlets	each (P)	3		
34	0407-0110	SP	2400 mm Manholes Catch Basins and Ditch Inlets, Over 4 m	each (P)	1		
35	-5002	SP	Oil-Grit Separator System	each (P)	1		
36	0410-0200	SP	200 mm Pipe Sewer	m (P)	17		
37	0410-0300	SP	300 mm Pipe Sewer	m (P)	141		
38	0410-0500	SP	500 mm Pipe Sewer	m (P)	142		
39	0410-0600	SP	600 mm Pipe Sewer	m (P)	226		
40	0410-0800	SP	800 mm Pipe Sewer	m (P)	473		
41	0410-1200	SP	1200 mm Pipe Sewer	m (P)	229		
42	0410-4500		Concrete Appurtenances (for Pipe Sewers)	m3 (P)	21.5		
43	0421-0305		300 mm Pipe Culvert	m (P)	81		

44	0421-0505	SP	500 mm Pipe Culvert	m (P)	251		
45	0421-0705	SP	700 mm Pipe Culvert	m (P)	105		
46	0421-0805	SP	800 mm Pipe Culvert	m (P)	447		
47	0421-0905	SP	900 mm Pipe Culvert	m (P)	77		
48	0421-1005	SP	1000 mm Pipe Culvert	m (P)	91		
49	0421-6400	SP	Clay Seal	lump sum	100 %		
50	0421-6500		Concrete Appurtenances (for Pipe Culverts)	m3 (P)	40.2		
51	0510-3130		Cutting Existing Pavement	m (P)	423		
52	0510-3133		Removal of Asphalt Pavement	m2 (P)	4,509		
53	0510-3137		Removal of Asphalt Pavement, Partial Depth	m2 (P)	22,538		
54	0510-3532	SP	Removal of Concrete Curb and Gutter	m (P)	372		
55	0510-4071		Removal of Maintenance Holes, Catch Basins, Ditch Inlets and Valve Chambers	each (P)	2		
56	0510-4210		Removal of Pipes and Culverts	m (P)	246		
57	0510-5401	SP	Removal of Fence	m (P)	8,316		
58	0511-0010	SP	Rip Rap	m2 (P)	1,776		
59	0511-0030	SP	Gravel Sheeting	m2 (P)	500		
60	0511-0040		Geotextile	m2 (P)	46,232		
61	0532-0008	SP	Pavement Marking Obliterating - By Grinding	m (P)	15,625		
62	0532-0010	SP	Pavement Marking	m (P)	10,649		
63	0532-0020	SP	Pavement Marking Symbols	each (P)	5		
64	0532-0030	SP	Pavement Marking, Durable	m (P)	7,870		
65	0532-0040	SP	Pavement Marking Symbols, Durable	each (P)	49		

66	0532-0050	SP	Pavement Marking, Temporary	m (P)	26,197		
67	0532-0060		Pavement Marking Symbols, Temporary	each (P)	29		
68	0540-0010	SP	Highway Fence	m (P)	11,702		
69	0540-0020		Brace Panels	each (P)	87		
70	0540-0030		Gates	each (P)	3		
71	0541-0011	SP	Chain Link Fence	m (P)	3,659		
72	0541-0013		Gates	each (P)	3		
73	0543-0010	SP	Traffic Control Signing	lump sum	100 %		
74	0543-0020	SP	Ground Mounted Signs	each (P)	162		
75	-5019	SP	Advanced Notification/Warning/Detour Route TC-64 Signs	each (P)	22		
76	0552-0030	SP	Delineator Posts	each (P)	143		
77	0552-0050	SP	Single Rail Steel Beam Guide Rail	m (P)	457		
78	0552-0060	SP	Single Rail Steel Beam Guide Rail with Channel	m (P)	113		
79	0553-0010	SP	Concrete Barrier	m (P)	60		
80	0553-0015	SP	Tall Wall Barrier	m (P)	112		
81	0553-0020	SP	Temporary Concrete Barrier	m (P)	1,358		
82	-5675	SP	Temporary Concrete Barrier Left in Place	m (P)	520		
83	0559-0100	SP	Steel Beam Energy Attenuating Terminal System	each (P)	5		
84	0565-0010		Barrier for Tree Protection	m (P)	3,289		
85	0577-0060	SP	Heavy-Duty Silt Fence Barriers	m (P)	4,443		
86	0577-0100	SP	Straw Bale Flow Check Dams	each (P)	348		
87	-5137	SP	Permanent Rock Flow Checks	each (P)	1		

88	-0909		Dewatering	lump sum	100 %		
89	-4104	SP	Energy Attenuator - Permanent, Single Sided	each (P)	2		
90	-4105	SP	Energy Attenuator - Temporary, Narrow	each (P)	13		
91	-5311	SP	Geogrid	m2	53,988		
92	-5320	SP	Snow Fence	m	933		
93	0904-0150	SP	Concrete in Toe Wall	lump sum	100 %		
94	-0453	SP	Outlet Structures	each (P)	5		
95	-0542	SP	Ramp Closure Gates	each (P)	2		
96	-5402	SP	Swing Gates	each	5		
97	-5407	SP	Wildlife Passage Substrate	m3 (P)	420		
98	-5132	SP	Monitoring Wells	each (P)	5		
99	-5149	SP	Well Decommissioning	each (P)	24		
100	-5752	SP	Concrete Block Spillway	m2 (P)	661		

Landscaping

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
101	0570-0020		Topsoil from Stockpiles	m3	3,131		
102	0571-0005		Sod	m2 (P)	1,442		
103	0572-0051	SP	Seed and Mulch	m2 (P)	24,052		
104	0572-0053	SP	Seed and Bonded Fibre Matrix	m2 (P)	37,084		
105	-5402	SP	Shrubs, 600 mm Height	each (P)	3,797		
106	-5407	SP	Coniferous Trees, 1.25 m Height	each (P)	449		
107	-5408	SP	Coniferous Trees, 1.5 m Height	each (P)	115		
108	-5409	SP	Coniferous Trees, 2.0 m Height	each (P)	88		
109	-5412	SP	Deciduous Trees, 2.5 m Height	each (P)	60		

110	-5415	SP	Deciduous Trees, 50 mm Caliper	each (P)	42		
111	-5416	SP	Deciduous Trees, 60 mm Caliper	each (P)	44		
112	-5418	SP	Maintenance and Warranty for Landscape Planting	lump sum	100 %		

Flexible Pavement Design (Option A)

Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
113	0206-0010	SP Earth Excavation (Grading)	m3 (P)	990,219		
114	0308-0010	Tack Coat	m2 (P)	280,459		
115	0313-1384	SP Superpave 12.5 FC2	m2 (P)	122,787		
116	0313-1385	SP Superpave 19.0	m2 (P)	201,623		
117	-3032	SP Superpave 25.0	m2 (P)	78,836		
118	0314-0071	SP Granular A	t	125,020		
119	0314-0130	SP Granular B, Type I	t	290,400		
120	0320-0020	Open Graded Drainage Layer	m2 (P)	90,620		
121	-3136	SP Shoulder Rumble Strips - Asphalt	m (P)	18,304		
122	0532-0030	SP Pavement Marking, Durable	m (P)	22,645		
123	0570-0020	Topsoil from Stockpiles	m3	11,573		
124	0572-0051	Seed and Mulch	m2 (P)	134,419		
125	0572-0053	Seed and Bonded Fibre Matrix	m2 (P)	97,041		

Rigid Pavement Design (Option B)

Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
126	0206-0010	SP Earth Excavation (Grading)	m3 (P)	786,036		
127	0308-0010	Tack Coat	m2 (P)	39,037		
128	0313-1384	SP Superpave 12.5 FC2	m2 (P)	39,037		
129	0313-1385	SP Superpave 19.0	m2 (P)	39,037		
130	0314-0071	SP Granular A	t	211,221		

131	0320-0020		Open Graded Drainage Layer	m2 (P)	101,412		
132	0350-0010	SP	Concrete Pavement	m2 (P)	83,738		
133	-3136	SP	Shoulder Rumble Strips - Asphalt	m (P)	18,301		
134	-5335	SP	Pavement Marking, Black Base Contrast Marking	m (P)	2,801		
135	-5338	SP	Pavement Marking, Spray Field Reacted Polymeric	m (P)	22,645		
136	0570-0020		Topsoil from Stockpiles	m3	14,425		
137	0572-0051		Seed and Mulch	m2 (P)	191,473		
138	0572-0053		Seed and Bonded Fibre Matrix	m2 (P)	97,041		

GO Transit Works

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
139	0350-0010		Concrete Pavement	m2 (P)	556		
140	0603-0035		Rigid Ducts, Concrete Encased	m (P)	10		
141	-0639	SP	GO Bus Pylon ID Sign	lump sum	100 %		
142	-9903	SP	GO Bus Prefabricated Platform Shelter	lump sum	100 %		
143	0602-0045		Electrical Handholes	each (P)	5		
144	0603-0045	SP	Rigid Ducts, Direct Buried	m (P)	248		
145	0603-0065		Rigid Ducts, Steel Encased by Subsurface Installation	m (P)	26		
146	0604-0045		Low Voltage Cables, in Ducts	m (P)	848		
147	0609-0020		Ground Wires	m (P)	315		
148	0609-0030		Ground Electrodes	each (P)	6		
149	0614-0030	SP	Distribution Assemblies	each (P)	1		
150	0615-0110	SP	Steel Poles, Base Mounted	each (P)	8		
151	0616-0020		Concrete Footings in Earth	each (P)	8		

152	0616-0040		Concrete Pads	each (P)	1		
153	0617-0020	SP	Roadway Lighting Luminaires and Bracket Assemblies	each (P)	8		

Electrical (MTO)

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
154	0602-0025		Electrical Maintenance Holes	each (P)	8		
155	0602-0045		Electrical Handholes	each (P)	28		
156	0602-0050		Electrical Chamber Drains	m (P)	40		
157	0603-0035		Rigid Ducts, Concrete Encased	m (P)	130		
158	0603-0045		Rigid Ducts, Direct Buried	m (P)	1,679		
159	0603-0065		Rigid Ducts, Steel Encased by Subsurface Installation	m (P)	127		
160	0604-0045		Low Voltage Cables, in Ducts	m (P)	8,854		
161	0604-0050		Extra Low Voltage Cables, in Ducts	m (P)	1,157		
162	0604-0055		Traffic Signal Cables, in Ducts	m (P)	535		
163	0609-0020		Ground Wires	m (P)	2,432		
164	0609-0030		Ground Electrodes	each (P)	18		
165	0614-0040	SP	Supply Control Cabinet Assemblies	each (P)	3		
166	0615-0020		Sectional Steel Poles, Direct Buried in Earth	each (P)	2		
167	0615-0099		Heavy Class Sectional Steel Poles, Base Mounted	each (P)	1		
168	0615-0100		Sectional Steel Poles, Base Mounted	each (P)	12		
169	0615-0110	SP	Steel Poles, Base Mounted	each (P)	20		
170	0615-0130		Frangible Bases	each (P)	8		
171	0616-0020		Concrete Footings in Earth	each (P)	33		

172	0616-0040		Concrete Pads	each (P)	1		
173	0617-0020	SP	Roadway Lighting Luminaires and Bracket Assemblies	each (P)	23		
174	0620-0020	SP	Single Member Arms and Signal Hangers	each (P)	5		
175	0620-0040	SP	Double Arm Brackets	each (P)	9		
176	0620-0050	SP	Highway Type Signal Heads	each (P)	4		
177	0620-0060	SP	Special Type Signal Heads	each (P)	4		
178	0620-0080	SP	Pedestrian Type Signal Heads	each (P)	6		
179	0621-0020	SP	Flasher Beacons and Downlights	each (P)	1		
180	0621-0060	SP	Flasher Mechanisms	each (P)	1		
181	0622-0020	SP	Traffic Signal Controllers	each (P)	1		
182	0623-0020	SP	Loop Detectors	each (P)	23		
183	0623-0030	SP	Prefabricated Loops	each (P)	8		
184	0623-0035	SP	Traffic Counting Station	each (P)	4		
185	0623-0080	SP	Pedestrian Pushbuttons	each (P)	6		
186	-6232	SP	Emergency Vehicle Pre-emption Equipment	each (P)	1		

Electrical (York Region)

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
187	0601-0010	SP	Maintenance and Operation For Temporary Traffic Signal System Work	lump sum	100 %		
188	0602-0045	SP	Electrical Handholes	each (P)	21		
189	0603-0045	SP	Rigid Ducts, Direct Buried	m (P)	474		
190	0603-0046	SP	Rigid Ducts, Direct Buried (Temporary)	m (P)	21		
191	0603-0055	SP	Rigid Ducts by Subsurface Installation	m (P)	208		

192	0604-0045	SP	Low Voltage Cables, in Ducts	m (P)	2,115		
193	0604-0046	SP	Low Voltage Cables, in Ducts (Temporary)	m (P)	30		
194	0604-0050	SP	Extra Low Voltage Cables, in Ducts	m (P)	1,451		
195	0604-0055	SP	Traffic Signal Cables, in Ducts	m (P)	560		
196	0604-0056	SP	Traffic Signal Cables, in Ducts (Temporary)	m (P)	24		
197	0604-0086		Traffic Signal Cables, Aerial on Messenger Cable (Temporary)	m (P)	145		
198	0604-0096	SP	Steel Messenger Cables, Aerial (Temporary)	m (P)	522		
199	0604-0101	SP	ACSR Cables, Aerial (Temporary)	m (P)	132		
200	0609-0020	SP	Ground Wires	m (P)	848		
201	0609-0021	SP	Ground Wires (Temporary)	m (P)	154		
202	0609-0030	SP	Ground Electrodes	each (P)	16		
203	0609-0031	SP	Ground Electrodes (Temporary)	each (P)	5		
204	0610-0010	SP	Removal of Electrical Equipment	lump sum	100 %		
205	0614-0040	SP	Supply Control Cabinet Assemblies	each (P)	3		
206	0615-0041	SP	Wood Poles, Direct Buried in Earth (Temporary)	each (P)	5		
207	0615-0100	SP	Sectional Steel Poles, Base Mounted	each (P)	17		
208	0615-0141	SP	Guy Anchors (Temporary)	each (P)	8		
209	0616-0020	SP	Concrete Footings in Earth	each (P)	17		
210	0616-0040	SP	Concrete Pads	each (P)	1		
211	0617-0020	SP	Roadway Lighting Luminaires and Bracket Assemblies	each (P)	11		

212	0617-0021	SP	Roadway Lighting Luminaires and Bracket Assemblies (Temporary)	each (P)	5		
213	0620-0020	SP	Single Member Arms and Signal Hangers	each (P)	6		
214	0620-0040	SP	Double Arm Brackets	each (P)	12		
215	0620-0050	SP	Highway Type Signal Heads	each (P)	5		
216	0620-0051	SP	Highway Type Signal Heads (Temporary)	each (P)	8		
217	0620-0060	SP	Special Type Signal Heads	each (P)	5		
218	0620-0061	SP	Special Type Signal Heads (Temporary)	each (P)	4		
219	0620-0080	SP	Pedestrian Type Signal Heads	each (P)	8		
220	0622-0020	SP	Traffic Signal Controllers	each (P)	1		
221	0623-0020	SP	Loop Detectors	each (P)	24		
222	0623-0035	SP	Traffic Counting Station	each (P)	1		
223	0623-0080	SP	Pedestrian Pushbuttons	each (P)	4		

Boag Road Overpass at Hwy 404 NBL (Site No. 37-1538/1)

Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
224	0902-0010	SP Earth Excavation for Structure	m3 (P)	1,520		
225	0902-0030	SP Dewatering Structure Excavations	lump sum	100 %		
226	0904-0035	SP Mass Concrete	m3 (P)	37		
227	0904-0055	Concrete in Footings	m3 (P)	201.8		
228	0904-0085	SP Concrete in Substructure	lump sum	100 %		
229	0904-0095	SP Concrete in Substructure and Retaining Walls	lump sum	100 %		
230	0904-0105	SP Concrete in Deck	lump sum	100 %		
231	0904-0115	SP Concrete in Barrier Walls	lump sum	100 %		
232	0904-0135	SP Concrete in Approach Slabs	lump sum	100 %		

233	0905-0010		Reinforcing Steel Bar	lump sum	100 %		
234	0905-0025	SP	Stainless Steel Reinforcing Bar	lump sum	100 %		
235	0913-0040	SP	Embedded Work in Structure (Utility)	lump sum	100 %		
236	0914-0011		Bridge Deck Waterproofing	lump sum	100 %		
237	0914-0040		Membrane Reinforcement	m (P)	28.00		
238	0928-0055		Access to Work Area, Work Platform and Scaffolding	lump sum	100 %		

Boag Road Overpass at Hwy 404 SBL (Site No. 37-1538/2)

Item	Spec. Code	Item Description	Unit	Quantity	Unit Price	Total
239	0902-0010	SP Earth Excavation for Structure	m3 (P)	1,450		
240	0902-0030	SP Dewatering Structure Excavations	lump sum	100 %		
241	0904-0035	SP Mass Concrete	m3 (P)	38		
242	0904-0055	Concrete in Footings	m3 (P)	209.1		
243	0904-0085	SP Concrete in Substructure	lump sum	100 %		
244	0904-0095	SP Concrete in Substructure and Retaining Walls	lump sum	100 %		
245	0904-0105	SP Concrete in Deck	lump sum	100 %		
246	0904-0115	SP Concrete in Barrier Walls	lump sum	100 %		
247	0904-0135	SP Concrete in Approach Slabs	lump sum	100 %		
248	0905-0010	Reinforcing Steel Bar	lump sum	100 %		
249	0905-0025	SP Stainless Steel Reinforcing Bar	lump sum	100 %		
250	0913-0040	SP Embedded Work in Structure (Utility)	lump sum	100 %		
251	0914-0011	Bridge Deck Waterproofing	lump sum	100 %		
252	0914-0040	Membrane Reinforcement	m (P)	28.00		
253	0928-0055	Access to Work Area, Work Platform and Scaffolding	lump sum	100 %		

Hwy 404 at Sta. 34+022 - Maskinonge River Tributary Culvert (Site No. 37-1538/3)

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
254	0902-0010		Earth Excavation for Structure	m3 (P)	3,400		
255	0902-0030		Dewatering Structure Excavations	lump sum	100 %		
256	0904-0035	SP	Mass Concrete	m3 (P)	95		
257	0904-0055		Concrete in Footings	m3 (P)	759.4		
258	0904-0095		Concrete in Substructure and Retaining Walls	lump sum	100 %		
259	0905-0010		Reinforcing Steel Bar	lump sum	100 %		
260	-0462	SP	Precast Concrete Arch Culvert - Reinforced	m	122.0		
261	-5823	SP	Temporary Flow Passage System	lump sum	100 %		

Steel Column Breakaway Sign Support Structures

Item	Spec. Code		Item Description	Unit	Quantity	Unit Price	Total
262	0911-0016	SP	Coating New Structural Steel Sign Support Structures	lump sum	100 %		
263	0915-0015	SP	Concrete In Steel Column Breakaway Sign Support Footings	each (P)	10		
264	0915-0040	SP	Steel Column Breakaway Sign Support Structures	each (P)	5		

					Total Tender		
--	--	--	--	--	---------------------	--	--

INSTRUCTIONS TO BIDDERS

1.0 DEFINITIONS

- 1.1 “Designated Contract” means a contract the ministry accepts Performance Bonds, Payment Bonds and Tender Deposit in lieu of pre-qualification.
- 1.2 “Itemized Bid Form” means the Ministry approved form that the bidder is to use to price the items specified in the Tender Documents to perform the Work.
- 1.3 “No Bid Submission” means a statement from a bidder, who has an approved Tender Registration Form, but who does not intend on submitting a Summary Bid Submission Form prior the Tender Opening or intends to withdraw their Tender prior to the Tender Opening.
- 1.4 “Non-Qualified Contract” is a Designated Contract that is tendered in accordance with the Ministry's Qualification Procedures for Contractors.
- 1.5 “Non-Rated Contractor” means a contractor who has not been granted a Basic Financial Rating or Maximum Workload Rating in accordance with the Ministry’s Qualification Procedures for Contractors.
- 1.6 “Non-Resident Contractor” means any contractor located outside Ontario not being incorporated pursuant to the laws of Ontario and who has not maintained a permanent place of business in Ontario continuously for twelve months prior to Tender Opening.
- 1.7 “Qualified Contract” means a contract that is tendered in accordance with the Ministry’s Qualification Procedures for Contractors.
- 1.8 “Qualification Procedures for Contractors” means the administrative routine established by the Ministry to determine that contractors have the financial and technical capability to perform the work in accordance with the Contract.
- 1.9 “Rated Contractor” means a contractor who has been granted a Basic Financial Rating or Maximum Workload Rating in accordance with the Ministry's Qualification Procedures for Contractors.
- 1.10 “Summary Bid Submission Form” means the Ministry approved form that the bidder is to use to summarize the lump sum offer to perform the Work.
- 1.11 “Tender” means the offer submitted by a bidder to perform the Work required of the Tender Documents at the prices set out in the offer, which said offer shall be set out in the forms approved by the Ministry and in accordance with the procedures more particularly described in these Instructions to Bidders. More particularly, the forms shall include, among other things, the Summary Bid Submission Form and the Itemized Bid Form.
- 1.12 “Tender Closing” or “Tender Opening” is the last date and time that the Ministry will receive bids.
- 1.13 "Tender Documents" includes the Tender, the Ministry of Transportation (Ontario) General Conditions of Contract, the Specifications, the Special Provisions, the Contract Drawings, the Quantity Sheets, any other documents listed in the Tender and any Addenda thereto issued by the Ministry, but excludes the Qualification Procedures for Contractors.

2.0 COMPLIANCE WITH INSTRUCTIONS

- 2.1 Bidders must comply with the “Instructions to Bidders” and those failing to do so may have the bid rejected.
- 2.2 Tenders will only be accepted from Rated Contractors and Non-Rated Contractors, who have an approved Tender Registration Form.

3.0 ENQUIRIES DURING TENDERING PERIOD

- 3.1 Enquiries are to be directed in writing to the Construction Office, Head Contracts Section, by using the Registry Appraisal and Qualification System website: www.raqs.mto.gov.on.ca or if access is unavailable, enquiries may be faxed to the Construction Office, Head, Contracts Section at (905) 704-2040. All public enquiries and responses will be posted to the Registry Appraisal and Qualification System website.

4.0 ELECTRONIC BID SUBMISSION PROCEDURES

- 4.1 All registration forms and other forms mentioned in these Instruction to Bidders are posted and can be found at the Registry Appraisal Qualification Systems (RAQS) website at www.raqs.mto.gov.on.ca and shall be used by all bidders.
- 4.2 All bidders must have a valid User ID and Password to access the RAQS website and must have an approved Contractor Registration Form (“CRF”) and an approved Tender Registration Form (“TRF”).
- 4.3 The TRF must be completed as of a date not earlier than four weeks prior to the Tender Opening to which it applies. TRF’s will not be approved after 12:00 noon of the last business day of the preceding week prior to the Tender Opening (generally, the Friday before Tender Opening).
- 4.4 Bidders must complete an on-line Summary Bid Submission Form. Only a bidder with an approved TRF is able to submit a Summary Bid Submission Form that will be considered by the Ministry.
- 4.5 Bidders can submit a revised on-line Summary Bid Submission Form up until Tender Opening. The Ministry will only consider the last Summary Bid Submission Form received prior to Tender Opening. A no bid submission can be received on-line up until Tender Opening.
- 4.6 Upon submitting an on-line Summary Bid Submission Form, bidders will receive an on-line receipt notifying that the Ministry has successfully received the Summary Bid Submission Form. Bidders not receiving an on-line receipt must contact the Ministry’s Help Desk at 1-877-246-4600.
- 4.7 After Tender Opening, two Ministry personnel will open the Summary Bid Submission Form received. Bidders will receive an e-mail or fax notification immediately after the Ministry opens the Summary Bid Submission Form. Bidders not receiving this communication within 2 hours after the Tender Opening should contact the Ministry’s Help Desk at 1-877-246-4600.

- 4.8 After all Summary Bid Submission Forms are opened, the Ministry will publish a Bidders List showing the Total Tender and/or Adjusted Total Tender on the RAQS website.
- 4.9 Bidders that submit a Tender bid will be notified by email or fax of the Tender results. Bidders not receiving this communication within 2 hours after the Tender Opening may contact the Ministry's Help Desk at 1-877-246-4600.
- 4.10 The three lowest bidders will be advised by e-mail or fax to submit an Itemized Bid Form within 24 hours after Tender Opening using the RAQS Itemized Bid Form. Once the Itemized Bid Form is submitted, the bidder will receive confirmation from the Ministry that the form has been received.
- 4.11 The Itemized Bid Form will be available to pre-qualified contractors for data entry 24 hours prior to Tender Opening. Only the three low bidders are required to complete and submit the form to the Ministry. Failure to submit the Itemized Bid Form within the specified time may result in rejection of the bid and/or may be referred to the Qualification Committee.

5.0 COMPUTER SYSTEM FAILURE

- 5.1 In the event that the bidder's computer system fails, the bidder must contact the Ministry's Help Desk at: 1-877-246-4600, no later than 15 minutes prior to Tender Opening.
- 5.2 The Ministry will provide the bidder with a Summary Bid Submission Form. The bidder must complete the Summary Bid Submission Form in its entirety and immediately fax the form to a number given at the time of the phone call. No other form of bid will be accepted.
- 5.3 The Ministry will not accept bids received by facsimile after Tender Opening. The date and time stamped by the Ministry's facsimile machine will be the official date and time stamp on the document.
- 5.4 In the event the Ministry's computer system fails at the time of Tender Opening, the Ministry will immediately contact contractors that have an approved Tender Registration Form and provide direction for submission of the Summary Bid Submission Form.

6.0 UNBALANCED TENDERS AND DISCREPANCIES

- 6.1 Tenders that contain prices that appear to be unbalanced, may be referred to the Qualification Committee and any Tenders that are so unbalanced that it may adversely affect the interests of the Ministry may be rejected.
- 6.2 The bidder will NOT be allowed to adjust the Total Tender Amount after Tender Opening. The Itemized Bid Form will not be editable once submitted and approved.
- 6.3 Bidders whose Tender has been rejected by the Ministry will be notified of the reasons within 10 days of Tender Opening.

7.0 TENDER DEPOSIT

- 7.1 The requirement for a tender deposit is waived for a Rated Contractor that uses its Adjusted Financial Rating to pre-qualify on a Designated Contract.
- 7.2 A Rated Contractor withdrawing a Tender after Tender Opening shall have the matter referred to the Ministry’s Qualification Committee without prejudice to any right or remedy the Ministry may have in law.
- 7.3 A Contractor submitting a bid on a Designated Contract, shall include with each Tender a Tender Deposit in the form of a Certified Cheque or Irrevocable Letter of Credit, made payable to the MINISTER OF FINANCE, or Bid Bond, equal to or greater than the amount shown in the following tables. The Ministry must receive the tender deposit by 4:00 p.m. Eastern Standard time on the last business day before Tender Opening.

TOTAL TENDER AMOUNT	DEPOSIT REQUIRED
\$ 20,000.01 or less	\$ 500.00
20,000.01 to 50,000.00	1,000.00
50,000.01 to 100,000.00	2,000.00
100,000.01 to 250,000.00	9,000.00
250,000.01 to 500,000.00.....	19,000.00
500,000.01 to 1,000,000.00	40,000.00
1,000,000.01 to 2,000,000.00	75,000.00
2,000,000.01 and over	150,000.00

8.0 RELEASE OF TENDER DEPOSIT

- 8.1 The tender deposit of all bidders except the lowest and second lowest bidder will be returned within 10 days of the Tender Opening.
- 8.2 The tender deposit of the second lowest bidder will be returned when the successful bidder has returned the executed Agreement and other applicable documents to the Ministry.
- 8.3 Application may be made to the Ministry for the return of the deposit where either the lowest or second lowest bidder has not been notified within 30 days after Tender Opening that Tenders have been accepted.
- 8.4 The successful Bidder's, tender deposit will be returned after the executed agreement and other applicable documents have been received by the ministry.
- 8.5 The tender deposit shall be forfeited if the successful bidder fails to return the applicable documents to the Construction Office, Contracts Section, within (7) seven working days of receipt.

9.0 Qualified Contracts

- 9.1 Qualified Contracts are applicable to Rated Contractors only, Performance and Payment Bonds are not acceptable unless otherwise stated in the Special Provisions of the Contract.

10.0 DESIGNATED CONTRACT

- 10.1 Non-Rated Contractors must supply a Tender Deposit payable to the Minister of Finance as per Section 7, Tender Deposit, of these Instructions.
- 10.2 A Rated Contractor may pre-qualify using its Available Financial Rating as per the Qualification Procedures for Contractors or, supply a Tender Deposit as per Section 7, Tender Deposit, of these Instructions.
- 10.3 A Rated Contractor under Sanction with the Ministry must pre-qualify using its Available Financial Rating.
- 10.4 A Tender Registration Form must be completed and submitted to the Construction Office/Qualification Control, 301 St. Paul St., St. Catharines, L2R 7R4, fax (905) 704-2481.
- 10.5 A Tender Registration Form will not be accepted for tendering purposes after 12:00 NOON of the last business day of the preceding week prior to Tender Opening (generally the Friday before Tender Opening).
- 10.6 Upon notification of low bid, the successful bidder must submit a Performance Bond for 50% and a Payment Bond for 50% of the amount of tender, issued by a surety company licensed in Ontario to transact business under the *Insurance Act*, on bond forms supplied by the Ministry.
- 10.7 In lieu of Performance and Payments Bonds, the Low Bidder has the option to supply a certified cheque or irrevocable letter of credit payable to the Minister of Finance equal to 100% of the amount of Tender.
- 10.8 In either case the form of security will be retained by the Ministry for 60 days after Certificate of Substantial Performance has been published in accordance with the Construction Lien Act.
- 10.9 A Rated Contractor using its Available Financial Rating to pre-qualify is not required to provide the Ministry with Performance Bonds, Payments Bonds or other allowable forms of security.

11.0 ACCEPTANCE OR REJECTIONS OF TENDERS

- 11.1 The Ministry reserves the right to reject any or all tenders, and to waive formalities as the interests of the Ministry may require without stating reasons, therefore, the lowest or any tender may not necessarily be accepted.
- 11.2 Tenders not accompanied by a Tender Deposit in the required amount may be rejected.
- 11.3 The Ministry shall not be liable for any costs, expenses, loss or damage incurred, sustained or suffered by any bidder prior, or subsequent to, or by reason of the acceptance or the non-acceptance by the Ministry of any Tender, or by reason of any delay in the acceptance of a Tender, except as provided in the tender documents.
- 11.4 The Tender shall be irrevocable for a period of thirty days following the date of Tender Opening.

12.0 CONTRACT AWARD PROCEDURES

- 12.1 The Ministry will notify the successful bidder that the Tender has been accepted within 30 days of the Tender Opening.
- 12.2 The contract documents will be sent to the successful Bidder immediately after acceptance of Tender. The Bidder shall fully execute and return the documents together with the applicable bonds, if such are required, to the Construction Office, Contracts Section within (7) seven working days of the date the documents are received.
- 12.3 Following receipt of the properly executed documents, Certificate of Liability Insurance and, where applicable, the contract bonds, the bidder will receive written authority to proceed with the work.
- 12.4 If the successful bidder fails to return the applicable documents to the Construction Office, within (7) seven working days of receipt, the matter may be referred to the Ministry's Qualification Committee without prejudice to any right or remedy the Ministry may have in law.
- 12.5 If the bidder fails for any reason to enter into the contract within the specified time, then it shall not be allowed to work on the contract as a subcontractor or be allowed to supply any material, equipment or labour to the contract and the matter shall be referred to the Ministry's Qualification Committee without prejudice to any right or remedy the Ministry may have in law.
- 12.6 Non-Resident Contractors must provide a retail sales tax "Letter of Compliance" from the Ministry of Finance, failing which the Non-Resident Contractor shall satisfy the *Retail Sales Tax Act* and its regulations (as amended from time to time) in lieu therefore.
- 12.7 Non-Resident Contractors must provide a copy of their approved Workplace Safety and Insurance Board registration form titled "Registration of Constructors and Employers Engaged in Construction" with their executed documents.

CONFLICT OF INTEREST

1. Each bidder must include in its bid submissions confirmation of the following:
 - 1.1 That the bidder does not and will not have any conflict of interest (actual or potential) in submitting its bid or, if selected, with the contractual obligations of the bidder as supplier/consultant under the Contract. Where applicable, a Bidder must declare in its bid any situation that may be a conflict of interest in submitting its bid or, if selected, with the contractual obligations of the bidder as supplier/consultant under the Contract; and
 - 1.2 That the bidder neither has nor has had access to any Confidential Information as defined below;

"Confidential Information" refers to the confidential information of the Crown (other than confidential information which is disclosed to the bidders in the normal course of the Tender); the Confidential Information is relevant to the Services required by the Tender, or their pricing and the disclosure for which could result in prejudice to the Crown or an unfair advantage to the Bidder.
2. In addition, each Bid shall include the following information:
 - 2.1 A list of the names, addresses and telephone number of the persons who participated in the development of the bid; and
 - 2.2 A list of the names of any former employees of the Ontario Public Service, their job classifications and the particular ministries where these individuals were working immediately prior to their leaving the Crown that the bidder has either appointed to its Board of Directors or employed since April 23, 1997.

The submission of any bidder may be disqualified where the bidder fails to provide confirmation of the foregoing or makes misrepresentations regarding any of the above. Further, the Minister shall have the right to rescind any contract with the selected bidder in the event that the Minister at his/her sole discretion determines that the selected bidder has made a misrepresentation regarding any of the above, in addition to or in lieu of any other remedies that the Minister has in law or in equity.

PART 1(a)

**CERTIFICATION - CONFLICT OF INTEREST
(Complete Part 1(a) or 1(b) - Do Not Complete Both)**

I/we hereby certify that there is not nor was there any actual or potential conflict of interest or unfair advantage in our submitting the Bid or performing the Work/Services required by the Contract.

In submitting the Bid, our company has no knowledge of or the ability to avail ourselves of confidential information of the Crown (other than confidential information which may be been disclosed by the Minister to the Bidders in the normal course of the Tender) where the confidential information would be relevant to the Work/Services, their pricing or the Tender evaluation process.

Name

Signature

Position

Date

The person who signs this declaration must be an authorised representative of the Tenderer and must have authority to bind the Tenderer.

PART 1(b)
CERTIFICATION - CONFLICT OF INTEREST
(Complete Part 1(a) or 1(b) - Do Not Complete Both)

In submitting our Bid, the Bidder declares that the attached is a list of situations, each of which may be a conflict of interest, or appears as potentially a conflict of interest in our company submitting the Bid or performing the contractual obligations of the Supplier/Consultant under the Contract. **(Strike out Paragraph if not Applicable)**

In submitting the Bid, our company has/has no **(Strike out the inapplicable portion)** knowledge of or the ability to avail ourselves of confidential information of the Crown (other than confidential information which may have been disclosed by the Minister to the Bidders in the normal course of the Tender) where the confidential information would be relevant to the Work/Services, their pricing, or the Tender evaluation process and where access to such additional information may prejudice the Crown or be an unfair advantage to the Bidder.

(If declaring that the Bidder has access to additional information that may be confidential, other than confidential information which may be disclosed by the Minister to the Bidders in the normal course of the Tender, please attach an explanation describing the additional information and how you access to it.)

With the exception of those situations and/or access to additional information disclosed on the list attached, I/we hereby certify that there is not nor was there any other actual or potential conflict of interest or unfair advantage in our submitting the Bid or performing the Work/Services required by the Contract.

I/We hereby acknowledge that the Minister at his/her sole discretion shall have the right to determine whether or not the declared situations do constitute an actual or potential conflict of interest or whether access to additional confidential information does constitute an unfair advantage over other bidders.

I/We acknowledge that in the event that the Minister finds the situations to be a conflict of interest or access to the additional confidential information to be an unfair advantage that our Bid may be rejected.

Name

Signature

Position

Date

The person who signs this declaration must be an authorised representative of the Tenderer and must have authority to bind the Tenderer.

PART 2

DISCLOSURE - CONFLICT OF INTEREST

PERSONS WHO PARTICIPATED IN THE PREPARATION OF THE TENDER			
NAME:	ADDRESS:	TELEPHONE NUMBER:	CONTRIBUTION OR % OF WORK:

The following is a list of individuals who are former employees of the Ontario Public Service (OPS) whom our company since April 23, 1997 has either appointed to its Board of Directors or employed:		
NAME of INDIVIDUAL:	JOB CLASSIFICATION OF THE LAST POSITION WITHIN THE OPS:	MINISTRY/AGENCY OF THE OPS WHERE LAST EMPLOYED:

The work specified in the Contract will be performed in strict accordance with the following Provisions, Contract Plans, Specifications and Conditions for **CONTRACT NO.**

SCHEDULE OF PROVISIONS, CONTRACT PLANS, STANDARD DRAWINGS, SPECIFICATIONS AND GENERAL CONDITIONS

A. SPECIAL PROVISIONS

- | | |
|---|----------|
| a) SPECIAL PROVISIONS FOR CONTRACT NO. | ATTACHED |
| b) SPECIAL PROVISIONS FOR LABOUR CONDITIONS | ATTACHED |
| c) LIQUIDATED DAMAGES FOR CONTRACT NO. | ATTACHED |

B. PLANS

CONTRACT DRAWING BOOK(S).

C. STANDARD DRAWINGS

Drawing No.	Issue Date	Drawing No.	Issue Date	Drawing No.	Issue Date
OPSD					
0100.0100	Nov 2009	0100.0110	Nov 2006	0100.0120	Nov 2009
0100.0130	Nov 2009	0100.0140	Nov 2002	0100.0500	Nov 2006
0100.0600	Nov 2006	0101.0100	Nov 2006	0101.0110	Nov 2006
0101.0120	Nov 2006	0101.0130	Nov 2006	0101.0140	Nov 2006
0101.0150	Nov 2006	0101.0160	Nov 2006	0101.0170	Nov 2007
0102.0100	Nov 2006	0103.0100	Nov 2006	0103.0110	Nov 2006
0104.0100	Nov 2007	0202.0100	Mar 1998	0202.0300	Nov 2009
0202.0310	Nov 2009	0202.0320	Nov 2009	0204.0100	Apr 1999
0205.0100	Apr 1999	0206.0500	Nov 2008	0207.0100	Nov 2007
0207.0200	Nov 2007	0207.0410	Nov 2008	0207.0440	Nov 2008
0208.0100	Feb 1996	0210.0100	Apr 1990	0210.0700	Mar 1998
0215.0100	May 1994	0216.0210	Nov 2008	0219.1300	Nov 2006
0219.1800	Nov 2006	0219.2110	Nov 2006	0220.0100	Apr 1988
0300.0100	Apr 1999	0300.0200	Apr 1999	0301.0100	Mar 1998
0301.0200	Mar 1998	0304.0100	Apr 1999	0310.0300	Oct 1993
0351.0100	Apr 1999	0400.0010	Nov 2007	0401.0100	Nov 2007
0401.0400	Nov 2007	0403.0100	Nov 2007	0404.0200	Nov 2008
0500.0100	Apr 1991	0504.0100	Apr 1991	0551.0100	Apr 1999
0551.0200	Apr 1999	0552.0100	Nov 2008	0552.0200	Nov 2008
0552.0510	Apr 1999	0552.0610	Apr 1999	0555.0200	Apr 1999
0561.0100	Sep 1996	0600.0400	Apr 1999	0600.1100	Apr 1999
0603.0200	Apr 1999	0605.0300	Apr 1999	0605.0400	Apr 1999
0608.0100	Apr 1999	0701.0100	Nov 2009	0701.0110	Nov 2009
0701.0120	Nov 2009	0701.0130	Nov 2009	0703.0230	Nov 2009
0704.0100	Nov 2009	0705.0300	Nov 2009	0706.0100	Nov 2009
0706.0200	Nov 2009	0802.0100	Sep 1996	0802.0140	Sep 1996
0802.0300	Sep 1996	0802.0310	Sep 1996	0802.0320	Sep 1996
0802.0340	Sep 1996	0803.0100	Nov 1999	0803.0300	Sep 1996
0803.0310	Mar 1998	0804.0300	Sep 1996	0804.0400	Sep 1990
0804.0500	Dec 1983	0805.0100	Nov 2004	0805.0300	Nov 2004
0806.0200	Jun 1991	0806.0400	Nov 1999	0806.0600	Jun 1991
0807.0100	May 1992	0807.0400	May 1992	0808.0100	Sep 1996
0809.0100	Jan 1995	0810.0100	Nov 2001	0810.0200	Nov 2001

0911.1300	Nov 2001	0911.1320	Nov 2001	0911.1400	Nov 2001
0911.3810	Nov 2001	0912.1010	Nov 2001	0912.1020	Nov 2001
0912.1400	Nov 2008	0912.4010	Nov 2001	0912.5300	Nov 2001
0912.5320	Nov 2008	0922.1310	Nov 2009	0922.1800	Nov 2009
0922.5300	Nov 2009	0923.0010	Nov 2007	0923.0020	Nov 2005
0923.1800	Nov 2005	0923.1810	Nov 2005	0923.1820	Nov 2005
0923.2800	Nov 2005	0923.2810	Nov 2005	0923.3800	Nov 2005
0923.3810	Nov 2005	0923.3820	Nov 2005	0923.3830	Nov 2005
0923.5300	Nov 2009	0923.5310	Nov 2009	0971.1010	Nov 2008
0972.1020	Nov 2005	0972.1300	Nov 2005	0984.1010	Nov 2001
2000.0010	Nov 2009	2011.1010	Nov 2009	2011.2010	Nov 2009
2011.4010	Nov 2009	2011.5010	Nov 2009	2011.6010	Nov 2009
2011.7010	Nov 2009	2012.1010	Nov 2009	2013.1010	Nov 2009
2013.2010	Nov 2009	2014.1010	Nov 2009	2014.1020	Nov 2009
2100.0100	Dec 1992	2100.0500	Dec 1992	2101.0100	Dec 1992
2103.0200	Dec 1992	2103.0500	Dec 1992	2103.0600	Dec 1992
2111.0200	Feb 1996	2112.0200	Nov 2009	2116.0100	Dec 1992
2116.0200	Dec 1992	2117.0100	Nov 2000	2118.0100	Nov 2009
2118.0200	Nov 2009	2123.0200	Dec 1992	2210.0100	Jul 1990
2210.0200	Apr 2007	2215.0300	Mar 1998	2220.0100	Apr 1985
2228.0100	Nov 2006	2232.0100	Nov 2006	2250.0100	Apr 2003
2255.0200	Sep 1996	2302.0200	Feb 1991	2400.0000	Nov 2008
2400.1000	Nov 2008	2415.0100	Dec 1993	2420.0100	Apr 2007
2421.0100	Nov 2005	2428.0100	Nov 2004	2440.0500	Mar 1998
2440.0600	Mar 1998	2501.0100	Dec 1993	2501.0200	Apr 1985
2502.0110	Nov 2007	2505.0100	Apr 1985	2514.0100	Jan 1990
2514.0200	Apr 1985	2524.0100	Nov 2009	2526.0100	Apr 1985
2528.0100	Oct 1991	2529.0100	Oct 1991	2529.0700	Oct 1991
2530.0100	Apr 1985	2547.0100	Jul 1989	3120.1000	Nov 2005

MTOD

0101.0700	Apr 1994	0202.0330	Nov 2009	0503.0200	Jan 2000
0503.0210	Sep 1999	0505.0100	Apr 2007	0806.0210	Aug 2006
0911.1500	Jul 2009	0911.1510	Jul 2009	0911.1600	Jul 2009
0911.1610	Dec 2008	0911.1800	Feb 2010	0911.1810	Feb 2010
0911.3400	Jan 2010	0912.1060	Dec 2007	0912.1070	Dec 2007
0912.1080	Nov 2008	0923.4800	Feb 2007	0923.4810	Feb 2007
0923.4820	Feb 2007	0984.2010	May 2009	0984.2020	May 2009
0984.2030	Nov 2009	0984.2040	Nov 2009	2102.0100	Oct 2008
2117.0200	Feb 2006	2123.0100	Mar 2001	2123.0300	Oct 2008
2130.0110	Oct 2008	2200.0100	Oct 2008	2200.0500	Nov 2007
2200.0900	Feb 2006	2215.0200	Nov 2007	2215.0250	Feb 2006
2440.0100	Feb 2005	2440.0300	Oct 2008	2440.0400	Feb 2004
2440.0510	Feb 2004	2440.0610	Feb 2004	2514.0210	Nov 2007
2532.0100	Mar 2001	2901.4010	Oct 2008	2901.4020	Oct 2008
2901.4030	Oct 2008				

SSD

0012.0001	Jun 2002
-----------	----------

D. GENERAL SPECIAL PROVISIONS

Special No.	Date	Special No.	Date	Special No.	Date
100S02	May 2010	100F08	M May 2010	100S14	Jun 2010
100S59	May 2010	100S60	Jul 2010	100S61	May 2010
100S64	May 2010	100S65	May 2010	101S18	Apr 1994
101F21	Jun 2007	103F17	M Jul 2007	103S20	Feb 2010
103F31	May 2010	103S35	Jun 2010	103S38	Mar 2009
103S39	Sep 2001	103F48	May 2010	103F49	May 2010
103S52	Jan 2010	104S02	Jul 2009	104S03	Jul 2009
105S10	Nov 2004	105S12	Mar 2006	105S14	Jun 1997
105S20	Aug 2007	109S41	Dec 2005	109S42	Feb 2008
109S49	Feb 2008	109S52	Jul 2008	110F10	Sep 2001
110S11	May 2010	110S12	May 2010	110S13	May 2010
110F14	May 2009	111S09	May 2010	111F10	M Jan 2010
112S06	Dec 2002	112S07	Feb 2008	113S03	Dec 2004
113S05	Dec 2006	113S06	Feb 2004	114S03	Jul 2007
118S01	Feb 2006	118S03	Nov 2007	118S04	Mar 2009
118S05	May 2009	118S06	Mar 2009	199F12	Mar 2001
199S17	Jul 2001	199S18	Jun 1992	199F31	Dec 1990
199F33	M Dec 1990	199F34	M Jul 2005	199S38	Mar 2008
199F43	Jun 2000	199S44	Jan 2001	199S48	Dec 2005
199S53	May 2010	199S54	May 2004	199S55	May 2004
199S56	Sep 2005	199F57	Dec 2006	199S60	Oct 2009
199F61	M Feb 2010	199S62	May 2010		

E. ITEM SPECIFIC SPECIAL PROVISIONS

Special No.	Date	Item No.
206F02	M Sep 2001	7
206S03	Jul 2007	6, 113, 126
305F01	Dec 2006	8
314S03	Aug 2007	17, 18, 118, 119, 130
351S02	Jul 2007	20
353S02	Jul 2007	21
399S41	Jun 2010	121, 133
407S06	Jul 2010	28, 29, 30, 31, 32, 33, 34
511S01	Jan 2001	58, 59
532S02	Feb 2007	62, 64, 66, 122
532F03	M Dec 1999	62, 64, 122
532S04	Dec 1999	62
532S09	Dec 2005	61
543F01	M Jun 2004	73
543S03	M Jul 2001	74
552S02	Nov 2008	77, 78
552S04	Nov 2008	76
553S03	Jul 2007	79, 80
553S05	Nov 2008	81
553F06	Jan 2000	81
553S08	Jul 2009	81
559S01	Jan 2010	83
577F02	Mar 2010	85, 86

599S19		Jul 2010	83, 89, 90
599S24		Jul 2010	89, 90
599S29		Jan 2010	81, 82
601S01		Feb 2006	187
614F01	M	Jan 2009	149, 165
615S02		Feb 2009	169
617F01		Jan 2009	153, 173
620S04		Jun 2009	174, 175, 176, 177, 178
621S01		Jun 2008	179, 180
622F01	M	Jan 2008	181
623S01		Jul 2009	182, 185
623S02	M	Dec 2005	183, 184
682S07		Jul 2010	144
905S04		May 2008	234, 249
911S07		Nov 2008	262
911S09		Nov 2006	262
915S01		Jul 2007	263
915S02		Nov 2005	264
915S03		Dec 2005	264

The following notes refer to Standard Special Provision Numbers in Section D & E.

1. For Special Provision Numbers containing an S. refer to the MTO Library website at www.mto.gov.on.ca/english/transrd or hard copy distribution of all technical publications can be purchased through Publications Ontario for entire text.
2. Special Provision Numbers containing an F signifies a fill-in portion required. Fill-in portion is printed in Section “A” of the contract. For rest of text refer to MTO Library website at www.mto.gov.on.ca/english/transrd or hard copy distribution of all technical publications can be purchased through Publications Ontario for entire text.
3. Special Provision Numbers containing an M signifies a modified special provision. Entire text is printed in Section “A” of the contract.

F. GENERAL AND STANDARD SPECIFICATIONS

No.	Date	No.	Date	No.	Date	No.	Date
OPSS							
0102	Oct 1992	0120	Apr 2008	0127	Apr 2010	0180	Nov 2005
0201	Feb 1996	0206	Dec 1993	0305	Mar 1998	0314	Dec 1993
0320	Nov 2003	0350	Mar 1998	0351	Sep 1996	0353	Sep 1996
0355	Sep 1996	0405	Nov 2008	0410	Apr 2008	0421	Apr 2008
0422	May 1993	0501	Feb 1996	0506	May 1994	0510	Oct 1993
0511	Feb 1990	0514	Nov 2005	0517	Oct 1989	0518	Dec 1984
0532	Jun 1991	0539	Nov 2009	0540	Apr 2007	0541	Nov 2005
0543	Dec 1990	0552	Nov 2008	0553	Feb 1991	0559	Apr 2008
0565	Nov 2007	0570	Nov 2007	0571	Nov 2007	0572	Nov 2003
0577	Nov 2006	0602	Nov 2008	0603	Nov 2008	0604	Apr 2009

0609	Nov 2008	0610	Nov 2008	0614	Nov 2008	0615	Nov 2008
0616	Nov 2008	0617	Nov 2008	0620	Sep 1984	0621	Sep 1984
0622	Sep 1993	0623	Jan 1990	0902	Nov 2009	0905	May 1994
0911	Nov 2004	0913	Nov 2006	0914	Nov 2008	0915	Dec 1983
0928	May 1994						

OPSS - MTC

0407	Mar 1984
------	----------

OPSS - Provincial

0100	Apr 2010	0106	Nov 2008	0308	Apr 2007	0313	Apr 2007
0904	Apr 2010						

G. REFERENCED STANDARD SPECIFICATIONS

The standard OPS specifications in the following list are applicable to the Contract when referenced by the Contract Documents.

No.	Type	Date	No.	Type	Date	No.	Type	Date
0100	Prov	Apr 2010	0102	Comm	Oct 1992	0106	Prov	Nov 2008
0120	Comm	Apr 2008	0127	Comm	Jul 2010	0180	Comm	Nov 2005
0201	Comm	Feb 1996	0206	Comm	Dec 1993	0209	Comm	Mar 1998
0212	Comm	Apr 1999	0301	Comm	Sep 1988	0302	Comm	Apr 1999
0304	Comm	Nov 2006	0305	Comm	Mar 1998	0307	Comm	Nov 2007
0308	Prov	Apr 2007	0309	Comm	Oct 1989	0311	Comm	Sep 1988
0312	Comm	Sep 1988	0313	Prov	Apr 2007	0314	Comm	Dec 1993
0315	Comm	Sep 1988	0316	Comm	Apr 2008	0320	Comm	Nov 2003
0330	Comm	May 1994	0331	Comm	Nov 2003	0332	Comm	Sep 1996
0333	Comm	Nov 2009	0335	Comm	Nov 2009	0336	Comm	Nov 2009
0337	Comm	Apr 1999	0341	Comm	May 1994	0350	Comm	Mar 1998
0351	Comm	Sep 1996	0352	Comm	Nov 2000	0353	Comm	Sep 1996
0355	Comm	Sep 1996	0360	Comm	Mar 1995	0362	Comm	Mar 1998
0363	Comm	Apr 2008	0364	Comm	Sep 1996	0365	Comm	Nov 2008
0369	Comm	Nov 2008	0405	Comm	Nov 2008	0407	MTC	Mar 1984
0409	Comm	Apr 1999	0410	Comm	Apr 2008	0415	Comm	Feb 1990
0416	Comm	Feb 1990	0421	Comm	Apr 2008	0422	Comm	May 1993
0501	Comm	Feb 1996	0503	Comm	Oct 1989	0504	Comm	Mar 1991
0506	Comm	May 1994	0507	Comm	Jul 1991	0510	Comm	Apr 2010
0511	Comm	Feb 1990	0512	Comm	Feb 1990	0514	Comm	Nov 2005
0515	Comm	Nov 2005	0517	Comm	Oct 1989	0518	Comm	Dec 1984
0530	Comm	Dec 1990	0531	Comm	Dec 1990	0532	Comm	Jun 1991
0538	Comm	Mar 1991	0539	Comm	Nov 2009	0540	Comm	Apr 2007
0541	Comm	Nov 2005	0542	Comm	Nov 2006	0543	Comm	Dec 1990
0550	Comm	Nov 2006	0552	Comm	Nov 2008	0553	Comm	Feb 1991
0555	Comm	Nov 2008	0556	Comm	Nov 2008	0558	Comm	Nov 2008
0559	Comm	Apr 2008	0565	Comm	Nov 2007	0570	Comm	Nov 2007
0571	Comm	Nov 2007	0572	Comm	Nov 2003	0577	Comm	Nov 2006
0602	Comm	Nov 2008	0603	Comm	Apr 2010	0604	Comm	Apr 2009
0609	Comm	Nov 2008	0610	Comm	Nov 2008	0611	Comm	Nov 2008

0614	Comm	Nov 2008	0615	Comm	Nov 2008	0616	Comm	Nov 2008
0617	Comm	Nov 2008	0620	Comm	Sep 1984	0621	Comm	Sep 1984
0622	Comm	Sep 1993	0623	Comm	Jan 1990	0624	Comm	Sep 1984
0630	Comm	Nov 2008	0631	Comm	Nov 2008	0701	Comm	Nov 2006
0902	Comm	Nov 2009	0903	Comm	Nov 2009	0904	Prov	Apr 2010
0905	Comm	May 1994	0906	Comm	Nov 2009	0907	Comm	Apr 2009
0908	Comm	Nov 2009	0909	Comm	Feb 1993	0910	Prov	Apr 2008
0911	Comm	Nov 2004	0913	Comm	Nov 2006	0914	Comm	Nov 2008
0915	Comm	Dec 1983	0918	Comm	Mar 1998	0919	Comm	Nov 2009
0920	Prov	Nov 2008	0922	Comm	Nov 2008	0928	Comm	May 1994
0929	Comm	May 1994	0930	Comm	May 1994	0931	Comm	May 1994
0932	Comm	Nov 2009	1001	Comm	Mar 1993	1002	Comm	Apr 2004
1003	Comm	Nov 2004	1004	Comm	Nov 2005	1006	Comm	Nov 2006
1010	Comm	Apr 2004	1101	Prov	Apr 2007	1102	Comm	Oct 1989
1103	Comm	Nov 2007	1151	Prov	Apr 2007	1152	Comm	Jul 1990
1153	Comm	Jul 1990	1154	Comm	Mar 1993	1202	Comm	Nov 2008
1203	Comm	Nov 2008	1204	Comm	Nov 2003	1205	Comm	Dec 1983
1210	Comm	Nov 2008	1212	Comm	Nov 2003	1213	Comm	Mar 1998
1215	Comm	Mar 1998	1301	Comm	Sep 1996	1302	Comm	Sep 1996
1303	Comm	Sep 1996	1305	Comm	Sep 1996	1306	Comm	Sep 1996
1308	Comm	Nov 2003	1312	Comm	Sep 1996	1315	Comm	Sep 1996
1350	Prov	Apr 2010	1351	Comm	Nov 2004	1352	Comm	Nov 1989
1359	Comm	May 1993	1430	Comm	Mar 1991	1440	Comm	May 1994
1441	Comm	Sep 1988	1442	Comm	May 1994	1443	Comm	May 1994
1503	Comm	Nov 2001	1504	Comm	Nov 2001	1505	Comm	Nov 2001
1540	Comm	Nov 2008	1541	Comm	Nov 2005	1601	Comm	Nov 2006
1605	Comm	Nov 1989	1704	Comm	Apr 2003	1712	Comm	Feb 1991
1713	Comm	Feb 1991	1714	Comm	Feb 1991	1715	Comm	Feb 1991
1716	Comm	Feb 1991	1750	Comm	Dec 1983	1801	Comm	Nov 2007
1802	Comm	Nov 2004	1820	Comm	Nov 2005	1821	Comm	May 1993
1840	Comm	Nov 2006	1841	Comm	Apr 2005	1842	Comm	Nov 2003
1850	Comm	Nov 2003	1851	Comm	Dec 1984	1854	Comm	Nov 2004
1860	Comm	Mar 1998	2001	Comm	Jun 1995	2002	Comm	Dec 1990
2003	Comm	Dec 1990	2005	Comm	Dec 1990	2007	Comm	Nov 1989
2012	Comm	Nov 1984	2320	Comm	Mar 1998	2321	Comm	Mar 1998
2322	Comm	Mar 1998	2323	Comm	Mar 1998	2324	Comm	Mar 1998
2325	Comm	Mar 1998	2401	Comm	Nov 2008	2409	Comm	Nov 2000
2410	Comm	Nov 2000	2414	Comm	Nov 2008	2420	Comm	Sep 1984
2421	Comm	Jan 1990	2422	Comm	Nov 2008	2423	Comm	Sep 1988
2426	Comm	Nov 2007	2428	Comm	Nov 2007	2432	Comm	Nov 2005
2434	Comm	Nov 2002	2452	Comm	Sep 1988	2453	Comm	Sep 1988
2460	Comm	Nov 2009	2461	Comm	Nov 2007	2471	Comm	Nov 2008
2474	Comm	Nov 2003	2476	Comm	Nov 2008	2479	Comm	Jan 1990
2485	Comm	Nov 2006	2492	Comm	Sep 1984	2501	Comm	May 1994
2502	Comm	Dec 1990						

The following note refers to Ontario Provincial Standard Specification (OPSS) and Drawing (OPSD) numbers found in Sections C, F and G.

For the text of all OPS specifications and copies of OPS drawings, please refer to the MTO Library website at www.raqsbt.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage. This webpage lists the most current published

version of all OPS specifications and drawings. Previous versions of OPS specifications and drawings can be found in the OPS archives at www.raqsb.mto.gov.on.ca/techpubs/opsa.nsf/ArchiveHomePage.

H. GENERAL CONDITIONS

OPSS.PROV 100, MTO General Conditions of Contract, April 2005

(The above referenced document can be accessed via the MTO library website, OPS Volume 5 – MTO General Conditions of Contract and General & Construction Specifications).

SIGNED STATEMENT BY BIDDER THAT THE BID IS PREPARED AND SUBMITTED WITHOUT COLLUSION OR DECEIT

The Bidder expressly warrants that the prices contained in his tender whether as unit prices or lump sums, and whether for transportation or supply of materials or for services, are quoted in utmost good faith on his part, without any collusive arrangement or agreement with any other person or partnership or corporation.

The Bidder expressly represents that he is not party or privy to any deceit tending to mislead the Ministry into accepting his tender as a truly competitive tender whether to the prejudice, injury or benefit of the Ministry.

THE CONTRACTOR BY THIS TENDER OFFERS TO COMPLETE THIS CONTRACT IN ACCORDANCE WITH THE PRICES QUOTED AND TERMS CONTAINED HERE IN.

Tax Compliance Declaration

The Ontario Government expects all suppliers to pay their provincial taxes on a timely basis. In this regard, bidders are advised that any contract with the Ontario Government will require a declaration from the successful bidder that his/her company's provincial taxes are in good standing.

In order for a company to be considered for a contract award, the bidder must submit the following statement of the company's tax compliance status:

I/we hereby certify that _____ at the time of
(legal name of company)

submitting this bid, is in full compliance with all tax status administered by the Ministry of Finance for Ontario and that, in particular, all returns required to be filed under all provincial tax statutes have been filed and all taxes due and payable under those statutes have been paid or satisfactory arrangements for their payment have been made and maintained.

Dated at _____ this _____ day of _____ 20__

(An authorized signing officer)

(Title)

(Phone Number)

**SECTION A
SPECIAL PROVISIONS
FOR**

CONTRACT NO.

NOTICE TO CONTRACTOR

Special Provision

Effective September 26, 2005 the text for all standard special provisions will be available on the MTO library site at: www.mto.gov.on.ca/english/transrd. Hard copy of all technical publications can be purchased through Publications Ontario web site at <http://www.publications.gov.on.ca>.

Use of Dombind

Dombind is not permitted for use on this contract.

Joint Ventures or Joint Bids

Section G.C. 1.07 is amended by the addition of the following definition:

Under the Qualification procedures for Contractors, Contractors are permitted to qualify and bid on tenders as a joint venture or joint bid. Joint ventures or Joint bids are defined as companies not associated or related by common ownership. All joint Venture or Joint bid companies must, on a joint and several bases, absolutely, unconditionally and irrevocably be responsible for all obligations under the contract. If the joint venture or joint bid companies do not form a corporation, all the joint venture companies must sign the contract upon execution

Under joint venture or joint bid submissions, Contractors must identify on the "Tender Registration Form" the percent responsibility for each qualified member and which Contractor will be considered the lead Contractor. The responsibilities of the lead Contractor are as follows:

- Ensures all documentation is received for qualification purposes.
- Submits the tender price at the time of tender opening and ensures all documentation is received by the Ministry in a timely manner.
- Acknowledges and accepts responsibility as a "Constructor" under the Occupational Health & Safety Act and that as between the lead Contractor and the other participants in the bid, all participants recognize the lead Contractor as the "constructor" under the Occupational Health & Safety Act.
- Act as the agent to do or execute any act or thing necessary for the purpose of receiving and giving all payments notices, directions, etc. under the contract.

CONTRACTOR'S RELEASE TO CITY OF TORONTO WORK'S YARD FORM August 2005

Prevention of Asian Long-horned Beetle (ALHB) Infestation and Management of Host Trees

MTO Contract# _____ Location: _____

Work Description: _____

The Contractor verifies that for the noted work the following quantity of chipped ALHB host tree material has been disposed and accepted at the CFIA designated site located at the Toronto Work's Yard at 61 Toryork Drive.

Dated this ___ day of _____, 200__

Quantity (Volume) of Chipped Material: _____

Print Contractor's Name and Field Representative's Name

Contractor's Signature

NURSERY STOCK SUPPLIER'S RELEASE FORM August, 2005

Prevention of Asian Long-horned Beetle Infestation and Management of Host Trees

MTO Contract# _____ Location: _____

Work Description: _____

I/We _____ being the Owner(s) and/or Operator (s) of the Nursery Stock Supply Company named _____

Located at the following Address: _____

And legal description (if available) : Lot _____, Concession _____ Township: _____

County/Region/District: _____ verify that the deciduous trees and shrubs (ie. Host trees) to be provided to the ministry's Contractor for planting on the Contract noted above:

1. Have never been grown, planted or otherwise stockpiled for any length of time at a site located within the area identified as a potential zone of Asian Long-horned Beetle infestation in the City of Toronto, Town of Vaughan which is bounded by:

**Major Mackenzie Road in the North;
Highway 50, along Highway 7 and Highway 427 to the west;
Along Highway 401, then along Dixon Road and Lawrence Avenue to the south: and
Bathurst Street to the east; and**

2. Do not exhibit any visible signs of infestation by the Asian Long-horned Beetle.

Dated this ___ day of _____, 200__

Print Name of NURSERY STOCK SUPPLIER'S Representative

NURSERY STOCK SUPPLIER REPRESENTATIVE'S Signature

PREVENTION OF ASIAN LONG-HORNED BEETLE INFESTATION AND MANAGEMENT OF HOST TREES

Non Standard Special Provision

Aug. 2005

SCOPE

This provision describes the requirements for the acquisition, planting, management and disposal of trees and shrubs that could host the Asian Long-horned Beetle (ALHB) which was found to have been infesting trees in the City of Toronto and Town of Vaughan. This provision applies where the Contractor's operations will include the planting of or the pruning or removal, including clearing and grubbing, of deciduous trees and shrubs.

These requirements are in addition to those which may be specified elsewhere in the Contract.

DEFINITIONS

Host Tree: means a deciduous tree that is a suitable host for the Asian Long-horned Beetle. Host tree species include the following deciduous trees: Maple, Horsechestnut, Birch, Willow, Elm, Mountain Ash, Poplar, Sycamore, Hackberry and Silk Tree. The deciduous shrubs Arrowwood and Nannyberry will also be treated as if they were host trees.

Plant Material: means all woody material from a shrub or tree including branches, trunks, and roots.

Area of Concern for ALHB: means the area surrounding and including a Regulated Area for ALHB and is the area contained within the following boundaries in the City of Toronto and the City of Vaughan:

- 1) *Major Mackenzie Road to the north;*
- 2) *Highway 50, along Highway 7 and Highway 427 to the west;*
- 3) *Along Highway 401, then along Dixon Road and Lawrence Avenue to the south: and*
- 4) *Bathurst Street to the east.*

Regulated Area for ALHB: means the area designated by the CFIA as a Regulated Area due to identified or potential infestation by the Asian Long-horned Beetle and is the area contained within the following boundaries in the City of Toronto and the City of Vaughan:

- 1) *Rutherford Road to the north:*
- 2) *Highway 27 to the west;*
- 3) *Along Highway 409, then Highway 401 to the south: and*
- 4) *Dufferin Street to the east.*

SUBMISSION AND DESIGN REQUIREMENTS

1. Within the **Area of Concern for ALHB**, the Contractor shall provide the following information to the Contract Administrator a minimum of two weeks prior to commencement of the work:
 - a) The Name, Address and Location of the Nursery that will be supplying trees for the contract;
 - b) Written confirmation that the Contractor has notified the Toronto Area Office of the Canadian Food Inspection Agency (CFIA) about the proposed **host tree** removals and a description of CFIA's response and any action taken.

At the completion of any host tree pruning and removal work the Contractor shall provide the Contract Administrator with the following records:

- a) Within the **Regulated Area for ALHB**, a completed "Contractor's Release to City of Toronto Works Yard" Form shall be provided;
 - b) Outside the **Regulated Area for ALHB** but within the **Area of Concern for ALHB**, a record identifying the species, quantity and stockpiling locations of any removed plant material shall be provided.
2. Outside the **Area of Concern for ALHB**, the Contractor shall provide the following information to the Contract Administrator a minimum of two weeks prior to commencement of the work:
 - a) The Name, Address and Location of the Nursery that will be supplying trees for the contract; and
 - b) A copy of the completed "Nursery Stock Supplier's Release Form – Prevention of Asian Long-horned Beetle Infestation & Management of Host Trees" for any host trees to be planted on the Contract.

CONSTRUCTION

Within the **Area of Concern for ALHB**, the Contractor shall ensure that host trees are not planted.

Where the contractor has parked a vehicle or other machinery within the **Area of Concern for ALHB**, for any period of time; prior to moving the vehicle the contractor shall inspect its exterior surfaces to prevent the transport of live beetles out of the area. Any sightings of the beetle shall be immediately reported to the CFIA at 1-800-442-2342 and the Contract Administrator.

Within the **Area of Concern for ALHB**, for any removal work including pruning and clearing and grubbing of **host trees** the Contractor shall ensure that:

- a) the Toronto Area Office of the Canadian Food Inspection Agency is notified at least two weeks prior to the proposed removal so that the CFIA has the opportunity to inspect the host trees for evidence of Asian Long-horned Beetle infestation; and

- b) host trees and plant material are NOT removed from the immediate work area but are chipped and stockpiled within the immediate work area in a location acceptable to the Contract Administrator. The perimeter of the stockpile shall be fenced with snow fencing and signed as designated by the Contract Administrator; and
- c) for any removal work including pruning and clearing and grubbing of **host trees** that are located within the **Regulated Area for ALHB**, the Contractor shall ensure that host tree and plant material is not stockpiled within the immediate work area. Removed host trees and plant material shall be chipped at the immediate work area the same working day to a size not greater than 5/8th inch. The Contractor shall ensure that chipped plant material shall be transported, the same working day, directly from the work site to the CFIA-designated disposal site located within the City of Toronto Works Yard at 61 Toryork Drive.

Outside the **Area of Concern for ALHB**, prior to acquiring any host trees, the Contractor shall ensure that all host trees to be planted on the Contract have never been located within the **Area of Concern for ALHB** and show no evidence of infestation with the ALHB.

WARRANT:

- 1) For use in all contracts in Central Region until December 31, 2008.

OPERATIONAL CONSTRAINT (ENVIRONMENTAL) - Migratory Bird Protection

March 2 2010

Migratory Bird Protection – General

The contractor shall adhere to the following;

Site Preparation:

- Prior to and during construction the Contractor shall inspect the construction area for nests and eggs/young and advise the Contract Administrator and Environmental Office of these locations immediately;

Site Preparation/Maintenance:

- To prevent the nesting of birds during construction the contractor shall establish preventative measures within the project limits;
- The Contractor shall adjust the preventative measures as needed during construction and maintain the integrity/function of the preventative measures until no longer needed or at the end of the contract;
- If adjustments to the preventative measures are required to facilitate construction staging operations, the adjustments shall be effective in preventing nesting of migratory birds;
- The Contractor shall document and report all preventative measures to the Contract Administrator;

- If nests with eggs and/or young are found the Contractor shall retain an avian biologist to confirm they belong to a migratory bird species;

If Active Nests (nests with eggs or young birds) are found:

- The contractor shall immediately notify the Contract Administrator who shall contact the Environmental Office and the environmental consultant/avian biologist for direction;
- The Contractor shall monitor the area daily for nesting activity and notify the Contract Administrator immediately if a nest (re)appears

The contractor shall remove nests only during specific situations as identified below;

Location	During the Migratory Bird Nesting Season	Outside the Migratory Bird Nesting Season
Durham Region York Region Peel Region Halton Region Niagara Region City of Hamilton City of Toronto	The contractor shall not destroy nests during the migratory bird nesting season (April 1 to July 15)	The contractor shall remove (inactive) nests only outside the migratory bird nesting season (July 16 to March 31)
Simcoe Region	The contractor shall not destroy nests during the migratory bird nesting season (April 1 to August 30)	The contractor shall remove (inactive) nests only outside the migratory bird nesting season (September 1 to March 31)

In certain circumstances a Canadian Wildlife Services (CWS) permit may be obtained for the removal of nest and eggs of migratory birds. The contractor shall notify the CA, the Consultant and the Environmental Office if a CWS permit is required.

WARRANT: All contracts.

ENVIRONMENTAL CONSTRAINT

Special Provision

General Environmental Protection Requirements

The Contractor is responsible for protection of people, property, and the natural environment from environmental impacts and damage that may result from this contract.

Environmental protection during construction shall:

- Comply with commitments and conditions of environmental approvals, permits, exemptions, agreements, reports, and clearances provided by the owner;
- Comply with any other formal environmental approvals, permits, exemptions, agreements, reports and clearances that must be procured by the contractor in order to perform the work; and
- Be integrated with environmental and other requirements specified in the contract.

Environmental protection shall include, but not be restricted to control of materials, equipment and construction operations in order to avoid and minimize:

- a) Direct physical damage;
- b) Sediment, noise, vibration, dust, chemical, and other emissions; and
- c) Interference with local use, access and passage.

Such control shall include but not be restricted to selection and management of:

- a) Materials, including the management of excess and contaminated materials;
- b) Equipment, including maintenance and refuelling;
- c) Method of construction;
- d) Construction site disturbance limits; construction site access, detours and haul roads; earth aggregate and rock borrow areas; material storage and disposal areas; equipment storage areas; construction yards; and
- e) Timing, duration and staging of work.

All materials used in the construction of temporary physical environmental protection measures shall remain the property of the Contractor.

ENVIRONMENTAL CONSTRAINT

Special Provision

Protection of Migratory Birds

Work activities, such as vegetation clearing, placement of fill, and the modification of culvert structures, have the potential to destroy migratory bird habitat. Vegetation removals associated with clearing, site access and

staging shall occur outside the breeding period identified by Environment Canada for migratory birds to ensure compliance with the Migratory Birds Convention Act, 1994 (MBCA) and Migratory Bird Regulations (MBR). Migratory bird habitat is known to exist within the construction area. The Contractor shall adhere to the following:

- a) The Contractor shall not disturb or destroy active nests or eggs, or injure/ kill of protected migratory birds, under the *Migratory Birds Convention Act*, 1994 and associated regulations, during the migratory bird nesting seasons.
- b) Prior to construction, the Contractor shall conduct an inspection of the construction area for nests and/or eggs, advising the MTO Contract Administrator of the location(s) of the nests and eggs immediately. A Qualified Avian Biologist must be retained to conduct a nesting survey prior to the commencement of the works.
- c) The Contractor shall, prior to the removal of the nests, notify the MTO Contract Administrator who shall contact the MTO Environmental Office and environmental consultant responsible for birds. A mitigation plan in consultation with Environment Canada – Ontario Region shall be developed to avoid the active nest (and potentially establish appropriate buffers around the active nests) until such time that the nests become inactive.
- d) The Contractor shall monitor the area on a daily basis for any recurrence of nesting activity upon removal of nests and shall immediately notify the Contract Administrator if a nest reappears.

The Contractor shall remove nests only during specific situations as identified below:

In Durham, York, Peel, Halton, and the Niagara Regions and in the Cities of Hamilton and Toronto – Bird Conservation Area 13 (Lower Great Lakes/St. Lawrence Plain) – The Contractor shall not destroy nests during the migratory bird nesting season (April 1 to July 15); the Contractor shall remove nests only outside the migratory bird nesting season (July 16 to March 31).

ENVIRONMENTAL CONSTRAINT

Special Provision

Wildlife Protection – General

The protection of vegetation where required for construction activities, is addressed elsewhere in this Contract.

This special provision addresses wildlife encounters which may occur as a result of disturbance of wildlife habitat through the conduct of construction activities.

- a) The feeding, harassment, or taking of wildlife is strictly prohibited.
- b) All construction equipment and vehicles shall give the right-of-way to wildlife, allowing wildlife to pass and proceed to a safe distance prior to construction equipment/vehicles commencing construction activities.
- c) In the event wildlife is injured during construction operations, the Contractor shall immediately cease work activities and notify the MTO Contract Administrator providing details of the incident/sighting.

The MTO Contract Administrator shall notify the Ministry of Natural Resources (Aurora District Office) to identify a plan to remove the injured wildlife. Such operations shall remain suspended until the injured wildlife has been removed (as per MNR) and the Contractor is notified by the MTO Contract Administrator in writing that construction activities may precede.

ENVIRONMENTAL CONSTRAINT

Special Provision

Solid Waste Management

Solid waste (i.e., domestic waste, paper, cardboard, and wood) generated by construction activities and day-to-day work activities (domestic waste), if not controlled, shall be unsightly and may cause human safety and health concerns.

- a) A solid waste collection system shall be implemented on a site-wide basis with installation of collection bins located at administration offices and placement throughout the work areas.
- b) All solid waste and construction debris shall be removed daily from the respective work areas and removed as provided for in the Contractor's EPP.
- c) All wastes shall be tracked (waste stream profiles) and transported off-site on a schedule with prior approval by the MTO Contract Administrator to an approved landfill or disposal facility (manifests providing a cradle-to-grave tracking system, if necessary) as defined in the Contractor's EPP.
- d) The incineration or open burning of solid waste is prohibited.

ENVIRONMENTAL CONSTRAINT

Special Provision

Air Quality Protection – General

The Contractor shall implement the following measures during the conduct of all work activities for the Highway 404 Extension Project:

- a) Approved dust control measures shall be implemented by the Contractor, as required by the MTO Contract Administrator, during windy and prolonged dry periods.
- b) Minimize vehicle traffic on exposed soils.
- c) Stabilize soil and other material storage piles against wind erosion.
- d) Cover and contain fine particulate materials during transportation to and from the site. Install a tarpaulin on haulage trucks, as appropriate.
- e) Use new or well-maintained heavy equipment and machinery, preferably fitted with fully functional emission control systems/muffler/exhaust system baffles and engine covers.

ENVIRONMENTAL CONSTRAINT

Special Provision

Restrictions on Open Burning

180.07 CONSTRUCTION

180.07.04 Conditions on Management by Open Burning

Subsection 180.07.04 of OPSS 180 is deleted in its entirety and replaced with the following:

Open Burning shall not be permitted within the Contract Limits.

Restrictions on Open Burning

ENVIRONMENTAL CONSTRAINT

Special Provision

Archaeology

During construction there is the possibility of encountering deeply buried archaeological material. In the event the following situations are encountered during construction, work must stop immediately and the actions undertaken as described below:

- a) Should previously unknown or unassessed deeply buried archaeological resources be uncovered during development, they may be a new archaeological site and therefore subject to section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*. The Heritage Operations Unit of the Ministry of Culture must be immediately notified at (416)314-7178.
- b) In the event that human remains are encountered during construction, the proponent must immediately notify the police or coroner and the registrar of Cemeteries, Ministry of Government Services at (416) 326-8392. The Registrar of Cemeteries, Cemeteries Regulation Unit can be reached at (416) 326-8404 or (416) 326-8393. The Heritage Operations Unit of the Ministry of Culture can be reached at (416) 314-7188.

If the above situations are encountered, the MTO-Central Region Planning and Environmental Office must be immediately notified.

Entrance is prohibited onto land beyond the ROW identified in the Contract drawings.

OPERATIONAL CONSTRAINT

Special Provision

Equipment Refueling, Maintenance and Washing

All activities, including equipment maintenance, refueling and concrete truck washing shall be controlled to prevent entry of petroleum products (e.g., gasoline, oils, lubricants), debris, rubble, concrete, primers, grout, bonding adhesives and/or other hazardous or deleterious substances into all watercourses and water bodies within the project limits. Substances are to be stored and mixed on protected surfaces away from the watercourses and water bodies within the project limits in order to prevent contamination of soils and waters. Any such material, which advertently enters the watercourses or water bodies within the project limits, shall be removed by the Contractor, at his own expense, in a manner satisfactory to the Contract Administrator.

For mobile equipment and vehicles, maintenance, refueling and truck washing shall be conducted no closer than 30 m from the watercourses and water bodies within the project limits in order to prevent water contamination due to accidental spills.

All large equipment working in or near the watercourses and water bodies within the project limits shall be well maintained to avoid contaminant leakage, shall be free of excess surface oil or grease and shall be equipped with spill kits deemed acceptable by the Contract Administrator.

OPERATIONAL CONSTRAINT

Special Provision

Spill Prevention and Response Contingency Plan

General

The Contract involves construction activities within and near watercourse areas as defined elsewhere in this Contract. This Special Provision covers the requirements for dealing with spills and unplanned situations.

Submission

The Contractor shall submit a Spill Prevention and Response Contingency Plan to the Contract Administrator 14 calendar days prior to commencing work as part of the Contractor's Environmental Plan. The Spill Prevention and Response Contingency Plan shall address procedures for preventing and responding to spills,

and equipment and resources that will be available to prevent and/or respond to all potential discharges resulting from the Contractor's operations in this Contract. The Plan shall address the following key features:

- a) identify roles and responsibilities in the event a spill were to occur.
- b) provide contact list of names and phone numbers for various agencies.
- c) protocols for on-site staff in reporting spills.
- d) detailed emergency response procedures.
- e) detailed emergency spill kit requirements.

Upon approval of the Plan, a copy of the plan shall be stored in proximity to each working area, clearly marked, and accessible should a spill occur. The Contractor shall ensure that all construction personnel are made aware of the Plan's contents and its location.

A Spills Containment Kit (comprising, at the very least, absorbent materials to initially contain a spill, protective gear for the handling of hazardous materials, and the number (1-800-268-6060) for the MOE Spills Action Centre) shall be stored in proximity to each working area and clearly marked and accessible should a spill occur.

OPERATIONAL CONSTRAINT

Special Provision

Contractor Environmental Protection Plan

There is potential to negatively impact the environment, both natural and social, through the conduct of work activities to construct this portion of the Highway 404 Extension. The development and implementation of an Environmental Protection Plan by the Contractor shall ensure mitigation measures committed to during the Class EA process are implemented as required to avoid and minimize to the extent possible any environmental effects.

Four (4) copies of the Environmental Protection Plan shall be submitted to the Contract Administrator 14 calendar days prior to commencing work. The Environmental Protection Plan shall be comprehensive and identify how the environmental requirements of the Contract are to be achieved.

The Environmental Protection Plan shall include, but is not limited to:

- Identification of all applicable acts and regulations;
- Roles and responsibilities of the Contractor's team with respect to the protection of the environment;
- Identification of environmental training programmes to ensure all Contractor's (and sub-contractors) personnel are educated with regard to implementation of the EPP and the applicable federal, provincial, and municipal legislation as it applies to their work activities;
- Identification of documentation procedures and schedules to ensure the EPP is maintained (up-to-date) and reports are submitted to the Contract Administrator;
- Identification of measures to be implemented during construction to ensure all EA commitments identified in the CMP are appropriately addressed;
- Identification of environmental inspection and monitoring procedures by qualified personnel;

- Identification of all environmental protection measures (best management practices) to be implemented as part of this Contract;
- Provision of a detailed Erosion and Sediment Control Plan (including those measures identified elsewhere) identifying site maintenance, over-winter protection, protection for slope and exposed (non-vegetated) surfaces, and watercourse protection.
- Provision of a detailed Stormwater Management Plan including maintenance of surface water drainage, diversion, and temporary sedimentation ponds.
- Provision of Flow Management Plan detailing the methodologies for working in the dry (dam and pump) in watercourses, on banks adjacent to watercourses, and other dewatering or channel diversion works.
- Provision of a Waste Management Plan including domestic and construction wastes;
- Provision of a detailed Hazardous Materials Management Plan (and hazardous wastes) including storage and use (equipment refuelling);
- Provision of a Spill Response Contingency Plan addressing all potential discharges relating to the Contractor's (sub-contractor's) construction activities, details on the location and contents of spill kits, and emergency contact numbers .
- Provision of an Emergency Response Plan including procedures to follow, emergency response team members, and contact numbers both internal and external.

The Contract Administrator shall review the details of the Contractor's Environmental Protection Plan to ensure it has been developed in accordance with this Special Provision and all other environmental requirements of this Contract. The Contractor shall not deem the Environmental Protection Plan accepted until the Contract Administrator provides written notice of permission to proceed with the implementation of this Plan.

OPERATIONAL CONSTRAINT

Special Provision

Erosion and Sedimentation Control - General

The time interval between commencement and completion of any work that disturbs earth surfaces shall be a maximum of 45 calendar days. Commencement of such work shall be considered to have occurred when the original stabilizing ground cover has been removed, including grubbing, or has been covered with fill material. Completion of such work shall be considered to have occurred when the specified cover material (seed and mulch, seed and erosion control blanket, sod, riprap, etc.) has been applied.

The period in which the time interval is permitted shall be determined by the Contract Administrator. In addition, this period shall be in compliance with any timing constraints specified elsewhere in the Contract for the application of the specified cover.

These timing constraints apply regardless of timing of Contract award.

Where interceptor ditches or subsurface drains are specified in the Contract, they shall be constructed before commencement of any related cut or fill.

Run-off from construction materials and any stockpiles shall be contained and discharged so as to prevent entry of sediment to watercourses.

Where dewatering is required, and where culverts are cleaned by hydraulic means, effluent shall be discharged so as to prevent entry of sediment to watercourses.

Erosion and sedimentation control measures shall not be placed in watercourses unless otherwise specified in the Contract, or directed by the Contract Administrator.

A 200 m stand-by supply of heavy duty silt fence barrier, in addition to silt fence barrier which may be specified elsewhere in the Contract, shall be maintained at the Contract site prior to commencement of grading operations and throughout the duration of the Contract.

Silt fence geotextile shall be a woven, Class I geotextile, having a width of 1 m minimum. It shall have a filtration opening size (FOS) of 840 micrometres maximum, meeting CAN/CGSB 148.1, Method 10.2.

ENVIRONMENTAL CONSTRAINT

Special Provision

July 12, 2000

EROSION AND SEDIMENTATION CONTROL

Scope

This special provision covers the requirements for erosion and sediment control for operations other than the item specific erosion and sediment control measures of the contract, including the winter shut-down period if required.

Erosion and Sedimentation Control

A plan shall be prepared for the control of erosion and sediment. The plan shall complement the erosion and sediment control measures specified elsewhere in the contract. The plan shall be comprehensive, and shall provide descriptions and schedules, as well as sketches and/or plans and/or drawings and shall include all required materials. The plan shall be designed to control erosion and sediment for a 5 year Design Storm Event.

Any work to correct ineffective erosion and sediment control measures, that is caused by a storm event not exceeding that specified in this special provision, shall be at the Contractor's expense.

The Contractor will provide the Contract Administrator with a copy of the plan prior to undertaking any work covered by the plan.

Implementation, inspection, maintenance and removal of erosion and sediment control measures, identified in the plan, shall be in accordance with OPSS 577.

Materials

Materials may include, but are not limited to, those specified in OPSS 577, Construction Specification for Temporary Erosion and Sediment Control Measures. Alternative materials or methods are acceptable

provided they meet industry standards and protect the environment from the impacts of erosion and sedimentation.

Payment

Except for specific environmental tender item(s) the Erosion and Sediment Control Plan, and work necessary to control erosion and sediment under the provisions of the plan, shall be included in the bid price for the contract.

ENVIRONMENTAL CONSTRAINT

Special Provision

Protection of Fisheries and Aquatic Habitat

The Contractor will be conducting work activities within and in close proximity to watercourses throughout the construction period. In particular, work activities to construct culverts to convey watercourses (and provide for wildlife movement) under the Highway 404 Extension at the Maskinonge River Tributary at 34+050 are required and will be conducted in accordance with the following requirements. Requirements specific to these areas are provided at the end of this Special Provision.

Notification of Government Stakeholders

MNR and DFO shall be notified no less than five (5) days in advance of the initiation and proposed scheduling of construction.

Environmental Inspector

An environmental inspector experienced in working around watercourses shall be responsible for ensuring the sediment and erosion control measures are functioning effectively and being maintained, and all of the other general mitigation measures are being implemented as intended.

The environmental inspector shall ensure all environmental mitigation and design measures are properly installed/constructed and maintained, and appropriate contingency and response plans are in place and implemented if required.

The environmental inspector shall be responsible for obtaining specialist advice (e.g. hydrology/hydraulics, fisheries, landscape architects) as required during the re-instatement or construction of specific features such as channel restoration and culvert inlet and outlet of the Maskinonge River tributary and installation of plant materials.

General Fisheries and Watercourse Protection Measures

At all times, the Contractor's operations shall be controlled so as to prevent the entry of deleterious materials to watercourses. Controls shall include, but not be restricted to, the following:

- a) The erosion and sedimentation control, and protection of environmentally sensitive areas, shall be in compliance with requirements that may be specified elsewhere in the Contract.
- b) Watercourses shall not be diverted, or blocked, and temporary watercourse crossings shall not be constructed or utilized, unless specified elsewhere in the Contract.
- c) All in-water and near-water activities shall be conducted between July 1 and March 31 to protect the warmwater fishery functions.
- d) To minimize potential for impacts and facilitate restoration particularly at the other watercourses or drainage features where fish use was identified, it is recommended that work be conducted during low flow periods when these features support no or very small flows.
- e) Any fish stranded within the temporary work zones in those watercourses that may support fish (i.e. the tributary of the Maskinonge River at 34+050) shall be removed using appropriate techniques by qualified individuals and released downstream of the temporary work zones in a suitable location where water is present (e.g. in the Maskinonge River).
- f) 'Flow management plans' shall be followed to isolate the temporary instream construction zones for the proposed culvert and interchange works to maintain clean flow downstream (where flow is present).
- g) All hoses drawing water from streams supporting fish shall be screened to prevent potential entrainment of fish.
- h) All activity shall be controlled so as to prevent entry of any petroleum products, debris or other potential contaminants/deleterious substances, in addition to sediment as outlined above, to the watercourses.
- i) Where the Contract does not require work in watercourses or on watercourse banks, equipment shall not be operated within such areas.
- j) Where the Contract requires work in watercourses or on watercourse banks, such work shall comply with operational constraints specified elsewhere in the Contract.
- k) All equipment maintenance and refuelling shall be controlled so as to prevent any discharge of petroleum products. Vehicular maintenance and refuelling shall be conducted away from watercourses and watercourse banks.
- l) No storage, maintenance or refuelling of equipment shall be conducted within 30 m of the watercourses.
- m) A Spills Prevention and Response Plan shall be developed by the Contractor and kept on site at all times.
- n) All materials necessary for containment, including a supply of silt control fabric, shall be readily available on the site. Ministry of the Environment (MOE), as well as, MNR and DFO shall be immediately notified of any "spills", including silt spills.
- o) Only clean materials free of fine particulate matter shall be placed in the water for temporary construction measures (e.g. coffer dams shall be constructed of 'pea gravel' bags, geotextile fabric or other clean material) or permanent works (e.g. substrate material, any required scour protection).
- p) A comprehensive sediment and erosion control plan shall be developed during detail design and implemented by the Contractor.
- q) Any temporarily stockpiled material, construction material, excess material, construction debris or empty containers shall be properly contained (e.g. within silt fencing) in areas separated at least 30 m from the watercourses.
- r) All construction materials and debris shall be removed and appropriately disposed of following construction.

- s) Every effort shall be made to retain as much of the natural vegetation as reasonably possible to help ensure bank, control erosion, and expedite the re-colonization of vegetative cover.
- t) All vegetation clearing required for access shall be conducted using proper clearing techniques and appropriate windows as may be defined by other legislation (e.g., *Migratory Birds Convention Act*).
- u) All new ditch lines draining to watercourse that support fish habitat should be re-stabilized and reseeded to prevent erosion and sediment migration downstream during periods of higher flow.

In the event that the MTO Contract Administrator determines that controls are unacceptable, the Contractor shall cease those operations, as identified by the MTO Contract Administrator which are causing the entry of deleterious material to watercourses. Such operations shall remain suspended until otherwise directed by the MTO Contract Administrator in writing. This will not require the cessation of work required for such essential operations as continuous concrete pours for structures, unless otherwise directed by the MTO Contract Administrator.

The Contractor’s operations shall comply with the timing constraints specified in Table ‘F’ (below):

Table ‘F’

Location	Timing Constraint Details
Tributary of Maskinonge River (34+040)	July 1 to March 31

Operations identified in Table ‘F’ are prohibited in any period outside the specified dates. These timing constraints apply regardless of timing of contract award.

ENVIRONMENTAL CONSTRAINT

Special Provision

Watercourse/Fisheries Protection During Work in Watercourses and on Watercourse Banks

This special provision describes the requirements for watercourse/fisheries protection during work in watercourses and on watercourse banks, and for culvert replacement, extension or repair at the locations specified in Table ‘A’ (below).

The requirements of this special provision are in addition to those which may be specified elsewhere in the Contract.

Where the Contract requires work in watercourses, on watercourse banks, or culvert replacement, extension or repair at watercourses. Operation of equipment within such areas shall:

- a) Be kept to the minimum necessary to perform the specified work;
- b) Comply with operational constraints that may be specified elsewhere in the Contract; and
- c) Otherwise proceed in a continuous fashion so as to minimize the duration of such work.

The work shall comply with the conditions specified in Table 'A'. In addition, the Contractor shall take such measures and provide such protection system or systems to ensure the following:

- a) Waterflow shall be isolated from the work area; and
- b) Materials that result from the work or that are disturbed by same, shall be prevented from entering the open portion of watercourses.

The protection system or system(s) shall consist of the following:

- a) One, or a combination of temporary water passage systems, in compliance with Table 'A'; and
- b) Temporary erosion and sedimentation controls to isolate temporary water passage systems from the work area.

Table A

Location (Station#) and Type of Work	Details of Temporary Water Passage Systems			Timing Constraints	
	Diversion Through Temporary Culvert	Diversion Through Temporary Channel	Intercept and Temporary Pumping/Piping	Maximum Duration of Temporary Water Passage (working days)	Permitted Period of Temporary Water Passage
	Dimensions	Dimensions	Capacity and End Points		
34+050 (at centre of right-of-way)	N/A	N/A	Capacity: 0.285 m ³ /s (285 L/s). Inlet Location: To be provided Outlet Location: To be provided	30 days	July 1 – March 31

The work identified in Table 'A' is prohibited in any period outside the dates specified. These timing constraints apply regardless of timing of contract award.

Where waterflow is to be diverted through a temporary, in-stream cofferdam channel, the channel shall be protected so as to prevent the entry of sediment to the watercourse.

Where waterflow is to be intercepted upstream of the work area and pumped back to the watercourse downstream of the work area, the following shall apply:

- a) Screening shall be provided so as to prevent entry or damage of fish at the water intake; and
- b) Discharge shall be directed so as to avoid erosion of the watercourse bed and banks at the water outlet.

During closure of the permanent watercourse channel of the temporary water passage system, the Contractor shall release any stranded fish to the open portion of the watercourse without harm.

The Contractor shall submit to the MTO Contract Administrator six (6) copies of written notice a minimum of 21 calendar days prior to the date that permission is required to proceed with this work. The notice shall be comprehensive, and shall provide descriptions, working drawings and schedules that detail the sequence of this work, and the provision of temporary water passage associated with each stage of same.

Permission to proceed with the above will be provided if the MTO Contract Administrator determines that the details of the notice meet the requirements of this special provision.

If, during these work operations, the MTO Contract Administrator decides that any of the Contractor's proposals are ineffective, changes shall be made immediately to ensure watercourse and fisheries protection.

ENVIRONMENTAL CONSTRAINT

Special Provision

Protection of Groundwater

The Contractor is also required to implement the following measures to ensure the protection of groundwater.

- a) Prior to the commencement of construction, local well owners shall be contacted in writing and provided with contact information for a Ministry of Transportation representative that they may contact if they notice issues with regard to the quantity and quality of their well water supply during construction.
- b) Tilling of soil in non-vegetated areas prior to restoration to re-establish infiltration along access roads, storage areas, or other well traveled areas where soil compaction has occurred in areas that previously permitted infiltration.
- c) All groundwater discharge, either by gravity drainage or by construction dewatering shall be managed, through implementation of the Contractor's sediment and erosion control plan, to minimize any erosion effects consistent with the management practices for surface water.
- d) Excavations that intercept existing groundwater flow shall be backfilled with porous granular material to maintain existing groundwater linkage particularly at river crossings.
- e) The permanent stormwater management facilities shall be built concurrently with the mainline grading contracts.
- f) The use of the best management practices for handling of hydrocarbons according to the Ministry of the Environment and the Technical Standards and Safety Authority (TSSA) of the Ministry of Government Services shall reduce the potential of environmental adverse effects associated with petroleum product handling and spill remediation. Spillage of petroleum products must be immediately remediated according to these standards such that groundwater quality is not impacted.

ENVIRONMENTAL CONSTRAINT

Special Provision

Protection of Vegetation -General

The construction access and work areas required for the works shall be confined to the extent required for the construction activities, and these areas then delimited in the field using appropriately installed protective fencing. The disturbed access areas shall be stabilized and re-vegetated within 45 days following the completion of construction activities in the area.

Edge Management

Temporary vegetation protection fencing shall be installed at the edge of the clearing limits where the edge of forest community is removed. This fencing shall delineate the clearing limits and prevent further intrusion into the adjacent forested habitat.

Edge management measures shall be implemented to seal and protect newly created forest edges. Measures shall include:

- Retaining a narrow zone where no root grubbing is to occur (in order to stimulate suckering),
- Removing hazard trees and installing edge plantings where warranted using appropriate native and salt-tolerant species.
- Tree removal shall be restricted to the working area. Wherever possible, vegetation shall be retained in areas not requiring grading or other works.
- Wood chip material shall be utilized in the edge plantings (at the identified edge management areas) to help retain soil moisture and prevent weed spread.
- Hazard tree management shall be undertaken along the new edge as required. A tree is considered hazardous if it has structural weaknesses that may cause it to fall resulting in property damage, personal injury or death.

General Vegetation Protection Measures

- a) After clearing, the edges of the cleared area shall be checked and any trees damaged shall be repaired or removed.
- b) All trees not designated for removal shall be considered specimen trees, and shall be protected and repaired as specified in OPSS 565.
- c) Trees shall be felled to avoid damaging other standing vegetation and trees shall be felled away from any watercourse where it is safe to do so.
- d) Vegetated areas outside the required grading footprint (and therefore not needed for stormwater management, drainage or other facilities) as well as those areas beyond the ROW shall be protected with temporary tree protection as determined based on the final grading plan. Equipment, materials, and other construction activities shall not be permitted in these zones.
- e) Exposed soil areas shall be temporarily stabilized as soon as possible to control sediment transport and erosion. In addition, natural vegetation cover shall be retained wherever possible (and root grubbing minimized where possible) to provide natural erosion control.
- f) Vegetation removals associated with clearing, site access and staging shall occur outside the breeding period identified by Environment Canada for migratory birds to ensure compliance with the *Migratory Birds Convention Act, 1994* (MBCA) and Migratory Bird Regulations (MBR) and as specified elsewhere in the contract.
- g) If works must be conducted during the breeding bird season, a nest survey shall be conducted by a qualified avian biologist prior to commencement of works to identify and locate active nests of species covered by the MBCA. If nesting is confirmed in the impact zone, a mitigation plan shall

be developed to address any potential impacts on migratory birds and their active nests, and should be approved by Environment Canada – Ontario Region prior to implementation as addressed in the Operational Constraint (Environment) – Migratory Bird Protection, as specified elsewhere in the contract.

- h) Cut and grubbed material shall be disposed of through chipping.
- i) Unnecessary traffic, dumping and storage of materials over tree roots shall be avoided.
- j) The soil in non-vegetated areas along access roads, storage areas, or other well travelled areas, where soil compaction has occurred in areas that previously permitted infiltration, shall be tilled prior to restoration to re-establish infiltration.

Location	Contract Drawing	Description
33+350 to 33+600	Removals	EA Vegetation Unit #11
34+600 to 35+050	Removals	EA Vegetation Unit #13
35+850 to 36+275	Removals	EA Vegetation Unit #14
36+450 to 36+675	Removals	EA Vegetation Unit #14
38+025 to 38+500	Removals	EA Vegetation Unit #14b
9+925 to 10+250	Removals	EA Vegetation Unit #17

ELECTRICAL OPERATIONAL CONSTRAINT – Power Connections

Non-Standard Special Provision

May 2010

Hydro One is responsible for power distribution throughout this project.

Hydro One will be connecting the power supplies at the locations shown on the contract drawings and as described below:

Activity
SUPPLY 'A' – Ramp S-N/S at Woodbine Avenue
SUPPLY 'B' – Ramp S-N/S at Woodbine Avenue
SUPPLY 'C' – Ramp S-N/S at Woodbine Avenue
SUPPLY 'D' – Ramp S-N/S at Woodbine Avenue
SUPPLY 'E' – Woodbine Avenue at Ravenshoe Road
SUPPLY 'F' – Woodbine Avenue at Ravenshoe Road
SUPPLY 'G' – Woodbine Avenue south of Ravenshoe Road

It will be the Contractor's responsibility to ensure that the utility connections are coordinated with his/her construction operations. The Contractor shall notify Hydro One upon award of contract and coordinate the utility connections as required.

Service Layouts

The Contractor shall coordinate with Hydro One and the Contract Administrator to arrange and conduct service layouts for the power supply locations. The Contractor shall submit invoices for reimbursement by the Ministry through the Contract Administrator.

Hydro One Networks Inc.

913 Crawford Drive
Peterborough, ON K9J 3X1
Tel: 1-905-713-1215 ext. 282

ELECTRICAL OPERATIONAL CONSTRAINTS – YORK REGION STANDARDS

Non-Standard Special Provision

May 2010

This Contract includes modifications to the existing traffic signal and lighting system at the intersection of Woodbine Avenue (Y.R. 8) and Ravenshoe Road (Y.R. 32). All electrical work shown on Contract Drawings labelled “Municipal” shall be performed in accordance with Region of York Standards and as specified herein and shall be coordinated with the Region of York.

York Region Standard Drawings have been referenced but not included in the Contract Drawing package. The Contractor shall ensure that he/she has the most current Region of York Standard Drawings at the time of construction.

The Contractor shall contact Martin Walsh, Operations Technologist, Region of York (Phone 905-830-4444 ext. 5216) prior to construction start-up.

MANAGEMENT OF EXCESS EARTH WITH SALT IMPACTS

Special Provision

The Contractor shall note that excess earth from highway construction projects may contain elevated concentrations of chloride and sodium and may have elevated values for Electrical Conductivity and Sodium Adsorption Ratio. For the purpose of this Contract, excess earth with salt impacts is not considered to be “contaminated” within the meaning of Table 1 in OPSS 180.

Where the Contractor manages excess earth as disposable fill, the Contractor shall take into account the possibility of salt impacts and ensure that the material is managed responsibly and in an environmentally appropriate manner. Where the Contractor intends to manage the excess earth that may be salt impacted on private property, the Contractor shall make the Property Owner aware that it may be salt impacted by using the attached Property Owner’s Release in place of OPSF 180-3.

The Contractor is responsible for conducting such sampling and testing as may be necessary to comply with any requirements imposed by the Property Owner as a condition of accepting the excess earth.

WARRANT: All Contracts

PROPERTY OWNER'S RELEASE

Contract No: _____

Work Description: _____

I/We being the owner(s) of Lot _____, Concession _____, Township of _____, and County/Region/District of _____, verify that the Contractor for the above noted work has placed excess material from the above noted Contract on my/our property with my/our permission. I/We have been advised by the Contractor of the Conditions on Management described in OPS Forms 180-1, Site Selection Notification for Stockpiling Materials Managed Through Re-Use, or 180-2, Site Selection Notification for Material Managed as Disposable Fill, or both, and have been assured by the Contractor that these conditions have been met.

Where materials are managed as disposable fill, I/we understand that excess earth from a highway project may contain elevated concentrations of chloride and sodium and may have elevated values for Electrical Conductivity and Sodium Adsorption Ratio and I/we agree to be responsible for any subsequent relocation and management of the material so placed.

Where materials are to be stockpiled, I/we agree that the stockpile(s) will be removed by the date(s) herein noted.

Dated this _____ day of _____ 20____

Property Owner's Signature

Print Contractor's Name & Field Representative's Name

Contractor's Field Representative Signature

cc: Contract Administrator, Property Owner(s), Contractor

NOTICE TO CONTRACTOR

Special Provision

Relocation of Canadian Tourist Oriented Directional Signs (CTODS)

Where there are CTODS within the project limits that require relocation to facilitate the proposed work. The Contractor shall contact (905-851-1322) to arrange for relocation of the CTODS, a minimum of six (6) weeks prior to the relocation being required. Neither the Contractor, nor the Ministry shall undertake the relocation of any CTODS.

OPERATIONAL CONSTRAINT

Special Provision

Maintenance of Traffic

Construction operations shall be carried out in such a manner as to maximize safety and minimize disruption to highway traffic.

Lane widths of no less than 3.50 metres and offsets between traffic and temporary concrete barrier of no less than 0.50 metres must be maintained at all times during construction staging. Any exceptions to these minimum requirements are already indicated on contract drawings.

NOTICE TO CONTRACTOR

Special Provision

Winter Shutdown

The scheduled winter shutdown period for this project is from December 1 (nearest Monday) to May 15 (nearest Sunday). Prior to the Contractor's "Winter Shutdown", minimum 1 through lane in each direction and lane width of no less than 3.50m shall be provided to all existing and new highways, crossing roads, structures and interchange ramps which were in place prior to the start of construction, or their reconstructed counterparts, or required for staging. They shall be paved, reinstated as defined elsewhere in the contract and opened to traffic as per the contract drawings. They shall remain unrestricted at all times to public traffic from December 1 to May 15 (referred to as "Winter Shutdown" for the purposes of this special provision). This special provision shall be read in conjunction with other components of this contract package.

Prior to "Winter Shutdown", the Contractor shall complete all partial depth pavement removal and paving operations on all lanes, shoulders, structures and ramps.

The Contractor shall schedule his operations such that the minimum acceptable pavement structure for "Winter Shutdown" will be either the existing full depth pavement structure or the new proposed pavement structure up to and including the upper binder course. No pavement drop-offs will be permitted.

All pavement markings, pavement marking obliteration and guide rail systems shall be in place to the satisfaction of the Contract Administrator and as follows:

- Any pavement markings that will be in place during “Winter Shutdown” shall be painted markings only and shall have had a second application of paint in accordance with the requirements specified elsewhere in the contract.
- All pavement marking obliteration that is required to remove painted temporary line markings shall be obliterated using “grinding or soft abrasive system” if the markings are on a binder course or a “soft abrasive system”, if the temporary line markings are on the final surface course.
- All guide rail systems that are to remain in place during “Winter Shutdown” shall be installed to the elevation requirements for the pavement surface that will be in place during “Winter Shutdown”. The shoulders shall be graded to reflect the required guide rail height. Sufficient room on the posts shall be left to allow for adjustment to final guide rail height.

The Contractor shall schedule and carry out his operations in accordance with these requirements, using any required acceleration including the construction and/or removal of any temporary transitions between the existing pavement structure and the new pavement structure. Compensation for all such work shall be deemed to be included in the Contract price for the appropriate tender items and no additional payment shall be made.

“Winter Shutdown” requirements, as contained in this special provision, shall not relieve the contractor of any other requirements contained in the contract, without the express written approval of the Contract Administrator. All hot mix paving work performed by the contractor to meet Winter Shutdown requirements, that do not meet the full requirements of OPSS 313, shall be considered temporary paving and all costs associated with the placement and subsequent removal of the temporary pavement shall be at the contractor’s expense.

The contractor’s Critical Path Schedule shall at all times reflect the “Seasonal Shutdown” contract requirements as defined in this Special Provision.

OPERATIONAL CONSTRAINT

Special Provision

Protection of Structures

For the new twin Boag Road structure and precast wildlife culvert, the Contractor shall not be allowed to run unlicensed or off-road construction equipment over these structures unless the Contractor has undertaken a detailed structural analysis, performed by a Professional Engineer, proving that the loads induced by the construction equipment will not adversely affect the structures. If such equipment is then permitted on to run over these structures, Appropriate protection of the structures including a minimum 300mm thick timber matting is required on all exposed concrete surfaces.

OPERATIONAL CONSTRAINT

Special Provision

Construction Access

Construction access to Highway 404 work zone shall be from Woodbine Avenue, Holborn Road and Boag Road. See the following restrictions:

For Boag Road reconstruction and new overpass structures during temporary Boag Road closure, limited access from east side of Boag Road via Woodbine Avenue is permitted. No access is permitted from/to Leslie Street onto Boag Road. No construction access is permitted on Holborn Road after through traffic is detoured from Boag Road.

For Holborn Road cul-de-sac construction, limited access from east side of Holborn Road via Woodbine Avenue is permitted. No access is permitted from/to Leslie Street onto Holborn Road. No construction access is permitted on Boag Road after it is reopened.

OPERATIONAL CONSTRAINT

Special Provision

Closure of Boag Road

The Contractor shall be permitted to close Boag Road between Leslie Street and Woodbine Avenue from May 15, 2011 to December 1, 2011 in accordance with the Town of East Gwillimbury Temporary Road Closure By-Law.

OPERATIONAL CONSTRAINT

Special Provision

Preloading of Earth Fill at the Commuter Parking Lot

Contractor shall note that in Stage 2 construction on Woodbine Avenue, after completion of placing earth fill to the proposed subgrade level at the commuter parking lot area, no other construction activities (install drainage structures, sewers, placing granular, paving on the parking lot and placing concrete at bus platform) are permitted.

Minimum 6 months of preloading period will be required to consolidate the native material underneath the earth fill on site after stripping/sub-excavation, as required.

Prior to resume construction, all foreign and contaminated objects left after Stage 2 shall be removed off site, add earth fill as required to the proposed grade, compaction and proof-roll the proposed subgrade in accordance to OPSS 501.

With the approval of the Contract Administrator, construction above the subgrade can be resumed on the parking lot in Stage 3 after preloading has been completed and no settlements have been observed.

Preloading of Earth Fill at the Highway 404 High Fill Area

After sub-excavation and backfill to the high fill area (approximately Sta. 38+200 to Sta. 38+500) to remove the existing clayey silt material, a one (1) month pre-loading period will be required at the above high fill area after completion of earth fill to top of subgrade level.

No construction activities will be permitted at the high fill area during the pre-loading period. Construction above the subgrade can be resumed after the pre-loading period with the approval of the Contract Administrator.

Prior to resume construction, all foreign and contaminated objects left shall be removed off site, add earth fill as required to the proposed grade, compaction and proof-roll the proposed subgrade in accordance to OPSS 501.

OPERATIONAL CONSTRAINT

Special Provision

Earth Hauling

The Contractor shall schedule their earth moving work on Highway 404. Contractor shall not cross Holborn Road for earth moving operations until completion of the Boag Road overpass structures and re-open Boag Road to through traffic.

Upon completion of Boag Road structures and re-open of Boag Road, Holborn Road shall then be closed to through traffic. Contractor shall construct the Cul-de-Sac on the east and west sides of Highway 404. Contractor shall then continue their earth moving work across Holborn Road after its closure to through traffic.

OPERATIONAL CONSTRAINT

Special Provision

Construction Noise

Construction noise is exempted from the Town of East Gwillimbury's Noise By-Law. However, Contractor shall give advanced notification to the Town when excessive noise outside the normal working hours (19:00 to 07:00) is anticipated from the construction operation.

Town of East Gwillimbury
19000 Leslie Street, Sharon, ON L0G 1V0
Tel. 905-478-4282, Fax. 905-478-4282

Illumination for Night Work

Floodlighting used for night work operations shall be adjusted so as to not interfere with the vision of drivers

on the affected or opposing lane and also not to be directed towards residences adjacent to the road.

OPERATIONAL CONSTRAINT

Special Provision

Work Completion at South Contract Limit

Contractor shall complete all the following major construction works within 200m of the south contract limit (Sta. 33+760 to 33+960) by June 22, 2012:

- Grading
- Pavement (rigid or flexible)
- Drainage related : drainage structures, sewers, culverts and ditches
- Stormwater management pond #6 and its outlet structures
- Temporary erosion controls

Work at the south construction limit of this contract shall be coordinated with the adjacent contract.

OPERATIONAL CONSTRAINT

Special Provision

Temporary and Permanent Relocation of Mailboxes and Civic Address Signs (911 Identification Numbers)

Existing private mail boxes throughout the Contract will require relocation to suit the widened Woodbine Avenue and Ravenshoe Road. The Contractor shall be responsible for the removal, temporary relocation and permanent relocation of all mailboxes, posts, and 911 numbers within the contract limit.

Any such items that are damaged as a result of the Contractor's handling shall be replaced by the Contractor at no expense to the Ministry or the owner of the item. Any item that is found to be in deteriorated condition such that relocation is not possible without damage shall be pointed out to the Contract Administrator before work on the item is started. The Contract Administrator will decide on the action to be taken with deteriorated items.

Mailboxes

The salvaged items shall be re-set in a new location to suit the widened road and remain accessible to Canada Post for mail delivery for the duration of the construction. Canada Post and the property owner shall be advised of the date of any temporary mailbox relocation one (1) week in advance.

The mailboxes shall be:

- Located along the appropriate side of the road according to the courier's line of travel, in a position where the courier can reach and service it from his/her vehicle without being an impediment to pedestrians or vehicular traffic.

- Erected so that the box is securely attached to a fixed post or cantilever arm, and the bottom of the box is 1.07 m (3.5 ft.) above the roadway.
- If at the discretion of the Contract Administrator the existing post can not be reused then a new post in accordance with OPSS 1508 (Terminal Post) shall be installed by the Contractor.

With the exception of deteriorated items, full compensation for all labour, equipment and materials required for the removal, temporary relocation and permanent relocation of all mailboxes and existing posts shall be deemed part of the contract prices and no separate payment shall be made for the work.

Payment for restoration or replacement of deteriorated items as described above will be made in accordance with Sub-section GC 3.11.02 "Extra Work" of the General Conditions.

Civic Address Signs (911 Identification Numbers)

The Contractor shall ensure that the above noted signs are in place at all times. Temporary relocation due to construction operations will be permitted but the address numbers must be made visible throughout the duration of the contract. Any damaged signs shall be replaced immediately at the Contractor's expense.

Full compensation for all labour, equipment and materials required for the removal, temporary relocation and permanent relocation of all Civic Address Signs (911 Identification Numbers) for the shall be deemed part of the contract prices and no separate payment shall be made for the work.

OPERATIONAL CONSTRAINT

Special Provision

Maintain Access to Commercial and Private Entrances

The Contractor shall maintain access to all adjacent properties at all times throughout the construction period. All excavation and trenching must be backfilled to the top of grade at end of daily work before shutting down.

For the existing commercial and private entrances on Woodbine Avenue and Ravenshoe Road that will be impacted by the road widening and related construction work, Contractor shall provide minimum 4 weeks advance notification of any required temporary entrance closure to these commercial and private property owners/users prior to the commencement of work.

Vehicular access must be maintained at all time to existing ESSO Gas Station at the NW quadrant of Woodbine/Ravenshoe intersection. Minimum of one (1) entrance on Woodbine Avenue and partial access/egress on Ravenshoe Road entrance must be maintained at all time. All entrances must be opened at end of each days work.

Contractor shall schedule their construction work to provide maximum accessibility for all private entrances on Woodbine Avenue and Ravenshoe Road. The time of temporary entrance closure shall be scheduled such that minimum impact to the property owner/user. Contractor shall coordinate with the owner/user regarding the temporary entrance closure.

Before commencing any construction activities that will affect access to any of these private entrances within the contract limits, the Contractor must provide a minimum of 1 week notice to the landowner.

OPERATIONAL CONSTRAINT

Special Provision

Emergency Service Providers

The Contractor shall notify emergency service providers at least two weeks prior to the commencement of construction to provide notification of the current construction schedule, and of any changes anticipated in traffic flow. Updates shall be provided, in a timely manner, if the original construction schedule changes.

This notification to the following emergency service providers shall be in writing and copied to the Contract Administrator.

York Region Emergency Medical Services Branch

Administrative Offices
17250 Yonge Street
Newmarket, ON L3Y 6Z1
Phone: 905- 830-4444 ext. 4045
or 1-800-361-5653
Fax: 905- 895-1499

York Regional Police

17250 Yonge Street
Newmarket, ON L3Y-4W5
Phone: 1-866-876-5423

Town of East Gwillimbury Fire Department

Fire Chief
19000 Leslie Street
Sharon, ON L0G 1V0
Phone: 905-853-8842
Fax: 905-853-8664

Ontario Provincial Police

Aurora Detachment
100 Bloomington Road
Aurora, ON L4G 7N5
Phone: 905- 841-5777
Fax: 905-841-7888

OPERATIONAL CONSTRAINT

Special Provision

Road Occupancy Permit

The Contractor shall obtain a Road Occupancy Permit for Woodbine Avenue and Ravenshoe Road from the Region of York's Transportation and Works Department. The completed Road Occupancy Permit shall name a representative from both The Ministry of Transportation of Ontario and the Contract Administrator and

shall be returned to the Roads Operations Permits Group of the Region of York's Transportation and Works Department two (2) weeks prior to commencing any work on the Region of York's right-of-way.

The Roads Occupancy Permits Group can be contacted at (905) 830-4444 extension 5207 or 5242
For application details go to www.york.ca

The Contractor shall note that Road Occupancy Permit application will require a Traffic Management Plan to be submitted together by the Contractor to obtain the York Region's approval.

The Contractor shall submit the Traffic Management Plan for the control of through traffic for the contract. The plan shall address any traffic arrangement required for completion of all new culverts and existing culvert replacement on Woodbine Avenue and Ravenshoe Road.

A copy of the Road Occupancy Permit Application shall be submitted to the Contract Administrator within 1 business day of submission and the copy of approved permit upon receipt. The Contractor shall not commence any work on the Region of York's right-of-way until the approved permit has been received by the Contract Administrator.

The Contractor shall obtain Road Occupancy Permits for Boag Road and Holborn Road from Town of East Gwillimbury.

For application details, contact :

Town of East Gwillimburg
19000 Leslie Street, Sharon, ON L0G 1V0
Tel. 905-478-4282, Fax. 905-478-8545

Payment for the permits shall be deemed to be included in the bid price.

OPERATIONAL CONSTRAINT

Special Provision

Interim Completion Date and Disincentive Provisions

The Contractor shall complete all work necessary to open Highway 404 and all associated ramps to traffic (to top of upper binder/concrete pavement) from north of Queensville Sideroad to the Woodbine Avenue/Ravenshoe Road before November 30, 2012.

The Ministry shall deduct from the Contract Payments an amount of \$10,000.00 per calendar day, with no maximum number of days, until the traffic opening occurs.

The monies of Disincentive Provisions will be deducted from the payment due to the Contractor at the completion of Contract.

PROTECTION OF PUBLIC TRAFFIC

Special Provision No. 100F08M

April 2003

Restrictions on Construction Operations

The use of construction accesses, shoulder closures and the loading and unloading of materials and construction equipment onto and from the traveled portion of the highway shall not be carried out on days identified under the section entitled "Holiday Restrictions ", or during the following periods:

Location	Monday or a Day Following a Holiday	Tuesday to Thursday Except on Days Following and Preceding Holidays	Friday or a Day Preceding a Holiday	Saturday	Sunday
Ravenshoe Road	06:00 – 09:00 15:00 – 22:00	06:00 – 09:00 15:00 – 22:00	06:00 – 09:00 15:00 – 23:59	Not Permitted	Not Permitted
Woodbine Avenue	06:00 – 09:00 15:00 – 22:00	06:00 – 09:00 15:00 – 22:00	06:00 – 09:00 15:00 – 23:59	Not Permitted	Not Permitted
Holborn Road	00:00 – 09:00 15:00 – 23:59	00:00 – 09:00 15:00 – 23:59	00:00 – 09:00 15:00 – 23:59	Not Permitted	Not Permitted
Boag Road	00:00 – 10:00 15:00 – 23:59	00:00 – 10:00 15:00 – 23:59	00:00 – 10:00 15:00 – 23:59	Not Permitted	Not Permitted

Open Excavations

The Contractor shall schedule the Work so that there will be no open excavation adjacent to a lane carrying traffic overnight and on non working days except where a traffic barrier designed to restrain errant vehicles is located between the traffic and the excavation. Excavations within 4 m of lanes carrying traffic shall be backfilled with the specified material up to profile grade and compacted prior to closing down operations each day.

Location and Storage of Materials and Equipment (Woodbine Avenue and Ravenshoe Road)

Materials and equipments shall not be stored within 6 m of the traveled portion of any roadway.

Notwithstanding the foregoing, the Contractor shall, at the Contractor's expense, remove any vehicle, equipment or material which, in the opinion of the Contract Administrator, constitutes a traffic hazard or obstruction to maintenance operations.

Location and Storage of Materials and Equipment (Boag Road and Holborn Road)

Materials and equipments shall not be stored within 3 m of the traveled portion of any roadway.

Notwithstanding the foregoing, the Contractor shall, at the Contractor's expense, remove any vehicle, equipment or material which, in the opinion of the Contract Administrator, constitutes a traffic hazard or obstruction to maintenance operations.

Delivery and Trucking

The Contractor shall plan and schedule the routes of vehicles transporting all materials to, from or within the job, so that vehicular movements are accomplished with minimum interference and interruptions to traffic in accordance with the sections entitled "Restrictions on Construction Operations" and "Permitted Times for Lane and Ramp Closures". This will necessitate vehicles to "slip-off" or "slip-on" in the direction of traffic, in order to merge with and thereby avoid crossing traffic lanes.

Access to and from the highway right-of-way will be restricted to ramps at the interchanges unless otherwise provided for in the Contract.

Median cross-overs shall not be used except where single axle vehicles are entering a passing lane that is closed to traffic.

The Contractor shall obtain the Contract Administrator's prior approval for the location of any "slip-off" or "slip-ons". The Contract Administrator reserves the right to alter, reject or close same as considered necessary. The Contractor shall notify suppliers of materials and equipment of the above requirements.

Holiday Restrictions

The use of construction accesses, shoulder closures, lane closures, ramp closures, and the loading and unloading of materials and construction equipment onto and from the traveled portion of the highway shall not be carried out on the following Canadian or U.S. (as applicable) Statutory/Civic Holidays:

HOLIDAY	2010	2011	2012
New Years Day		January 1	January 1
Family Day		February 21	February 20
Good Friday		April 22	April 6
Easter Monday		April 25	April 9
Victoria Day		May 23	May 21
Canada Day		July 1	July 1
Civic Holiday		August 1	August 6
Labour Day	September 6	September 5	September 3
Thanksgiving	October 11	October 10	October 8
Christmas Day	December 25	December 25	December 24
Boxing Day	December 26	December 26	December 26

or afternoon on days which precede holiday weekends. These days are:

HOLIDAY	2010	2011	2012
For New Years Day		December 31 (2010)	December 31 (2011)
For Family Day		February 18	February 17

For Good Friday		April 21	April 5
For Easter Monday		April 21	April 5
For Victoria Day		May 20	May 18
For Canada Day		June 30	June 30
For Civic Holiday		July 29	August 3
For Labour Day	September 3	September 2	August 31
For Thanksgiving	October 8	October 7	October 5
For Christmas Day	December 24	December 23	December 23
For Boxing Day	December 24	December 23	December 23

Permitted Times for Lane and Ramp Closures

Lane closures and ramp closures for construction will only be allowed during the following times, subject to the additional restrictions covered under the section entitled "Holiday Restrictions":

Lane Closures

Section Description: Woodbine Avenue, Northbound and Southbound (Stage 1 to 4)

Closure	Monday or a Day Following a Holiday	Tuesday to Thursday Except on Days Following and Preceding Holidays	Friday or a Day Preceding a Holiday	Saturday	Sunday
One Lane Closure	00:00 – 06:00 09:00 – 15:00 2200 – 23:59	00:00 – 06:00 09:00 – 15:00 22:00 – 23:59	00:00 – 06:00 09:00 – 15:00	Not Permitted	Not Permitted
Two Lane Closure	Not Permitted	Not Permitted	Not Permitted	Not Permitted	Not Permitted
Three Lane or Full Closure	Not Permitted	Not Permitted	Not Permitted	Not Permitted	Not Permitted

**Section Description: Ravenshoe Road, Westbound and Eastbound
(Stage 1 to 4)**

Closure	Monday or a Day Following a Holiday	Tuesday to Thursday Except on Days Following and Preceding Holidays	Friday or a Day Preceding a Holiday	Saturday	Sunday
One Lane Closure	00:00 – 06:00 09:00 – 15:00 22:00 – 23:59	00:00 – 06:00 09:00 – 15:00 22:00 – 23:59	00:00 – 06:00 09:00 – 15:00	Not Permitted	Not Permitted
Two Lane Closure	Not Permitted	Not Permitted	Not Permitted	Not Permitted	Not Permitted
Three Lane or Full Closure	Not Permitted	Not Permitted	Not Permitted	Not Permitted	Not Permitted

Section Description: Boag Road, Holborn Road

Closure	Monday or a Day Following a Holiday	Tuesday to Thursday Except on Days Following and Preceding Holidays	Friday or a Day Preceding a Holiday	Saturday	Sunday
One Lane Closure (WBL or EBL)	09:00-15:00	09:00-15:00	09:00-15:00	Not Permitted	Not Permitted
Two Lane Closure (WBL & EBL) or Full Closure	Not Permitted	Not Permitted	Not Permitted	Not Permitted	Not Permitted

Boag Road will be closed temporarily for reconstruction. Upon completion of Boag Road reconstruction and open to 2-way traffic, Holborn Road will be closed in the vicinity of proposed Highway 404 Extension to construct cul-de-sac on both sides of Highway 404.

Full mainline closures will be permitted for installation of overhead sign structures, bridge girders, hydro wire installations/modifications and removal of concrete panels during bridge demolition by saw cutting methods only. The installation over the traveled portion of the highway will require the stoppage of traffic across the full width of the affected set of traffic lanes as well as the closure of the adjacent lane on the other side of the median where applicable. Closure of a full set of lanes shall only be carried out as follows:

- Ontario Provincial Police must be employed to perform the full closures;
- The closure shall take place between the hours of N/A and N/A;
- The duration of nightly closures is restricted to fifteen (15) minutes per any 1 hour period or until the end of the traffic queue passes.

Ramp Closures

Ramp description:

Closure	Monday or a Day Following a Holiday	Tuesday to Thursday Except on Days Following and Preceding Holidays	Friday or a Day Preceding a Holiday	Saturday	Sunday
One Lane Closure	N/A	N/A	N/A	N/A	N/A
Full Closure	N/A	N/A	N/A	N/A	N/A

The following ramps shall not be closed at the same time: N/A

Penalty for Early Closing

On each occasion when the Contractor closes lanes to traffic earlier than the specified times, the Contract Administrator will assess the Contractor an initial penalty of **\$ 500.00.**

Thereafter, a further penalty of **\$ 50.00** per minute will be assessed against the Contractor for every minute outside the permitted closure window that the traffic lanes are not open to traffic. The Contract Administrator will be the sole judge of the length of time of the delay.

Penalty for Late Opening

On each occasion when the Contractor fails to reopen the traffic lanes by the specified time, the Contract Administrator will assess the Contractor an initial penalty of **\$ 500.00.**

If traffic lanes are not open within 15 minutes of the specified time, a further penalty of **\$ 500.00.** will be assessed against the Contractor.

Thereafter, a further penalty of **\$ 50.00** per minute will be assessed against the Contractor for every minute that the traffic lanes are not open to traffic. The Contract Administrator will be the sole judge of the length of time of the delay.

Closure Notification

Prior to the Contractor closing lanes and/or shoulders, the Contractor shall:

1. Inform the Contract Administrator of any closure, 1 week prior to the start date of the closure.
2. Inform the Contract Administrator of any closure lasting more than one week, at least 2 weeks prior to the start date of the closure.
3. Inform the Contract Administrator of emergency closures as soon as any details are known.
4. Obtain a Closure Notification Number from the Contract Administrator for each closure.
5. Inform the Contract Administrator of any closure that is being canceled subsequent to 1. and 2. above.

Lane Closures and Speed Control by YRP Officers (Paid Duty)

It is estimated that 5 York Regional Police (YRP) assisted lane closures and 3 days of YRP speed control activities will be required to execute the Work.

Traffic Control At Signalized Intersections

To maintain public safety, YRP presence shall be required to direct traffic at the intersection of Woodbine Avenue and Ravenshoe Road, at no cost to the owner, when construction operations adversely affect the flow of traffic within the intersection.

Basis of Payment

Section 543.10 of OPSS 543 is amended in that payment for all costs associated with the number of lane closures and the number of days of speed control activities stipulated above is deemed to be included in the Traffic Control Signing item and no additional payment will be made.

Any additional YRP assisted lane closures and speed control activities that result from the Contractor's chosen sequence and/or method of operation are deemed to be included in the Traffic Control Signing item and no additional payment will be made.

If a third party stipulates that additional YRP assisted lane closures or speed control activities are required, the Owner will compensate the Contractor for the cost of the YRP services as Extra Work in accordance with GC 3.11.02 as amended.

OCCUPATIONAL HEALTH AND SAFETY ACT COMPLIANCE

Special Provision No. 101F21

June 2007

List of Designated Substances

In accordance with the Occupational Health and Safety Act, R.S.O. 1990, c. 0.1, the Contractor is advised of the presence of the following Designated Substances.

Substance (Ontario Regulation Number)	Location
No designated substances have been identified within the limits of this contract.	

The Contractor is further advised that the Designated Substances silica (Ontario Regulation Number R.R.O. 1990, Reg. 845), lead (R.R.O 1990, Reg. 843) and arsenic (R.R.O. 1990, Reg. 836) are generally present throughout the Working Area, occurring naturally or as a result of vehicle emissions. Exposure to these substances may occur as a result of activities by the Contractor such as sweeping, grinding, crushing, drilling, blasting, cutting, and abrasive blasting.

AMENDMENT TO OPSS 313, APRIL 2007

Special Provision No. 103F17M

July 2007

Placing Hot Mix Asphalt Before Winter Shutdown

313.07.06 Placing Hot Mix Asphalt

Subsection 313.07.06 of OPSS 313 is amended by the addition of the following clause:

313.07.06.03 Placing Hot Mix Asphalt Before Winter Shutdown

The following requirements shall apply to the entire roadway of Woodbine Avenue and Ravenshoe Road within the contract limits.

Before the Contractor shuts down for the winter or by December 24, whichever is earlier, the following work shall be completed on the above roadways on which construction operations have commenced and which are to remain open to public traffic:

- a) The roadbed shall be completed to the specified grade and cross section of the granular base;
- b) The roadbed shall be paved with binder course only. At least the first layer of binder course mix as designed for the roadway shall be completed, including ramping at curb and gutter, manholes and catch basins. Surface course paving may proceed, in conformance with OPSS 313, as amended by this contract provided that the underlying work conforms to the contract requirements; and
- c) The shoulders shall be completed to the corresponding elevation of the top of the hot mix.

When, in order to comply with a) above, the Contractor does not comply with the restrictions on placing earth, rock or granular materials over frozen ground, ice or snow, the Contractor shall be responsible for the costs of removal and replacement of the pavement, granular and subgrade materials, subdrains, pavement markings, temporary traffic barriers, signs and other associated work and the provision of traffic control where removal and replacement is deemed necessary by the Contract Administrator.

When, in order to comply with b) above, the Contractor paves over a frozen roadbed or in violation of the temperature restrictions for paving, the Contractor shall be responsible for the costs of removal and replacement of the hot mix pavement, granular base and shouldering materials, pavement markings, temporary traffic barriers and the provision of traffic control where removal and replacement is deemed necessary by the Contract Administrator.

The Contract Administrator will make an assessment of the condition of the roadway when it is thawed in the spring. When removal and replacement is deemed necessary by the Contract Administrator, the removal and replacement work shall conform to the Contract requirements and the Contractor shall comply with any other terms and conditions for carrying out the work as the Contract Administrator may declare in writing at that time.

When the Contractor has performed work which did not comply with the restrictions on placing earth, rock or granular materials over frozen ground, ice or snow, or paves over a frozen roadbed or in violation of the temperature restrictions for paving:

- a) The Contractor shall be responsible for the costs incurred by the Owner in maintaining the roadway in a condition satisfactory for the travelling public during winter shutdown, excluding the costs of applying de-icing salts, abrasives and snow-ploughing operations; and
- b) Payment at the contract prices for the work will be withheld until any necessary removal and replacement of the roadway has been completed after it has thawed in the spring.

AMENDMENT TO OPSS 313, APRIL 2007

Special Provision No. 103F31

May 2010

Asphaltic Concrete Payment Adjustment for Surface Smoothness

313.02 REFERENCES

Section 313.02 of OPSS 313 is amended by the addition of the following:

Ministry of Transportation Publications:

- LS-293 Method of Test for Correlating Profile Measuring Devices and Conducting Surface Smoothness Measurements
- SP-024 Manual for Condition Rating of Flexible Pavements – Distress Manifestations

ASTM International:

- E 1274 – 03 Standard Test Method for Measuring Pavement Roughness Using a Profilograph

313.03 DEFINITIONS

Section 313.03 of OPSS 313 is amended by the replacement of the following:

Through Lane: means a traffic lane not intended for entering or exiting the roadway and does not include shoulders.

Section 313.03 of OPSS 313 is also amended by the addition of the following:

Blanking band: means a band of uniform height “B” in mm (0 mm for asphaltic concrete) and with a length equal to the subplot length, which is positioned optimally between the highs and the lows of the profile trace to “blank out” as much of the profile trace as possible.

Cold in-Place Recycled Mix (CIR): means the in situ mixture of reclaimed existing asphalt pavement, emulsified asphalt, and water.

Existing Surface: means the original pavement surface prior to construction under the Contract.

Expanded Asphalt Mix (EAM): means “Full Depth Reclamation with Expanded Asphalt Stabilization” which is a mixture of reclaimed existing asphalt pavement, granular base, corrective aggregate if required, and expanded asphalt.

Final profile index: means the profile index used for acceptance purposes.

Initial profile index: means the first profile index measured for a given subplot as soon as it is feasible to do so after final rolling.

Profile index: means the rate of surface smoothness averaged over both wheel paths for a given subplot.

Pulverized Grade: means a grade that has undergone “In-place Full Depth Reclamation of Bituminous Pavement and Underlying Granular”.

Rate of Smoothness: is calculated by adding up all of the amplitudes of all of the individual bumps and depressions on a profile trace outside of a blanking band which are greater than 0.8 mm and which also extend at least 0.6 m as measured by the California Profilograph along the profile length; and then dividing that number by the subplot length; expressed in mm/km.

Reduction length: means an input parameter which is equal to the subplot length normally set at 100 m.

Scallop: means a bump or depression in the pavement surface at a location which is automatically determined by the SMD’s computer as either a line through the profile trace for McCracken or SSI profilographs or a shaded mark above the profile trace for Cox profilographs, which is at least “S” mm (“S”= 10.0 mm shall be the upper limit of acceptability for asphaltic concrete) above or below a 7.5 m long baseline (i.e. bump length) or 7.62 m long baseline for older Cox Brothers Profilographs, where the setting cannot be changed, which is constantly changing in elevation due to the surrounding pavement.

SMD Operator: means the Ministry-approved person who actually operates the SMD or the Ministry-approved Quality Control Technician (QCT) or the Paving Control Technician (PCT) who provides on-site direct supervision during the operation of the SMD.

Smoothness Measuring Device (SMD): means a California Profilograph used for measuring the surface smoothness of a pavement.

Sublot: means a continuous traffic lane of pavement; excluding the shoulder, which has been measured by SMD for purposes of repairs/payment adjustments and normally having a length of 100 m, measured horizontally for highway survey purposes.

Subsequent profile index: means any profile index measured after the initial profile index.

Tolerance(s): means measurements of deviations which are taken using a rigid metal straight edge.

Total Allowable Repair Area Limit: means the limit for all surface smoothness-related repairs which is equal to 5% of the area represented by all measured sublots of surface course constructed within the same construction season.

Wheel paths: means 1.0 m on each side of the centreline of the actual trafficked lane. The trafficked lane does not include adjacent paved areas such as paved shoulders or tapers.

313.06 EQUIPMENT

313.06.03 Smoothness Measuring Device (SMD)

Subsection 313.06.03 of OPSS 313 is amended by the addition of the following:

The SMD shall be a California Profilograph, conforming to ASTM E 1274 and LS-293.

The Contract Administrator will verify that the Contractor's SMD is accurately calibrated for both height and distance recording using the method and frequency outlined in ASTM E1274 and the air pressure of the measuring wheel is within specified tolerances at all times, in accordance with LS-293.

The Owner shall have the right at any time to confirm the height/distance calibration of the Contractor's SMD, in accordance with LS-293. In the event that the height calibration is not within the specified limits and the Contractor is unable to bring it within specified limits by following the Manufacturer's recommended assembly and maintenance procedures in the presence of the Owner, the faulty SMD will not be permitted to be used for further measurements until it has been recalibrated by the Manufacturer.

All SMD's to be used on the Contract site shall be correlated with the Owner's California Profilograph at a Correlation Site, on an annual basis, in accordance with LS-293 and must meet the Owner's requirements prior to use on any of the Owner's contracts.

All SMD's shall be operated under the direct supervision of a Ministry-approved SMD Operator. SMD Operators will be required to present a signed card to the Contract Administrator when requested.

313.07 CONSTRUCTION

313.07.03 Preparation of Foundation and Existing Pavement

Subsection 313.07.03 of OPSS 313 is amended by the addition of the following:

313.07.03.01 Smoothness Correction of Pavement Surface(s) Beneath Surface Courses

At no additional cost to the Owner, unless otherwise specified in the Contract, the Contractor may place hot mix padding on the existing pavement or any other pavement(s) underlying the surface course, as the Contractor deems necessary, in order to meet the surface smoothness requirements specified for the surface course. Diamond grinding or micromilling will also be allowed for such corrections on existing pavements or any other pavements underlying the surface course, but only if the thickness of those pavements after grinding or micromilling is not reduced by more than 5 mm below the general profile of the surrounding unground or unmilled pavement surface.

313.07.16.04 Surface Smoothness

Clause 313.07.16.04 of OPSS 313 is amended by the addition of the following:

- h) lanes less than 400 m in length;
- i) curves with a centerline radius of less than 300 m and pavement within the superelevation transition, i.e. slope changes, of such curves;
- j) the following additional stations, roadways and major intersections:

N/A

313.07.16.04.01 Before SMD Measurements Are Taken

Before the pre-pave meeting, the Contractor shall present a sketch to the Contract Administrator with the proposed details for the numbering and stations of each subplot. During the pre-pave meeting, the sketch will be reviewed and discussed. However, at any time up until surface smoothness measurements of any particular subplot begin, the Contract Administrator will have the right to make any changes to the sketch which affect that subplot. The Contract Administrator will notify the Contractor in writing of such changes not later than two business days before the measurements of that subplot are taken.

At least 24 hours prior to beginning the construction of the surface course, the Contractor may propose areas for consideration by the Contract Administrator, in consultation with the Owner which the Contractor wants exempted from the surface smoothness-related payment adjustment or repair requirements. The decision of the Contract Administrator regarding such areas will be binding and no additional areas may be exempted from such requirements, except for "Damaged Areas" excluded by the Contract Administrator in accordance with clause 313.08.01.05.04 of this Special Provision.

313.07.16.04.02 How SMD Measurements Are Conducted

The Contractor shall carry out surface smoothness testing of an individual subplot of surface course, in accordance with LS-293 and all other requirements herein, within 10 business days of that subplot being constructed, unless otherwise agreed to by the Contract Administrator.

The Contractor shall give the Contract Administrator a minimum of 48 hours notice prior to surface smoothness testing at any locations on the surface course, or on the upper binder course for carry-overs, as described in clause 313.07.16.04.03.

Prior to testing, the Contractor shall clearly mark each subplot at regular intervals of no more than 100 m, either on the pavement surface by using painted marks or surveyed nails or on the shoulder by using chainage stakes located within the right-of-way. All marks shall remain visible until the final measurements are completed and accepted.

Prior to beginning surface smoothness measurements each day, the Contractor shall give the Contract Administrator sufficient notice to allow him to observe the height calibration and to sign the beginning of the daily profile record. In addition to the Contract Administrator, the SMD Operator shall also sign the beginning of the profile trace. At that time the Contractor shall inform the Contract Administrator of:

- 1) The pavement sections that he intends to measure,
- 2) The longitudinal reference line (s) and offsets that he intends to use during that visit to ensure that the measurements are taken within 150 mm of the proposed wheel paths for the finished lane and
- 3) The method that the Contractor intends to use to ensure that the proposed reference line remains visually intact until all sublots have been accepted for payment by the Contract Administrator.

Stations, areas that will not be measured, areas that will be measured but not payment-reduced and all distances from such areas shall be referenced from the centreline of the SMD's measuring wheel.

Upon finishing the last complete subplot in any lane, if the remaining portion of the lane is greater than or equal to 50 m in length, then that remaining portion of the lane will be considered to be the last subplot in the lane. However, if the portion of the lane is less than 50 m in length, then it will be added to the previous subplot in the lane. In either case, the profile index of the affected subplot shall be averaged over the increased/reduced subplot length and the subplot will be considered equally with all other sublots when calculating the overall payment factor.

At the end of each day or prior to the SMD leaving the site, whichever occurs first, the Contractor shall present the Contract Administrator with an original, unbroken, continuous profile record, representing all of the sublots and any other pavement surfaces which were measured that day, in accordance with LS-293. All daily profile records shall have the signatures of both the Contract Administrator and the SMD Operator with the date and time, which they were signed both at the beginning and end of the roll. Should the printer for the SMD require a change in its paper spool at some time during the day, then the Contractor shall inform the Contract Administrator of this requirement and he shall not proceed with any additional measurements until the Contract Administrator has signed the beginning of the new profile record, along with date and time clearly written. Profile records shall be submitted to the Contract Administrator on the date that the profile record is signed by the Contract Administrator or his representative.

Any sublots with input parameters which are anything other than:

- a) A “Butterworth” data filter of 0.61 m (or 2.0 feet) with a “Gain” setting of 1.000, where an adjustable gain setting is provided or for older Cox Brothers Profilographs, a “DATA FILTER HI” set at 0.00 and a “DATA FILTER LO” set at 2.00;
- b) A bump or depression height and length of 0.8 mm and 0.6 m, respectively and a resolution of 0.2 mm which are all used for calculating Rate of Smoothness;
- c) A height and length of 10 mm and 7.5 m (or 7.62 m for older Cox Brothers Profilographs), respectively, which are used for calculating a scallop;
- d) A bottom bump locator set to ON to measure the negative scallops (or depressions); and
- e) A blanking band of 0.0.

or sublots with profile traces that are incomplete, of improper format, contain discrepancies or missing shall be deemed incomplete and unacceptable for payment purposes and will have to be remeasured.

After the initial profile trace is made, all areas to be repaired due to scallops shall be marked on the pavement surface by the Contractor prior to doing any corrective work.

The Contractor shall fill out all of the required information on summary acceptance forms which have been approved by the Contract Administrator for the surface course(s), in accordance with LS-293. The updated forms for the sublots measured for payment purposes shall be handed to the Contract Administrator no later than five business days following the date when the measurements were taken and prior to any corrective action taking place.

The Contractor shall also provide to the Contract Administrator and the Bituminous Section summaries of all profile indices and all scallop locations/heights taken in both wheel paths in Microsoft® Excel spreadsheet file(s) on either compact disks or sent electronically by E-mail for use by IBM-compatible PC’s. The disks or E-mail shall be submitted within ten working days after all surface smoothness measurements taken on the Contract, during the same season, have been completed.

The original profile traces for any subplot of surface course(s) shall be made available to the Contract Administrator for inspection, at any time when requested. All profile traces shall remain the property of the Owner.

313.07.16.04.03 Carry-Over Contracts

If the Contractor cannot construct a portion of the surface course in the same construction season as its underlying binder course then, prior to the close of the construction season in which the binder course for that portion of the surface course was constructed, the Contractor shall choose one of the following options:

- Option 1: The Contract Administrator will reduce the profile indices of each of the sublots in the portion of the surface course which will be constructed over the upper binder course in a following construction season by 15 mm/km or
- Option 2: The Contractor will carry out surface smoothness measurements on all of the sublots included in that same portion of the upper binder course, using a SMD, prior to the close of the season in which they were constructed.

If the Contractor does not submit the written notification that Option 2 has been chosen prior to taking any surface smoothness measurements on the upper binder course, then Option 1 shall apply.

Procedures for Option 2:

If the Contractor decides to measure the upper binder course prior to the close of the construction season in which those sublots of binder course were constructed, then the Contractor shall re-measure the surface smoothness of those same sublots of binder course after the frost has come out of the ground and the QC SMD has successfully passed the spring re-correlation in the same construction season in which the overlying sublots of surface course will be constructed.

To ensure that all of the measurements taken on the upper binder course in the two different construction seasons are coincident with one another, the Contractor shall clearly and permanently mark the subplot stations and the reference lines and offsets used for each wheel path on the pavement surface at the edge of the lane and at regular intervals of no more than 100 m, prior to taking the first set of measurements on the upper binder. In addition, the Contractor shall conduct all smoothness measurements on the binder using profile runs of no more than 500 m long before setting up at a new station.

Prior to taking any such measurements on the binder course, the Contractor shall give the Contract Administrator at least 24 hours written notice. At the end of each day prior to the SMD leaving the site, the Contractor will be required to present the original, unbroken, continuous profile traces for all sublots measured on the binder course that day for each lane and wheel path to the Contract Administrator.

If the average profile index for all of the sublots of binder course which were re-measured in the spring is more than 5% greater than the average profile index for the same sublots measured prior to winter shut-down, then the profile indices for the corresponding overlying sublots of surface course will be reduced by 80 percent of the difference in average profile index which was recorded for the binder course in the two different construction seasons after adjusting for the difference in means that the SMD(s) established at the correlation site at the beginning of each of the two affected seasons.

If a subplot of the binder course exhibits ravelling in the spring that the Contract Administrator classifies as worse than “very slight”, as described in the Owner’s Manual for Condition Rating of Flexible Pavements – Distress Manifestations” (i.e SP-024), then that subplot shall not be included in the comparison of the two sets of measurements of the binder course.

313.08 QUALITY ASSURANCE

313.08.01.03 Surface Tolerance

Clause 313.08.01.03 of OPSS 313 is amended by deleting the last paragraph and replacing it with the following:

In general, every pavement which exceeds the tolerances for straight edge measurements is rejected and must be repaired. However, the Contract Administrator, in consultation with the Ministry, may assess a penalty in lieu of repair.

All repairs shall be completed within 30 days of the measurements indicating that repairs were required. Such repairs shall be made, in accordance with clause 313.08.01.05.05.01 of this Special Provision, prior to the end of the season in which the pavement was constructed, unless otherwise agreed to by the Owner.

Wherever such repairs are made, the Contract Administrator may, at his discretion and in his presence, require that the Contractor to re-test the repaired area by 3m straight edge.

313.08.01.05 Acceptance Criteria for Surface Smoothness

Clause 313.08.01.05 of OPSS 313 is amended by deleting it and replacing it with the following:

313.08.01.05.01 Lot Size

A lot for surface smoothness shall consist of the total pavement quantity in a given surface course contract item that was measured by a SMD. Each lot will generally be divided into 100 metre sublots.

Lot acceptance for surface smoothness shall be based on measurements of profile index and scallop height.

313.08.01.05.02 Quality Assurance Testing

The Owner will conduct QA measurements on a minimum of 10% of the surface course constructed and measured by the Contractor, within a given construction season. All QA measurements will be conducted on independent QA sections, from 300 to 1000 m long. Each independent QA section will be measured within 15 business days of its construction.

The Contract Administrator will designate a third party, to operate an approved, i.e. correlated, California Profilograph, on behalf of the Owner, which will be deemed to be the "Owner's SMD" for such testing. The Contract Administrator will inform the Contractor, at least 48 hours prior to taking any QA measurements at the contract site.

The disposition of each independent QA section resulting from a comparison between the average QA and QC profile index measurements within that section is summarized in Table A.

As part of the QA/QC comparison of the independent QA sections described above, the Contract Administrator will verify that the QC summaries and profile traces have correctly identified the number and amplitude of all scallops which were identified by the QA measurements. If, in any single subplot, the Contract Administrator finds at least one scallop(s) present in the QA trace with an amplitude greater than 11.0 mm that is not identified in the applicable QC trace or summary sheet or the amplitude of at least one of the scallops within that subplot is at least 1.5 mm larger than the amplitude of the same scallop identified on the applicable QC trace or summary sheet and that difference affects the disposition of that scallop (i.e. the QA measurements indicate that the size of its payment adjustment increases or that it now must be repaired) then:

- a) The QA profile traces and/or applicable summary sheets for the affected subplot will be given to the Contractor,
- b) The QA measurements for that subplot will be used for the disposition of any scallops measured by the Owner's SMD within the affected subplot,
- c) The QA profile index will be used for the acceptance of the affected subplot, and will take precedence over the adjustment of that subplot based on the QC/QA outcome outlined in Table A, or

- 2) The measurements by the referee SMD will be used for the disposition of any scallops included in all sublots measured by the referee SMD.

Differences Based on Scallops:

When the referee testing is carried out for one or more sublots due to differences between QA and QC test results that affect the disposition of one or more scallops, then

- 1) The test results from the referee SMD will be used for the disposition of all scallop(s) within the disputed sublots and
- 2) The referee profile index will be used for the acceptance of the subplot(s) that contained the disputed scallop(s).

313.08.01.05.04 Damage to Existing Pavement Surface After Preparation or Damage to Surface Course Prior to Smoothness Measurements

The Contractor shall provide written documentation to the Contract Administrator within one business day of the occurrence of damage to areas of:

- existing pavement surfaces, underlying a subplot, which have been milled and/or padded; or
- surface course within a subplot;

when such damage was due to circumstances beyond the Contractor's control and occurred prior to measurement for surface smoothness.

The Contractor shall not cover the affected area with hot mix until a decision is made by the Contract Administrator. The Contract Administrator, in consultation with the Ministry, will evaluate the Contractor's submission and may exclude all or part of the affected area from the final calculation for the payment factor.

313.08.01.05.05 Repairs and Redecisioning

Repairs shall not exceed the Total Allowable Repair Area Limit.

Any scallop will either be repaired or receive a penalty in accordance with the requirements given in Table C. However, if one or more of these scallops are located within a rejected subplot, then at least a portion of the subplot containing the scallop(s) shall be repaired, subject to the Total Allowable Repair Area Limit.

For any subplot with an initial profile index which is greater than 430 mm/km but less than or equal to 550 mm/km, the Contractor may either accept the inclusion of its payment factor in the calculation for the lot or the Contractor may choose to repair at least a portion of the subplot, subject to the Total Allowable Repair Area Limit.

For any subplot with initial profile indices which are greater than 550 mm/km, the subplot is rejected and the Contractor shall repair at least a portion of the subplot, subject to the Total Allowable Repair Area Limit.

Where surface smoothness-related repairs are not permitted because such repairs will exceed the Total Allowable Repair Area Limit, then penalties shall be assessed in lieu of repairs, in accordance with Tables B and C.

All repairs shall be made in accordance with clause 313.08.01.05.05.01 of this Special Provision prior to the end of the season in which the pavement was constructed, unless otherwise agreed to by the Owner. Redecisioning shall be in accordance with clause 313.08.01.05.05.02 of this Special Provision.

All repairs and the redecisioning of all sublots which are constructed in a given construction season shall be completed within 30 days of the last set of measurements indicating repairs for those sublots, unless otherwise agreed to by the Owner.

313.08.01.05.05.01 Repairs

General:

At least 5 business days prior to beginning any surface smoothness-related or tolerance-related repairs, the Contractor shall submit a written proposal to the Contract Administrator with the subplot and repair locations including the appropriate stations, length of each repair area, distance between the ends of the repair areas on the same lane that are within 100 m of each other, and method(s) of repair that the Contractor intends to use for each repair area. The Contractor shall not start repairs unless the Contract Administrator has given written permission. If permission is denied, then the Contract Administrator will provide the Contractor with the reason(s) in writing.

Repairs shall consist of one or more of the following corrective measures:

1. Diamond Grinding
2. A hot mix overlay, where permitted;
3. Remove and replace; and/or
4. Other methods of repair, if approved by the Contract Administrator, in consultation with the Ministry.

Diamond Grinding:

Subject to the Total Allowable Repair Area Limit, diamond grinding will not be allowed in any area of the surface course where that area:

- a) Consists of a single lift of hot mix placed on a granular surface, Expanded Asphalt Mix (EAM) Pavement or on pulverized grade; or
- b) Will be reduced by more than 5 mm below the general profile of the surrounding pavement surface after the repair.

A subplot shall be limited to no more than 3 separate diamond ground repair areas representing a total combined area not exceeding 20 percent of that subplot.

If the Contractor wishes to grind more than 5 mm below the general profile of the surrounding pavement surface, the Contractor shall, at the Contract Administrator's request, prove by coring that the design thickness of the surface course will not be reduced by more than 5 mm after the repair.

Diamond grinding shall be performed parallel to the lane with each pass overlapping the previous one by at least 25 mm. The elevation difference between abutting edges of adjacent lanes shall not exceed 3 mm after grinding and the pavement cross slope shall be maintained throughout the repaired area. The pavement after repair shall be of uniform surface texture. The slurry produced from diamond grinding shall be removed from the site by the Contractor and managed as specified in the Contract Documents.

Hot Mix Overlay / Remove and Replace

As long as the Total Allowable Repair Area Limit is not exceeded, overlays on traffic lanes beneath structures may be allowed, if clearances between the pavement surface and the underside of the structure after overlay meet the established minimum requirements. Overlays on traffic lanes adjacent to curb-and-gutter or on bridge decks shall not be permitted. If an overlay is constructed, it shall be re-tested. If the overlay does not meet the tolerances and/or surface smoothness requirements specified in the Contract, a second overlay will not be permitted.

The transverse joints for an overlay shall be a butt joint-constructed by removing the existing surface course to a minimum depth of 40 mm to form a straight vertical face and for a longitudinal distance of not less than 3 m.

A paver shall be used wherever corrective measures include removal and replacement or the construction of a hot mix overlay. Hot mix used in such repairs shall meet all of the requirements specified for the item in the Contract. Hot-in-place recycling may only be used to repair hot-in-place contract items. Where there is an integral overlay, the integral overlay must be replaced with a new integral overlay of the same specified thickness as the original integral overlay.

The minimum width of all repairs by “remove and replace” or a hot mix overlay shall be the width of the lane being repaired, i.e. between longitudinal joints, and including any pavement markings that may be present. Also, for such repairs, there shall be no more than one repair area in an individual subplot and all individual repair areas shall be at least 50 m apart.

313.08.01.05.05.02 Redecisioning

When repairs are made to all or part(s) of any subplot for the pavement courses defined by clause 313.07.16.04 of this Special Provision for any reason, then the entire subplot shall be re-tested by SMD as specified in the Contract. Re-testing by SMD shall include at least 15 m on either side of the repaired area. If this requirement extends the testing onto an adjacent subplot, then the adjacent subplot shall also be re-tested. After such repairs to a subplot, the subsequent profile index and scallops for that subplot shall be used in the final calculations for the payment adjustment to the lot.

After a subplot is repaired/overlaid due to high initial profile indices or scallops, then that subplot shall have no scallops with amplitudes greater than 14.5 mm and its subsequent profile index shall be less than or equal to 550 mm/km.

313.10 BASIS OF PAYMENT

313.10.01 Hot Mix

Clause 313.10.01.03 of OPSS 313 is amended by deleting it and replacing it with following:

313.10.01.03 Payment Adjustment for Surface Smoothness

Profilograph Correlations, Recorrelations and Operator Approvals:

The Contractor shall be responsible for all costs that the Contractor and the Owner incurs, in order to meet and maintain the Owner’s requirements for the correlation of the SMD, regardless of the number of times that the Contractor must visit the Correlation Site and for the approval of all persons responsible for either supervising or actually operating the SMD.

The Ministry's cost for the first approval of each SMD at the beginning of each construction season will be \$250 for a maximum two-hour visit to the correlation site, plus an additional \$50 for each additional hour beyond the maximum. The cost for any additional visits to the correlation site for SMD re-approvals during each construction season will be \$500 for a maximum two-hour visit, plus \$100 for each additional hour beyond the maximum. A "visit" shall be deemed to begin when the Operator first begins calibration of the Contractor's assembled SMD, in the presence of the Ministry's representative. An additional \$300 will also be charged for each SMD/QCT Operator approval test which is conducted by the Ministry.

Smoothness Correction of Pavement Surface(s) Beneath Surface Courses:

No additional payment will be made to the Contractor for the smoothness corrections described in clause 313.07.03.01.

Profile Index:

A subplot's payment factor for smoothness shall be based on the subplot's QC profile index, unless that subplot has been repaired or the initial QC profile index has been substituted or adjusted as a result of a QC/QA comparison, referee testing or carry-over. Where a subplot has been repaired, a subsequent reading taken after the repair shall be used in the calculation for the payment adjustment to that subplot.

A subsequent profile index shall not be used to increase a payment factor, unless the subplot has been repaired.

No subplot that has been repaired for any reason shall receive a payment factor greater than 1.0.

For any subplot with an initial profile index which is greater than 430 mm/km but less than or equal to 550 mm/km, the Contractor may either accept the inclusion of its payment factor in the calculation for the lot or the Contractor may choose to repair at least a portion of the subplot, subject to the Total Allowable Repair Area Limit.

The individual payment factors for each subplot shall be determined by substituting the profile indices into the applicable formulae shown in Table B and rounding to 3 decimal places, in accordance with LS 100.

The payment factor for the entire lot shall be the average of the individual payment factors for all measured sublots of surface course within the lot, rounded to 3 decimal places, in accordance with LS 100, up to a maximum 1.050 times the Contract price of the hot mix surface course tender item.

If the average payment factor for the lot is equal to 1.000, the payment adjustment shall be zero.

If the average payment factor for the lot is greater than 1.000, the payment adjustment shall be:

$$(PFS - 1.000) \times \text{Price} \times \text{Lot Quantity}$$

If the average payment factor for the lot is less than 1.000, the payment reduction shall be:

$$(1.000 - PFS) \times \text{Price} \times \text{Lot Quantity}$$

where: PFS = the average payment factor for smoothness for the lot

The term "Price" means the contract price of the hot mix surface course tender item. However, when the Contract specifies that the contract price will be adjusted due to a change in asphalt cement content from that specified for bidding purposes, then "Price" means the contract price after adjustment for the change in asphalt cement content, if applicable.

Where the unit of measure is by tonnes:

For the “Lot Quantity”, the Contract Administrator will calculate the theoretical tonnage of surface course in the lot using the length of pavement on which the SMD measurements were made, design widths and lift thickness of the finished lane; excluding any paved shoulder and the mean lot average bulk relative density calculated from all of the values obtained from compaction acceptance testing of core samples for the applicable surface course. The bulk relative density values shall be the same as those used in calculating the final compaction payment factors, as specified elsewhere in the Contract Documents.

Where the unit of measure is by square metres:

For the “Lot Quantity”, the Contract Administrator will calculate the theoretical area of surface course in the lot using the length of pavement on which the SMD measurements were made and the design widths of the finished lane; excluding any paved shoulder.

TABLE B - Payment Factors

Surface Course Profile Indices (PI) (mm/km per Sublot)	Payment Factor
≤ 150	1.200 (subject to Note 1 given below)
150 to 230	$1.575 - \frac{PI}{400}$ (subject to Note 1 given below)
230 to 430	1.000
430 to 550	$1.358 - \frac{PI}{1200}$ (subject to Note 2 given below)
551 or greater	REJECTED (Requires repairs – subject to Notes 2 and 3 given below)

- NOTES:
- 1 The payment factor shall be equal to 1.000 for subsequent profile index measurements which are taken after repairs regardless of the reason for the repairs
 - 2 Sublots, with profile indices between 430 and 600 mm/km and located in areas of hot-in-place recycling being used as a surface course (including hot-in-place with an integral overlay and hot in-place recycled premium mix), shall receive a payment factor of 1.00. Sublots with profile indices greater than 600 mm/km and located in areas of hot-in-place recycling being used as a surface course (including hot-in-place with an integral overlay and hot in-place recycled premium mix) shall be repaired if within the Total Repair Area Limit.
 - 3 Repairs to a subplot will only be allowed provided that the total area for all surface smoothness-related repairs has not exceeded the Total Allowable Repair Area Limit. Any rejectable subplot that is not allowed to be repaired because the Total Allowable Repair Area Limit is exceeded will receive a payment factor of 0.500, in addition to any other penalties assessed for scallops within that subplot that are also not allowed to be repaired.

Scallops:

The Contractor will either be given penalties or required to repair all scallops in accordance with Table C.

Where two scallops on the same side of the blanking band have been recorded in adjacent wheelpaths in the same lane at stations which are within 3 m of one another and they are both left unrepaired, then the two scallops shall be treated as a single scallop for penalty assessment purposes. In addition, where the profile trace crosses the same “excessive height line”, where it is printed on the profile traces more than once within the same baseline distance of 7.5 m and these bumps or dips are recorded as separate scallops, then these “multiple-peaked” scallops shall be treated as a single scallop for penalty assessment purposes.

The payment adjustment for a subplot which includes any unrepaired scallops shall be unaffected by any penalties given for such scallops.

TABLE C – Penalties/ Repairs for Scallops

Amplitude of Scallops (rounded to nearest 0.5 mm)	Penalty
10.0 to 11.5	The Contractor shall receive a penalty (subject to Note 1) of \$1,500 for each scallop which is automatically identified by the SMD regardless of its amplitude when rounded and located in multi-lane freeways and \$1250 for each scallop which is automatically identified by the SMD regardless of its amplitude when rounded and located in all other highway types. Repairs (subject to Note 2) will be allowed for any scallop in this amplitude range.
12 to 14.5	The Contractor shall receive a penalty (subject to Note 1) of \$3,000 for each scallop located in multi-lane freeways and \$2500 for each scallop located in all other highway types. Repairs (subject to Note 2) will be allowed for any scallop in this amplitude range.
> 14.5	All scallops shall be repaired in this amplitude range (subject to Note 2). For any additional scallop that is not allowed to be repaired because the Total Allowable Repair Area Limit has been exceeded, the Contractor shall receive a penalty of \$3000 for each scallop located in a multi-lane freeway and \$2500 for each scallop located in any other highway type.
<p>NOTES: 1 Scallops with amplitudes between 10.0 and 14.5 mm which are located in areas where hot-in-place recycling is used as a surface course (including hot-in-place recycling with an integral overlay and hot in-place recycled premium mix), shall receive no penalties.</p> <p>2 As long as the Total Allowable Repair Area Limit has not been exceeded and subject to the restrictions on repairs stated in clause 313.08.01.05.05.01 entitled “Repairs”, the Contractor may repair a scallop with amplitude greater than 10.0 mm. If the repair removes that scallop, then the penalty for that scallop will be waived. Any additional scallop that is not allowed to be repaired because the Total Allowable Repair Area Limit has been exceeded shall receive a penalty as specified in this table above.</p>	

Repair Costs:

All repairs shall be made entirely at the Contractor's expense. Where overlays are allowed, any other associated costs such as additional granular materials for shoulders, shall also be borne by the Contractor.

Additional QC Measurements:

No additional payment will be made to the Contractor for the cost of any additional surface smoothness or tolerance-related QC measurements that are required by the Contract Administrator or the additional measurements taken of the binder course when Option 2 is chosen, as described in clause 313.07.16.04.03.

QA Measurements and Traffic Control:

Payment for the applicable hot mix tender item shall include full compensation for all traffic control, protection and lane closures which are required for smoothness measurements including any QA measurements made by the Owner's SMD up to a maximum of three separate visits to the site by the Owner's SMD for a combined total of up to 20 hours of QA measurements, excluding any waiting time in which the QA measurements were delayed by the Contractor.

Costs for Referee Testing (including any associated traffic control, protection and lane closures):

a) Difference Based Solely on Average Profile Indices:

The cost of referee testing shall be borne by the party whose average profile index for the independent QA section is further removed from that generated by the referee SMD for the same section. If the average profile index for the independent QA section is exactly between that determined by the Contractor's QC and Owner's QA results, then the cost of the referee testing will be split evenly between the Owner and the Contractor.

b) Differences Based on Solely on Scallop:

The cost of referee testing for a single subplot due to differences between QA and QC test results that affect the disposition of one or more scallops within that disputed subplot shall be borne by the party whose average measured scallop height for all of the scallops within that subplot is further removed from the average scallop height generated by the referee SMD. If the average scallop height for all scallops recorded by the referee SMD is exactly between that determined by the Contractor's QC and Owner's QA results for the same locations, then the cost of the referee testing for that subplot shall be split evenly between the Owner and the Contractor.

c) Differences Based on Average Profile Indices and Scallop:

In the event that the Contractor requests referee testing for both average profile indices and scallops in the same independent QA section and they result in a difference in the determination of the party that is responsible for the cost of referee testing, then the cost for referee testing of that pavement section will be shared between the Owner and the Contractor. The party responsible for the cost of referee testing based on average profile indices will pay 50% of the cost of referee testing plus a portion of the remaining 50% calculated on the basis of the proportional number of sublots challenged for scallops in which that party is responsible for the costs divided by the total number of sublots challenged for scallops within that pavement section.

Additional HMA Definition and Construction Criteria

313.03 DEFINITIONS

Section 313.03 of OPSS 313 is amended by the addition of the following:

Asphalt Cement (AC) means asphalt binder as defined in OPSS 1101.

313.07 CONSTRUCTION

Section 313.07 of OPSS 313 is amended as follows:

313.07.01 Quality Control

The third paragraph of subsection 313.07.01 is deleted l.

313.07.07 Paving in Echelon

Subsection 313.07.07 is amended by the deletion of the first paragraph and its replacement with the following:

For the purpose of laying levelling, binder and surface courses as required under this Contract, paving in echelon shall be used for Highway 404 mainline. When specified, echelon paving shall be according to the last paragraph of this subsection.

313.07.15.03 Hot Mix Asphalt Mix Properties

Clause 313.07.15.03 is amended by the addition of the following:

If the Owner's QA laboratory chooses LS-292, the Contractor shall provide, for each mix design, two sets of samples consisting of:

- 2 one-litre cans of asphalt cement
- 25 kilograms of each aggregate type and
- 1 kilogram of baghouse fines, if used in the mix design

one for the Owner's QA testing and the other for Referee testing for the purpose of ignition oven calibration, including aggregate gradation correction factors. The samples shall be submitted to the Owner's QA laboratory at least 5 working days prior to the start of paving with the applicable hot mix type. If materials have changed from the mix design, an additional two sets of samples, as detailed above shall be provided.

313.10.01.06 Payment Adjustment for Asphalt Cement Content

Clause 313.10.01.06 of OPSS 313 is amended by the replacement of the term "RAP" in the second last paragraph with the following:

"RAP or RST or both"

Anti-Stripping Additive Requirements

313.05 MATERIALS

Subsection 313.05.01 of OPSS 313 is deleted and replaced with the following:

313.05.01 Hot Mix Asphalt

The Materials used in the production of HMA shall be according to OPSS 1151, amended as follows:

1151.03 DEFINITIONS

The definition for Anti-Stripping Additive in section 1151.03 of OPSS 1151 is deleted and replaced with the following:

Anti-Stripping Additive (ASA) means aggregate anti-stripping additive and liquid anti-stripping additive used to minimize or eliminate stripping of asphalt cement from aggregates in HMA.

Section 1151.03 of OPSS 1151 is amended by the addition of the following:

Aggregate Anti-Stripping Additive means an anti-stripping additive such as latex solution and hydrated lime that are applied to the HMA aggregates to minimize or eliminate stripping of asphalt cement from aggregates in HMA.

Liquid Anti-Stripping Additive means an anti-stripping additive added to the asphalt cement to minimize or eliminate stripping of asphalt cement from aggregates in HMA.

1151.04.01.06 Anti-Stripping Additives

1151.04.01.06.03 Hydrated Lime

Clause 1151.04.01.06.03 of OPSS 1151 is deleted and replaced with the following:

1151.04.01.06.03 Aggregate Anti-Stripping Additive

1151.04.01.06.03.01 General

Irrespective of any moisture sensitivity testing that shows that ASA is not required, hydrated lime, (Ca(OH)₂) shall be included in all mixes consisting of more than 75 % quartzite and dolomitic sandstone aggregates, or combinations thereof.

Coarse and fine aggregates crushed within the last 30 Days shall not be incorporated into SMA or Superpave 12.5 FC2, unless hydrated lime, (Ca(OH)₂) is added to the mix.

When moisture sensitivity testing determines that an ASA is required for SMA or Superpave 12.5 FC2 mixes, hydrated lime, shall be used as the ASA.

When the aggregates are traprock, the Contractor may treat the aggregates using a latex ASA accepted by the Owner as an aggregate treatment in place of the required hydrated lime.

1151.04.01.06.03.02 Hydrated Lime

When hydrated lime is used as the aggregate ASA, the dosage shall be the greater of:

- a) the amount determined to meet the moisture sensitivity requirements, or
- b) one percent by mass of total dry aggregate.

1151.04.01.06.03.03 Latex Anti-Stripping Additive

When latex is used as a aggregate ASA or latex aggregate treatment is used in place of a liquid ASA, the dosage shall be the greater of:

- a) the amount determined to meet the moisture sensitivity requirements, or
- b) 0.0375 % latex solids by mass of total dry aggregate.

Clause 1151.04.01.06.04 of OPSS 1151 is deleted and replaced with the following:

1151.04.01.06.04 Liquid Anti-Stripping Additive

When an aggregate ASA such as hydrated lime or a latex ASA accepted by the Owner as an aggregate treatment is not required as an ASA in the mix and aggregate ASA not used as the ASA, liquid ASA shall be used in the mix if:

- a) mix moisture sensitivity testing indicates ASA is required, or
- b) the Contract Documents note that an ASA is required.

The amount of liquid ASA to be used in the mix shall be the greater of:

- a) the amount required to meet the required Superpave moisture sensitivity requirements, or
- b) 0.5 % by mass of asphalt cement.

1151.07 PRODUCTION

Section 1151.07 of OPSS 1151 is amended by the addition of the following clause:

1151.07.01.03 Latex Solution

When latex ASA is added to the mix, the latex solids shall be applied to aggregates as a solution of latex solids diluted in water to a concentration which will result in the required amount of latex solids being added to the aggregates by any of the following methods:

- a) Blended During Aggregate Production:

The solution of latex solids shall be mixed with wetted aggregate at the pit or quarry prior to delivery of the aggregate to the hot mix plant, by a method approved by the Owner prior to the start of any mix production. The blending process shall produce aggregates that are uniformly and homogeneously coated with the quantity of latex solids specified in the Contract Documents. The Contractor or the aggregate supplier or both shall implement and maintain a quality control system and records that demonstrate compliance with the Contract. The Owner may reject Materials if they fail to meet the quality control or blending requirements or both.

b) At the HMA Plant

The HMA plant shall be equipped with suitable pumps or mixers to maintain a homogeneous concentration of latex solution and shall have adequate spray bars for introducing the required quantity of latex solids onto the aggregates. The coarse and fine aggregate shall be sufficiently wetted prior to the latex solution being sprayed on to the wetted aggregate to ensure uniform and complete adhesion of latex to the aggregate. The latex solution shall be homogeneously mixed with the wetted aggregate, prior to entering the dryer at the HMA plant. Mixing shall be accomplished at a minimum with a tumbling wheel or mixing chamber capable of providing a homogeneously uniform mixing process.

Regardless of the method or mixing equipment used, the Contractor shall ensure through regular quality control sampling and inspection that the specified quantity of latex solids is being incorporated into the mixture and that the aggregates possess a uniform and homogeneous coating of latex free of clumps and balls prior to entering the dryer at the HMA plant.

Aggregate which was treated and stored from a previous season may be used only after the Contract Administrator agrees to a written proposal from the Contractor that verifies the effectiveness of the stored aggregate, including the sampling protocol used, and test results from those samples that indicate that the aggregates meet the moisture sensitivity requirements specified in this specification.

USE OF AIR COOLED IRON BLAST FURNACE SLAG AS GRANULAR MATERIAL

Special Provision No. 110F10

September 2001

SCOPE

This special provision covers the requirements for the use of air cooled iron blast furnace slag as granular material in road construction.

DEFINITIONS

Slag: means air cooled iron blast furnace slag.

CONSTRUCTION

General Operational Constraints

For those applications permitted in this special provision, it is the Contractor's responsibility to notify the District Manager of the local District Office of the Ministry of the Environment (MOE), of the locations where slag will be utilized.

The Contractor shall prepare a contingency plan that specifically addresses management by the Contractor, during construction, of any odour and leachate which may be generated by the slag material. The plan shall include but not be limited to the following:

- a. a strategy for containment, cleanup and disposal of leachate to ensure a quick and comprehensive response to any escape of leachate from the construction site;
- b. a strategy for communicating with MOE and other regulatory authorities in the event of any escape of leachate;
- c. a strategy to identify the project specific causes of leachate problems as well as a commitment to developing short and long term corrections; and
- d. a strategy for dealing with public complaints about odour problems which may occur.

Restrictions On the Use of Slag

- a. Slag is prohibited for any application below top of subgrade.
- b. Slag may be applied above subgrade with the following exceptions:

No Exception
- c. During construction, water shall not be directed, through means such as channelized flow or dewatering effluent, to areas where slag has been placed.
- d. When placing slag, the Contractor shall ensure that the material is graded and placed in a manner which ensures free drainage and prevents ponding on, within or against the material.

SUBMISSION AND DESIGN REQUIREMENTS

Notification of Sites Intended to be Used for the Placement of Slag

Three weeks prior to receipt of the slag material at the job site, a completed Notification of Intended Placement of Slag Form, included in this special provision, shall be submitted to the attention of the District Manager of the appropriate local District Office of the Ministry of the Environment. The notification shall include a copy of this special provision and a copy of the contingency plan required by this special provision.

Three weeks prior to receipt of the slag material on the job site, copies of the completed Notification of Intended Placement of Slag Form and the Contractor's contingency plan for the use of slag material shall be supplied to the Contract Administrator, and to the Manager/Supervisor of the MTO Regional Environmental Office/Unit.

Notification of Intended Placement of Air Cooled Iron Blast Furnace Slag Form

Highway: _____ MTO Contract No. _____

Location of Contract: _____

Contractor: _____ Telephone: _____

Construction Administrator: _____

The following describes the Contractor's intended locations for placement of slag on the noted MTO Contract currently under construction. By signing this form the noted Contractor acknowledges to the Ministry of the Environment that all locations proposed to be used by the Contractor for the placement of slag meet the requirements of the special provision attached.

1. Source of Slag

The material source is as follows:

Name and address of the commercial source;

2. Site Description

The site description includes the following:

An identification of the location of the work project including a map reference;

3. Location for Placement of Slag

Attach descriptions (including station numbers) detailing the following:

- a) use and location of the slag, including a detailed plan of the material placement site (and typical cross section if necessary); and
- b) quantities/volume of material to be placed at the location specified.

Dated this _____ day of _____ 2____

Contractor's Signature

Name of Construction Company

INFORMATION TO BIDDERS REGARDING AGGREGATE SOURCES

Special Provision No. 110F14

May 2009

General

The Contractor must demonstrate the suitability of aggregate in accordance with the appropriate MTO special provision(s) contained elsewhere in this contract.

For inquiries related to a specific commercial and/or private source, Contractors may visit the Aggregate Unit of the appropriate Regional Geotechnical Section by appointment to access available Mineral Aggregate Inventory Data Bank (MAIDB) information, provided they have written consent from the source owner.

Regional Geotechnical Section offices are located in:

Toronto:	Tel. (416) 235-5428 / Fax. (416) 235-3999;
London:	Tel. (519) 873-4400 / Fax. (519) 873-4403;
Kingston:	Tel. (613) 545-4794 / Fax. (613) 547-1760;
North Bay:	Tel. (705) 497-5478 / Fax. (705) 497-5499; and
Thunder Bay:	Tel. (807) 473-2090 / Fax. (807) 473-2168.

For enquiries related to Crown sources or sources under permit to MTO, Contractors may visit the appropriate Regional Geotechnical Section by appointment to access available MAIDB information.

During tendering, a request for approval for use of an MTO/Crown source not listed on an Aggregate Sources List (ASL) shall be made through the bid enquiry process.

Any MTO/Crown sources not listed on an ASL may be made available, subject to the approval of the Head, Geotechnical Section. If approval is granted, the ministry's ASL Conditions of Information shall apply.

Access to the information in MAIDB is provided for the convenience of the Contractor only. Since MAIDB information is dated and subject to interpretation, the information is not guaranteed. This is because of revisions to aggregate specifications and inherent source variability.

Structural Concrete Aggregate Source Lists and Concrete Base/Pavement Aggregate Source Lists are available for each MTO region on the ministry's Registry, Appraisal and Qualification System (RAQS) website under the Contractor subheading (www.raqsb.mto.gov.on.ca).

Earth Borrow, Rock Supply, Granular Base, and Conventional Hot Mix Aggregates

This contract does not include an Aggregate Sources List (ASL) for earth borrow, rock supply, granular base, and conventional hot mix aggregates. For information regarding commercial sources, Contractors may refer to the following sources of information:

- i) Commercial Aggregate and Membership Directory, available through Ontario Stone, Sand & Gravel Association (OSSGA);
- ii) Aggregate License/Permit List, available through the Ministry of Natural Resources (MNR); and
- iii) Aggregate Resources Inventory Papers (ARIPs), available through the Ministry of Northern Development and Mines (MNDM).

Concrete Aggregates

This contract includes an Aggregate Sources List for Structural Concrete Fine and Coarse Aggregates.

AMENDMENT TO OPSS 1151, APRIL 2007

Special Provision No. 111F10M

January 2010

HMA Mix Design and Additional Materials Requirements

1151.03 DEFINITIONS

Section 1151.03 of OPSS 1151 is amended by the addition of the following:

RAP Content means the amount of RAP expressed as a percentage by mass of the mix.

1151.04.01.01 Mixture Requirements for Design Purposes

Clause 1151.04.01.01 of OPSS 1151 is amended by the addition of the following:

Aggregate Gradation requirements for Superpave 12.5, 12.5FC 1 and 12.5FC 2 in Table 1 are deleted and replaced with:

Hot Mix Asphalt Type	Percentage Passing by Dry Mass of Aggregates									
	Sieve Size mm									
	50.0	37.5	25.0	19.0	12.5	9.5	4.75	2.36	1.18	0.075
Superpave 12.5, 12.5FC 1 and 12.5FC 2	-	-	-	100	90-100	45-90	50-65	39-58	-	2-10

For HMA in this Contract, the mix properties, the compaction effort, and the aggregate properties specified in the Contract Documents, shall conform to the requirements for the Traffic Category specified in Table A.

The asphalt cement (AC) added to the hot mix types shall be performance graded asphalt cement, PGAC as specified in Table A. For bidding purposes only, the percentage by mass of asphalt cement, AC_{BID}, contained in the various HMA mix types shall be as specified in Table A.

Table A: Superpave Mix Design Criteria

HMA Type	Location in Contract	Traffic Category	PGAC Grade	AC _{BID} (%)
SP 12.5 FC 2	All Hwy 404 locations as shown in contract, including ramps and side roads.	E	64-28	5.2
SP 12.5	Boag Road and Holborn Road, Commuter Parking Lot and driveway approach.	D	64-28	5.2
SP 19	All Hwy 404 locations as shown in contract, including ramps and side roads.	E	64-28	4.8
SP 25	All Hwy 404 and ramps locations as shown in contract.	E	64-28	4.0

The Contractor may modify the composition of the HMA as permitted in clause titled Reclaimed Asphalt Pavement Proportions, provided that the resultant mixture conforms to all the Contract requirements for the HMA type specified. In addition, if the Contractor modifies the composition of the mix by including RAP or RST or both the high and low grade of PGAC required shall be lowered by 6° C when:

$$[(\text{percent RAP by mass total mixture}) + 10 \text{ times}(\text{percent RST by mass total mixture})] > 20 \%$$

1151.04.01.02 Reclaimed Asphalt Pavement Proportions

Clause 1151.04.01.02 of OPSS 1151 is amended by the deletion of the second paragraph.

1151.04.02 Submission Requirements

1151.04.02.01 Mix Design

Clause 1151.04.02.01 of OPSS 1151 is amended by deleting the second paragraph and replacing it with the following:

When the tender item in tonne is more than 2000 tonnes, and for tender item in square metre (Superpave 12.5 FC2, 19.0 and 25.0 only), Superpave mix design submissions shall include certification from an independent laboratory stating that:

- a) the independent laboratory prepared all samples and conducted all testing required by the laboratory procedure for the mix check according to LS-316 to determine the values of mix and aggregate properties listed in Table 7; and
- b) the mix meets the requirements and tolerances given in Table 7.

1151.05 MATERIALS

Clause 1151.05.02.01 of OPSS 1151 is deleted and replaced with the following:

1151.05.02.01 Reclaimed Asphalt Pavement and Roof Shingle Tabs

The aggregate contained in the RAP or RST or both, where permitted in a HMA, shall be according to the aggregate requirements of OPSS 1003 for the mix type specified in the Contract Documents. Any materials used to keep the ground RST material from clumping shall be approved by Owner.

RST, where permitted in a HMA, shall meet the requirements of Table 9.

RAP and RST that are contaminated with deleterious material shall not be used and shall be removed from the work. RAP and RST shall be stockpiled conforming to the stockpiling requirements for coarse aggregates according to OPSS 1001, except that when the material is stockpiled on a compacted granular pad the top 75 mm of the pad shall be the coarse aggregate that is required for a new (virgin) mixture of the tendered hot mix item.

The use of RAP and RST that are obtained from existing stockpiles that do not have a foundation conforming to the above paragraph shall be permitted provided that the bottom 0.3 m of the stockpile is not incorporated into the work.

Process control sampling and testing of the RAP and RST shall be as specified in the Contract Documents.

When RST is used in the HMA, it shall be processed solely from manufactured shingle scrap and shall be free of all contamination.

TABLE 6 - Maximum Reclaimed Asphalt Pavement Proportions by Mass is deleted and replaced with the following:

**TABLE 6
Maximum Reclaimed Asphalt Pavement Content**

Traffic Category (See Note 1)	Binder Course 150 mm or More Below Pavement Surface	Binder Course Within 150 mm of Pavement Surface	Surface Course Excluding SMA Surface Mixes	SMA Surface Course (See Note 2)
A, B	40%	40%	20%	0%
C, D	40%	20%	20%	0%
E	40%	20%	20%	0%

Notes:

1. Traffic Category is specified elsewhere in the Contract Documents.
2. The use of up to 3% RST by mass of mix is permitted in SMA surface course.

ENVIRONMENTALLY SENSITIVE AREAS

Special Provision No. 199F12

March 2001

Limits

The areas(s) bounded by the offsets listed in the chart below, are environmentally sensitive areas. Entry onto or use of such areas is prohibited. *

Area #	Highway/ Roadway	Stations	Offset Left	Offset Right	Description
1	404X	33+200 to 33+350		Any portion beyond specified limit of grading	EA Vegetation Unit #10
2	404X	33+350 to 33+600	Any portion beyond specified limit of grading		EA Vegetation Unit #11
3	404X	34+600 to 35+050		Any portion beyond specified limit of grading	EA Vegetation Unit #13
4	404X	35+850 to 36+275	Any portion beyond specified limit of grading	Any portion beyond specified limit of grading	EA Vegetation Unit #14 Lot A
5	404X	36+275 to 36+450		All portions	EA Vegetation Unit #14 Easterly Section
6	404X	36+450 to 36+675		Any portion beyond specified limit of grading	EA Vegetation Unit #14 Lot B
7	404X	38+025 to 38+500		Any portion beyond specified limit of grading	EA Vegetation Unit #14b

Area #	Highway/ Roadway	Stations	Offset Left	Offset Right	Description
8	Woodbine Avenue	9+925 to 10+250		Any portion beyond specified limit of grading	EA Vegetation Unit #17
9	404X	33+200 to 33+350		All portions	Maskinonge River Wetland
10	Woodbine Avenue	9+300 to 10+200		Any portion beyond specified limit of grading	Maskinonge River Wetland

ENVIRONMENTAL EXEMPTIONS AND PERMITS

Special Provision No. 199F31

December 1990

The following environmental exemptions and permits are provided for the work.

Exemption and Permit Identification	Exemption and Permit Details and Conditions
Permission To Take Water (PTTW)	

The exemptions and permits provided above do not relieve the Contractor of other obligations imposed by statute or by municipal bylaw.

CONSTRUCTION NOISE CONSTRAINTS

Special Provision No. 199F33M

December 1990

Noise Sensitive Areas

This special provision covers the requirements for control of construction noise produced by the Contractor's operations. With the exception of any exemptions from municipal noise control bylaws that may be indicated elsewhere in the Contract, these requirements do not relieve the Contractor of other obligations imposed by statute or by municipal bylaw.

Noise constraints in noise sensitive areas are as follows:

Noise Sensitive Area # 1

Noise Sensitive Area Limits	
Constraint	Constraint Details
Equipment Maintenance	Equipment shall be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts.
Equipment Operation	Idling of equipment shall be restricted to the minimum necessary to perform the specified work.
Hours of Work	<p>The operation of any equipment in connection with construction within the Town of Georgina (i.e., north of Ravenshoe Road) is restricted from 2000 to 0700 hours; and all day Sundays and Statutory holidays.</p> <p>As specified elsewhere in the contract, a noise bylaw exemption from the Town of East Gwillimbury has been obtained. This bylaw exemption does not apply at the following locations, where the operation of any equipment is not permitted from 1900 to 0700:</p> <ul style="list-style-type: none"> • Sta. 36+975 (east side); • Sta. 37+125 (east side); and • Sta. 37+175 (west side).

IDENTIFICATION OF LOCAL REGULATORY AUTHORITIES

Special Provision No. 199F34

July 2005

The following is provided for information only, to facilitate contact with and notification to regulatory authorities as specified in the Contract Documents:

Regulatory Authority	Notification Requirement
MOE: Spills Action Centre (SAC) 1-800-268-6060	For notification of a spill to the environment under the Environmental Protection Act
Municipality: Regional Municipality of York 17250 Yonge Street, Box 147 Newmarket, ON L3Y 6Z1 Tel.: 905-895-1231 or 1-877-464-9675 Town of East Gwillimbury 19000 Leslie Street Sharon, ON L0G 1V0 905-478-8545	For notification of a spill to the environment under the Environmental Protection Act
MOE: District Office Ministry of the Environment York Durham District Office 230 Westney Road South, 5 th Floor Ajax, ON L1S 7J5 Tel.: 905-427-5600 or 1-800-376-4547 Fax: 905-427-5602	For Waste Management Approval under the Environmental Protection Act
MNR: District Office Ministry of Natural Resources Aurora District 50 Bloomington Road West R.R. #2 Aurora, ON L4G 3G8 Tel.: 905-713-7400 Fax: 905-713-7359 – Mailroom	For notification of the release of a deleterious substance to a watercourse under the Fisheries Act
DFO: District Office Fisheries and Oceans Canada Peterborough District Office 501 Towerhill Road, Unit 102 Peterborough, ON K9H 7S3 Tel.: 705-750-0269	For notification of the release of a deleterious substance to a watercourse under the Fisheries Act
Local Police: York Regional Police (District 1) 17250 Yonge Street Newmarket, ON L3Y 4W5 Tel.: 1-866-876-5423 Tel.: 905-895-1221	For notification of a Dangerous Occurrence involving dangerous goods under the Transportation of Dangerous Goods Act
Town of East Gwillimbury – Fire Chief 19000 Leslie Street Sharon, ON L0G 1V0 Tel.: 905-853-8842 ext. 101	For notification of impediments to through traffic on existing roads.
Regional Municipality of York Emergency Medical Services Branch 520 Cane Parkway Newmarket, ON L3Y 8T5 Tel.: 905-895-1231	For notification of impediments to through traffic on existing roads.
York Region Transit 50 High Tech Road, 5 th Floor	For notification of impediments to through traffic on existing roads. Operations dispatch will require

Richmond Hill, ON L4B 4N7 Tel.: 905-762-2964, Ext. 5842	72 hours notice prior to construction if on-street stops will be affected.
York Catholic District School Board 320 Bloomington Road West Aurora, ON L4G 0M1 Tel.: 905-713-1211 Fax: 905-713-1272	For notification of impediments to through traffic on existing roads.
York Region District School Board The Education Centre – Aurora 60 Wellington Street West, Box 40 Aurora, ON L4G 3H2 Tel.: 905-895-7216 (Newmarket & East Gwillimbury)	For notification of impediments to through traffic on existing roads.
Regional Municipality of York – Transportation Operations 17250 Yonge Street Newmarket, ON L3Y 6Z1 Tel.: 905-895-3047	For notification of impediments to through traffic on existing roads.

OTHER CONTRACTORS WITHIN OR ADJACENT TO THE LIMITS OF THE CONTRACT

Special Provision No. 199F43

June 2000

Other work may be in progress within or adjacent to the limits of this contract.

The Contractor shall co-ordinate the work with other Contractors within and/or adjacent to the project limits to ensure that they do not perform work in the same area at the same time, or adversely affect each other's work. The Contractor shall ensure that a minimum separation of 100 m is maintained between the operation included in this contract and work within and / or adjacent to this project done by others.

The Contractor shall provide a written submission explaining how the work with other Contractors will be co-ordinated to the Contract Administrator.

The following work is ongoing:

- Utility relocations
- Highway 404 from 0.9km south of Green Lane to 0.8km north of Queensville Sideroad, MTO Contract No.2010-2001
Contact :
Nanda Kandiah, P. Eng.
Senior Project Engineer
Tel. 416-235-5397
Email: Nanda.kandiah@ontario.ca
- Reconstruction/Widening of Woodbine Avenue from north of Ravenshoe Road to Church Street, Region of York (Contract No.T-08-104)

Contact:
Cynthia Martin, P. Eng.
Project Manager - Road
Tel. 905-830-4444 Ext. 5947
Email: Cynthia.martin@york.ca

GENERAL REQUIREMENTS OF SAMPLES FOR QUALITY ASSURANCE, REFEREE AND OTHER TESTING BY THE OWNER OR THE OWNER'S AGENT

Special Provision No. 199F57

December 2006

Scope

This special provision covers the minimum requirements for the handling, identification, and delivery of samples to a laboratory for Quality Assurance, Referee and other testing by the Owner or the Owner's agent.

Sampling and Identification

All samples shall be obtained by the Contractor in the presence of the Contract Administrator or a designated representative. Sampling, handling and storage of samples shall be carried out as specified elsewhere in the Contract Documents. Notwithstanding, the Owner may take samples for its own purposes at any time from any location. The Contractor shall furnish all reasonable assistance to the Owner and shall require its subcontractors and suppliers to do the same.

The Contractor shall supply sample containers. All containers used for samples of materials controlled under WHMIS shall be appropriate for the materials being shipped and shall be labelled and accompanied with the relevant Material Safety Data Sheets.

The Contractor shall place bags or containers of samples into clear polyethylene security bags supplied by the Owner when instructed by the Contract Administrator. The Contract Administrator or his representative may apply security seals.

All samples, including those handled by a commercial carrier shall be accompanied by a sample data sheet and any additional documents as specified elsewhere in the Contract Documents. The documentation shall be sealed in a moisture proof container and placed within or attached to the sample container. Where not specified or not included on the sample data sheet, samples shall be delivered with a transmittal form identifying the following information:

- a) MTO Contract Number;
- b) Name of Contractor, name of contact person and telephone numbers;
- c) Name of Contract Administrator, and telephone numbers;
- d) Quantity and type of sample (when a sample consists of more than one item, each item shall be individually identified);
- e) Date sampled;
- f) Date shipped;
- g) Sample, lot and subplot number; and
- h) Sample location.

Sample Delivery

All samples shall be delivered by the Contractor within the time limits and locations specified elsewhere in the Contract Documents. The Contractor shall normally deliver samples during regular business hours. Where a sample has to be delivered outside these hours, the Contractor shall give the laboratory one full Business Day notice. If the time limits and/or locations for delivering samples are not specified elsewhere in the Contract Documents, then the sample shall be delivered by the Contractor no later than 1 Business Day from the date of sampling to the Regional Quality Assurance Laboratory located within a 150 km radius of the contract limits.

The Contractor shall maintain records that contain the date, time of delivery, and the printed name and signature of the authorized receiving individual. The Contractor shall sign the testing laboratory's records to confirm the date and time of delivery.

The Regional Quality Assurance Laboratory will be designated by the Owner.

AVAILABLE DIGITAL INFORMATION, DURING ADVERTISING AND CONSTRUCTION

Special Provision No. 199F61M

February 2010

Availability of Drawings and Digital Files during Bidding

For information purposes the following documents, plans, and reports are available in the Registry, Appraisal, and Qualification System (RAQS) under the "Contract Documents".

- Horizontal and Vertical alignment information
- Cross-section and profile data
- Aggregate Sources List
- Concrete Aggregate Sources List
- Foundation Investigation Report(s) (FIR)

#	Title	Hwy	WP	Site	Report Date	Originating Organization
1	Foundation Investigation Report Boag Road Overpass – NBL Structure. Highway 404 Extension from Queensville Sideroad to Ravenshoe Road. Town of East Gwillimbury.	404	2005-07-00	37-1538/1	November, 2009	Golder Associates
	Foundation Investigation Report Boag Road Overpass – SBL Structure. Highway 404 Extension from Queensville Sideroad to Ravenshoe Road. Town of East Gwillimbury.	404	2005-07-00	37-1538/2	November, 2009	Golder Associates
	Foundation Investigation Report Maskinonge River Tributary Culvert. Highway 404 Extension from Queensville Sideroad to Ravenshoe Road. Town of East Gwillimbury.	404	2005-07-00	37-1538/3	March, 2010	Golder Associates
	Foundation Investigation Report Deep Cut/High Fill Areas 1 to 8 From Queensville Sideroad to Ravenshoe Road	404	2005-07-00	-	February, 2010	Golder Associates

- Hydrogeology Report, from Queensville Sideroad to Woodbine/Ravenshoe (May 2010).

During advertising, the following documents may be viewed during office hours

N/A

For viewing information contact the Regional Tendering Co-ordinator at:

Tel: 416-235-3992
4th Floor Bldg D
1201 Wilson Avenue
Downsview, ON M3M 1J8

All above digital and hard copy information is provided as a courtesy to facilitate the Contractor's operations. The ministry does not warrant the accuracy of the information or its compatibility with any software

applications. The information shall only be used for the Contractor's administration and construction of this project.

After award of the Contract, the Owner will provide the Contractor with the above digital files posted in the Registry, Appraisal, and Qualification System (RAQS) under the "Contract Documents" for this contract.

The original printed copies on file at the ministry's Regional Contracts Office shall be the official contract drawings.

CLEARING - Item No. 1, 2

CLOSE CUT CLEARING - Item No. 3

Special Provision

This special provision covers the requirements for producing wood chips for landscaping.

Contractor shall use the branches and materials suitable from the clearing/closed cut clearing to produce wood chips. Wood chips produced shall be from 20mm to 50mm in length and width.

Wood chips shall be stored on site or move to a place owned by the contractor for temporary storage. Contractor shall maintain these wood chips in good, usable condition and deliver the chips back on site for landscaping use at contractor's expense.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work including production, temporary storage, and delivery of these wood chips.

EARTH EXCAVATION (GRADING) - Item No. 6

Special Provision

Scope of Work

1) Dewatering at Deep Cut and High Fill Areas

Deep Cut Areas

The contractor shall be alerted that groundwater level at Deep Cut Area 2 (Sta. 34+360 to 34+600), Area 3 (Sta. 34+780 to 34+880), Area 5 (Sta. 35+750 to 35+900), and Area 7 (Sta. 37+400 to 37+760) was measured to range from the ground surface to 2.9m below ground surface.

It is estimated that the new Highway 404 subgrade profile will be constructed to depth ranging from 2.5m to 6m below the groundwater levels measured in the piezometers installed at the deep cut areas in June 2009. The cut slopes consist of water-bearing silty sand to sand and silt till, silt and sand layers, and clayey silt/cohesive deposits containing sand interlayers /seams.

Dewatering ahead of deep cut excavations will be required and the excavation shall be kept stable during the work. It is considered that a combination of ditches and sub-drains installed progressively as the subgrade is lowered and in advance of the final side slopes being excavated to the design grade is required to allow the groundwater to drain sufficiently ahead of the permanent excavation.

If excavation operations are to progress during wet periods of the year (i.e. Spring and Fall), gravel sheeting of minimum 0.5m thick and as per OPSS 511, in combination with rip rap and/or counterfort drains may be required to control erosion due to groundwater seepage.

High Fill Areas

The contractor shall be alerted that the shallow groundwater level at High Fill Area 1 (Sta. 33+900 to 34+160), Area 4 (Sta. 35+000 to 35+150), Area 6 (Sta. 36+870 to 37+150), and Area 8 (Sta. 38+200 to 38+500) was measured to range from the ground surface to 4.4m below ground surface. High Fill Area 1 and 8 had areas of ponded water at the time of the subsurface investigation in March and June 2009.

It is estimated that stripping up to 1.5m below existing ground surface may be required to remove topsoil /surficial organics at the high fill areas as indicated elsewhere in the Contract.

Temporary dewatering will be required and the temporary excavation shall be kept stable during the work in order to allow for stripping and compaction of suitable backfill soils in the dry. It is considered that any groundwater seepage into excavated areas of subgrade preparation can be handled by diversion channels, perimeter ditches /trenches and pumping using sump pumps.

2) Dewatering of Excavation for Stormwater Management Pond Construction

Cut Areas

The contractor shall be aware that the groundwater level at SWM Pond 6, SWM Pond 7, Holborn SWM Pond, SWM Pond 8 and SWM Pond 9 was measured to range from 1 m to 4.3 m below ground surface.

It is estimated that the new stormwater management pond grades will be constructed to depths ranging from 1 m to 3.3 m below the groundwater levels measured in the boreholes and piezometers installed in the vicinity of the pond areas in June 2009 and March 2010. The cut slopes consist of water-bearing silty sand to sand and silt till, silt and sand layers, and clayey silt / cohesive deposits containing silty sand interlayers / seams.

Dewatering ahead of deep cut excavations will be required and the excavation shall be kept stable during the construction. It is considered that a combination of ditches and sub-drains installed progressively as the subgrade is lowered and in advance of the final side-slopes being excavated to the design grade is required to allow the groundwater to drain sufficiently ahead of the permanent excavation.

If excavation operations are to progress during wet periods of the year (Spring and Fall), gravel sheeting may be required to control erosion due to groundwater seepage.

Fill Areas

The contractor shall be aware that the shallow groundwater level at SWM Pond 6, SWM Pond 7, Holborn SWM Pond, SWM Pond 8 and SWM Pond 9 was measured to range from 1 m to 4.3 m below ground surface in June 2009 and March 2010.

It is estimated that stripping up to 0.4 m below existing ground surface may be required to remove topsoil and surficial organics at the pond containment berm fill areas as indicated in the Contract Drawings. Under such condition, temporary dewatering may be required and the temporary excavation shall be kept stable during the construction in order to allow for stripping and compaction of suitable backfill materials in the dry condition.

It is considered that any groundwater seepage into excavated areas of subgrade preparation can be handled by diversion channels, perimeter ditches or trenches and pumping using sump pumps.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work. Gravel sheeting and rip rap, if required to be used, will be paid under separate tender item. No additional payment shall be made if the site conditions are different from the information provided above or indicated in the contract documents.

Special Provision

Subgrade Inspection

1) At High Fill Embankments

High Fill Embankment Areas are located at Area 1 (Sta. 33+900 to 34+160), Area 4 (Sta. 35+000 to 35+150), Area 6 (Sta.36+870 to 37+150) and Area 8 (Sta. 38+200 to 38+500).

The measured depth of top soil or soils containing organics that are to be stripped generally ranged from 0.7m to 1.5m at Area 1, 0.3m to 0.6m at Area 4, 0.5m to 0.8m at Area 6 and 0.2m to 0.5m at Area 8. The plan limits of areas to be stripped are provided elsewhere in the Contract.

After stripping, the exposed subgrade soil shall be inspected by the Quality Verification Engineer (QVE) prior to placement of embankment fill, proof-rolled to identify soft /loosened areas and any poorly performing areas should be sub-excavated and replaced with suitable earth backfill.

2) At Stormwater Management Pond Containment Berm Fill Area

Portions of the stormwater managment pond containment berms are to be constructed as fill embankments at SWM Pond 6, SWM Pond 7, Holborn SWM Pond, SWM Pond 8 and SWM Pond 9.

For information purpose, the depth of topsoil or soils containing organics that are to be stripped generally ranges from 0.1 m to 0.3 m at SWM Pond 6, 0.1 m to 0.2 m at SWM Pond 7, 0.2 m to 0.3 m at Holborn SWM Pond, 0.3 m to 0.4 m at SWM Pond 8, and is about 0.3 m at SWM Pond 9. To minimize potential settlements, the limits of stripped areas shall be between the toe of fill slopes.

After stripping, the exposed subgrade soil shall be inspected by the Quality Verification Engineer (QVE) prior to placement of suitable embankment fill, proof-rolled to identify soft / loosened areas, and any poorly performing areas should be subexcavated and replaced with suitable earth backfill.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

Special Provision

Scope

This specification covers the requirements for the ballast soil cover to be used at the stormwater management ponds.

Materials

The ballast soil cover should consist of suitable earth fill material available from the pond excavation and/or other cut areas. These suitable earth fill materials should consist of sandy silt till, to sand and silt till and/or clayey silt till, to silty clay till, or granular materials.

Construction

Suitable earth fill material meeting the ballast soil cover specifications above should be placed in accordance with SP206S03 and be placed in maximum 0.3 m thick lifts and compacted to a minimum 95% Standard Proctor Maximum Dry Density of the material.

The ballast soil cover should be placed on top of the clay liner as soon as practicable after clay seal construction.

Minimum thickness of ballast soil cover:

SWM Pond #6, 8 & Holborn Pond	0.6m
SWM Pond #7 & 9	0.3m

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

EARTH EXCAVATION (GRADING) - Item No. 6, 113, 126

Special Provision

Present of Cobbles and Boulders at the Deep Cut/High Fill Area

The native silty sand to sand and silt till and clayey silt till soils present at the high fill and deep cut areas contains cobbles and boulders as indicated in the Record of Borehole sheets.

Consideration of the present if these obstructions must be made in the selection of appropriate equipments and procedures for the top soil / organic material removal at the high fill areas and permanent excavation at the deep cut areas.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

**Backfill to Sub-Excavation at Highway 404 mainline
and S-N/S Ramp**

After removal of highly frost-susceptible soils, backfill with approval fill to the subgrade level, compaction and proof-roll in accordance to OPSS 501. Backfill material should be free from any organic material and frost-susceptible soil, from either on-site or off-site sources, shall be approved by the Contract Administrator before placing.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work. No additional payment shall be made if the site conditions are different from the information provided above or indicated in the contract documents.

EARTH DITCH CLEANOUT - Item No. 7

Special Provision No. 206F02

September 2001

Cleaning Existing Ditches

The Contractor shall clean existing ditches as detailed in the Contract. The work is specified in accordance with OPSS 206, December 1993.

Equipment

Equipment to be used to clean ditches shall be a minimum of:

Hydraulic Backhoe, Rubber Tire with Wrist Action Bucket. The bucket shall be toothless.

Management of Material

The management of materials, surplus to the requirements of the contract, shall be removed off site.

Measurement for Payment

Measurement is by Plan Quantity, as may be revised by Adjusted Plan Quantity, of the length in metres along the centreline of the cleaned ditches.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

GRANULAR SEALING - Item No. 8

Lot Definition, Operational Constraints, Sampling, Measurement for Payment and Basis of Payment, Including Price Adjustment

305.03 DEFINITIONS

Section 305.03 of OPSS 305, March 1998, is deleted and replaced with the following:

Lot: the quantity of work completed with a shipment (normally a truck tank) of sealer.

305.07 CONSTRUCTION

305.07.01 Operational Constraints

Subsection 305.07.01 of OPSS 305 is amended with the addition of the following:

The wind is not strong enough to cause drifting of the sealer off the area designated for sealing.

305.07.05 Sampling of the Sealer for Acceptance

Subsection 305.07.05 of OPSS 305 is amended with the addition of the following:

Sample containers for liquid asphalt sealer shall be triple tight 1-litre cans. A minimum of one can is required per sample.

Sample containers for emulsified asphalt sealer shall be triple-tight, epoxy-lined 4-litre pails, or suitable plastic containers of similar capacity which can be closed to prevent any leakage. A minimum of two pails is required per sample.

The Contractor shall supply and fill the sample containers, leaving only sufficient space to allow for liquid expansion. The sample shall be taken from a sampling spigot on the transfer line, or, if one is not available, from the end of the transfer line. Each sample shall be taken after sufficient material has been drawn from the truck tank to purge the transfer line.

The Contractor shall completely identify the sample using the Ministry of Transportation Bituminous Materials Tag PH-CC-349 and this tag will be supplied by the Contract Administrator. In addition, when two pails are required per sample, a tag shall be placed on each pail and labelled as A1 of 2" or A2 of 2". Tag PH-CC-349 is only for use by the Owner in the identification of the sample for contract administration purposes.

305.10 BASIS OF PAYMENT

305.10.01 Granular Sealing - Item

Subsection 305.10.01 of OPSS 305 is amended by the addition of the following:

The tender price shall include the cost of any water required to dampen the granular material prior to granular sealing.

Payment for any lot of sealer which does not meet all contract requirements will be subject to a price adjustment, except when the lot sample has been delivered within the maximum number of business days after sampling as specified elsewhere in the contract and testing is not started within 14 calendar days of sampling. A price adjustment is a reduction in payment in the contract price for the item and is a calculated or fixed percentage of the contract price. A calculated price adjustment will be determined, through a system of adjustment points based on test results for any lot sample when tested providing the sample remains in a condition suitable for testing.

When more than one test result is available on any one sample, the test result with the least deviation from the specification limit will be used to calculate the price adjustment.

The total number of adjustment points for each sample will be divided by 25 to obtain the price adjustment percentage for the lot.

A fixed price adjustment of 20 percent of the contract price will be made for lots for which the following conditions apply:

- i) A lot sample has not been received for testing; or
- ii) The lot sample contains insufficient material for testing; or
- iii) The lot sample does not remain in a condition suitable for testing for 14 calendar days after sampling, e.g. broken emulsion or foamover during distillation.

305.10.01.01 Adjustment Points for RC-30 and MTO Primer

The total number of adjustment points will be equal to the summation of the number of units that each test deviates from the specification limits times the multiplier.

Prior to the summation, all adjustment points will be rounded to one decimal place in conformance with LS-100 of the MTO Laboratory Testing Manual.

**TABLE OF TESTS, UNITS AND MULTIPLIERS
FOR RC-30 AND MTO PRIMER**

TEST	UNIT	MULTIPLIER
Residue by Distillation to 360°C	%	200
Kinematic Viscosity @ 60°C	mm ² /s	20
Distillate, as % of total distillate to 360°C		
to 190°C	%	10
to 225°C	%	10
to 260°C	%	10
to 316°C	%	10
Residue Penetration @ 25°C	0.1 mm	15
Residue Ductility @ 25°C	cm	10
Residue Solubility	%	10

305.10.01.02 Adjustment Points for Emulsified Asphalt Primers

The total number of adjustment points will be equal to the summation of the number of units that each test deviates from the specification limits times the multiplier, plus:

1000 adjustment points for failure of the Storage Stability Test, 24 hours; and

1000 adjustment points for failure of the Particle Charge Test.

The Storage Stability Test and the Particle Charge Test have a pass/fail criteria.

Prior to the summation, all adjustment points will be rounded to one decimal place in conformance with LS-100 of the MTO Laboratory Testing Manual.

**TABLE OF TESTS, UNITS AND MULTIPLIERS
FOR EMULSIFIED ASPHALT PRIMERS**

TEST	UNIT	MULTIPLIER
Residue by Distillation	%	200
Viscosity at 50°C (less than minimum)	SFs	30
Viscosity at 50°C (greater than maximum)	SFs	5
Oil Portion of Distillate, by volume EA Primer	%	50
Residue Penetration @ 25°C	0.1 mm	15
Flash Point, Open Tag	°C	10
Residue Ductility @ 25°C	cm	10
Residue Solubility	%	10

SUPERPAVE 19.0 - Item No. 12, 116

Special Provision

Hot Mix Padding

The Contractor is advised the quantity for the above tender item is for information purposes only. The Contractor is required to pre-determine the locations and quantity of padding as per the typical details in the contract drawings and any subsequent field measurements carried out by the Contractor. Upon establishing the required padding within the contract limits, the Contractor is required to submit to the Contract Administrator his calculations for approval prior to commencing with the padding operations.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

SUPERPAVE 12.5 - Item No. 13

SUPERPAVE 12.5 FC2 - Item No. 14, 115, 128

SUPERPAVE 19.0 - Item No. 15, 116, 129

SUPERPAVE 25.0 - Item No. 16, 117

Special Provision

Measurement by Square Metre for Multiple Lifts of Hot Mix Asphalt

313.01 SCOPE

Section 313.01 of OPSS is amended by the addition of the following:

This non standard special provision covers measurement, acceptance and payment for hot mix surface and binder courses when the unit of measurement for payment of the hot mix is “square metres”. It also covers the measurement and acceptance of pavement width and thickness.

313.02 REFERENCES

Section 313.02 of OPSS 313 is amended by the addition of the following:

Ministry of Transportation Publications:

MTO Laboratory Testing Manual:

LS-294 Method for Measuring Pavement Lift Thickness

313.03 DEFINITIONS

Section 313.03 of OPSS 313 is amended by the addition of the following:

Design Lift Thickness (T_D) means the thickness in millimetres of a specific lift as specified in the Contract Documents or for multiple binder course lifts of the same mix type it means the total thickness in millimetres of the binder lifts of the same mix type at the same location as specified in the Contract Documents.

Lift Thickness means the thickness in millimetres of the placed and compacted lift of surface course or the total thickness in millimetres of all the placed and compacted binder course lifts of the same mix type at the same location.

313.07 CONSTRUCTION

313.07.03 Preparation of Foundation and Existing Pavement

Subsection 313.07.03 of OPSS 313 is amended by the addition of the following:

The Contractor shall be solely responsible for determining and preparing the existing surface to be paved by milling or padding or a combination, as the Contractor deems necessary, to place and compact each lift to the thickness specified in the Contract Documents, provided such corrections do not reduce the thickness of existing pavement materials or underlying materials by more than 5 mm below the general profile of the surrounding existing unground or unmilled pavement surface.

313.07.06.02 Paving

Clause 313.07.06.02 of OPSS 313 is amended by the addition of the following sentence:

The hot mix tender items shall be placed and compacted to the design lift thickness.

313.07.15 Sampling

Subsection 313.07.15 of OPSS is amended by the addition of the following clause:

313.07.15.06 Lift Thickness

The Contract Administrator will determine the lift thickness sample locations. Single cores, consisting of all lifts placed, shall be used to evaluate the lift thickness of all lifts of hot mix placed at each sample location. Sample locations, for the assessment of all surface and binder course mixes, will be determined based on the surface area of surface course mix placed.

All areas of hot mix paving, including paved shoulders, within the contract limits will be sampled for lift thickness with the following exceptions:

- a) Detours and other temporary pavement
- b) Miscellaneous hot mix
- c) Bridge decks
- d) The following additional stations and/or roadways: N/A

The Contractor shall obtain one core sample from each subplot to be designated as the subplot QA core. Upon completion of each subplot, the Contract Administrator will inform the Contractor in writing of the random location for sampling. The Contractor shall obtain all pavement core samples to be used for payment purposes not later than the next working day after the completion of the surface course in that subplot.

Each core shall have a nominal diameter of 50 mm and shall consist of all the hot mix lifts placed in the subplot and at least one underlying hot mix layer if one exists. Each core shall have its vertical side cored perpendicular to the upper surface of the core. The subplot number shall be clearly marked with a permanent marker on each core. In addition the sample documents specified elsewhere in the Contract Documents shall be provided. These sample data sheets in addition to the requirements noted elsewhere in the Contract Documents shall also note the number of lifts for which the thickness measurements are required and mix type for each. Each sample shall be placed in a suitable container to protect the sample integrity during transport and until testing.

No replacement thickness cores shall be obtained for QA or referee. The Contractor shall be permitted for the first subplot of each lot to obtain for QC purposes to obtain a maximum of three thickness core samples. Samples obtained for QC purposes shall be a minimum of 100 m² from any core samples obtained for QA purposes and any other core sample obtained for QC purposes within the subplot.

Holes resulting from the removal of thickness core samples shall be cleaned, dried and filled with a material acceptable to the Contract Administrator immediately after sampling.

313.08 QUALITY ASSURANCE

313.08.01 Acceptance Criteria

Subsection 313.08.01 of OPSS 313 is amended by the addition of the following:

- f) Lift Thickness

Subsection 313.08.01 of OPSS 313 is amended by the addition of the following clauses:

313.08.01.06 Lift Thickness

313.08.01.06.01 Lot Size

The Contract Administrator shall determine the size and location of the lots and sublots after discussions with the Contractor and before hot mix production for the item starts. Generally there will be one lot for the total

pavement quantity of each hot mix tender item that is measured for lift thickness. When more than one T_D is specified for the hot mix tender item, the Contract shall generally consist of a separate lot for each total area of the same hot mix tender item with the same specified T_D . Each lot will be divided into sublots, corresponding to the overlying thickness sublots. Sublots shall normally be 2000 m² in size. A minimum of 3 sublots are required for each lot.

313.08.01.06.02 Acceptance of Pavement Width

The Contract Administrator shall conduct random spot checks of the width of each binder and surface course lift for acceptance. The Contractor shall provide and maintain offset stakes on both sides of the roadway, or other identifiers acceptable to the Contract Administrator, for use in checking the pavement width at 25 m maximum intervals until the Contract Administrator advises the Contractor that the stakes or identifiers are no longer required.

The width of each lift shall be accepted provided the:

- a) outside edges of the lanes and the paved shoulders are free from horizontal waves,
- b) width across all the adjacent lanes from the outside edge to outside edge is not less than the sum of the specified lane widths, and
- c) width of the paved shoulders is not less than the specified shoulder width.

If the width is not acceptable at any location, the Contract Administrator shall notify the Contractor in writing that the pavement is rejectable and the Contractor shall submit a written proposal for corrective action to the Contract Administrator within 2 Business Days of receiving the notification.

313.08.01.06.03 Acceptance of Lift Thickness

313.08.01.06.03.01 General

The Contract Administrator shall determine the acceptability of the lift thickness of the lot based on lift thickness measurements. The Contract Administrator shall calculate the thickness payment adjustment for the lot once all measurements for the lot have been completed.

313.08.01.06.03.02 Lift Thickness Measurement

The lift thickness measurements shall be determined based on lift thickness of the QA designated core sample for each subplot as determined by the Owner's designated laboratory according to LS-294.

The Contract Administrator shall provide the Contractor with a copy of each lift thickness measurement for each hot mix item upon completion of the subplot measurement. The lift thickness measurements shall be reported in millimetres to the closest 0.5 mm. The rounding-off procedure, for all values, shall be according to LS-100.

313.08.01.06.03.03 Assessment Criteria for Lift Thickness

Individual subplot thickness measurements shall be acceptable if they are equal to or greater than the minimum subplot thickness specified in Table A. If an individual subplot thickness measurement is less than the minimum subplot thickness specified in Table A, the subplot shall be deemed rejectable and shall be repaired. The repaired subplot shall be re-evaluated using the lift thickness measurement for the repaired subplot and used in determining payment of the lot.

In addition, when a core taken for compaction testing does not meet the minimum lift thickness specified in Table A, the thickness subplot in which the compaction core was located shall be rejectable and shall be repaired.

Table A: Minimum Lift Thickness

Mix Course	Specified Design Thickness T_D (mm)	Minimum Thickness (mm)	Lift
All courses	25 to 39	$T_D - 7$	
	40 to 59	$T_D - 10$	
Surface Course	60 and greater	$T_D - 15$	
Binder Courses	60 and greater	$0.70 \times T_D$	

The Contract Administrator shall calculate the lot mean to one decimal point and the lot thickness payment adjustment based on all the subplot thickness measurements in the lot, according to LS-101. If the lot mean is equal to or greater than design lift thickness, the lot shall be accepted with no thickness payment adjustment. If the lot mean is less than the design lift thickness and greater than or equal to 85% of the design lift thickness, payment for the mix shall be reduced by a thickness payment adjustment that shall be calculated as specified under the Payment Adjustment for Lift Thickness clause. If the lot mean is less than 85 % of the design lift thickness, the lot will be rejectable.

When a lot contains any sublots that are deemed rejectable according to Sublot Acceptance clause, the lot will be rejectable until the subplot has been repaired and re-evaluated as acceptable. When the Contract Administrator determines that a rejectable subplot shall not be repaired, payment for the mix shall be reduced by a thickness payment adjustment that shall be calculated as specified under the Payment Adjustment for Lift Thickness clause as a minimum.

313.08.01.06.04 Referee Testing

The Contractor may only challenge the individual lift thickness measurement by requesting referee testing within five Business Days of the Contractor receiving the subplot thickness measurement and shall submit his request in writing to the Contract Administrator. The Contractor shall then have the opportunity to view the re-measurement of the QA designated pavement core for that subplot at the designated lab together with the Contract Administrator. The re-measured lift thickness measurement shall be considered binding and shall replace the original lift thickness measurement for assessment of the subplot.

313.08.01.06.05 Repair and Re-evaluation

The Contractor shall not be permitted to make any repairs solely to correct for excess lift thickness.

The minimum length of a repair is the entire length of the subplot being repaired. The minimum width of repair shall be the width of the lane or shoulder or both being repaired. A paver shall be used in carrying out the repair. The repair shall be as specified in the Contract Documents.

When a subplot is repaired, the subplot shall be re-evaluated for and accepted, for all other hot mix requirements, at the full Contract price, subjected to payment adjustment or rejected as specified in the Contract Documents. For lift thickness, acceptance of the repaired subplot shall be based on the individual subplot thickness measurement and the lot thickness payment adjustment shall reflect the re-evaluated subplot measurement.

313.09 MEASUREMENT FOR PAYMENT

313.09.02 Plan Quantity Measurement

Subsection 313.09.02 of OPSS 313 is amended by the addition of the following:

The Plan Quantity shall not be adjusted due to any of the exceptions specified in the Lift Thickness clause under the Sampling subsection.

313.10 BASIS OF PAYMENT

313.10.01.01

Clause 313.10.01.01 of OPSS 313 is amended by the addition of the following:

The Contractor shall be responsible for the costs of carrying out additional milling, padding or grade preparations to meet the acceptance requirements of the contract for lift thickness.

313.10.01.04 Payment Adjustment for Segregated HMA

Clause 313.10.01.04 of OPSS 313 is amended by deleting the second paragraph and replacing it with the following:

When the unit of measure is square metres and the Contractor is to receive a payment increase, the payment increase shall be based on square metres not tonnes and shall be \$0.06 per m² for Superpave 12.5 FC2 and Superpave 12.5 FC1 only when used on freeways in Northeastern Region; or \$0.024 per m² for any other mix types.

313.10.01.05 Payment Adjustment for Aggregate Density

Clause 313.10.01.05 of OPSS 313 is deleted.

Subsection 313.10.01 of OPSS 313 is amended by the addition of the following clause:

313.10.01.07 Payment Adjustment for Lift Thickness

Price for purposes of payment adjustment due to lift thickness means the contract price of the hot mix surface course tender item. If asphalt cement content is specified for bidding purposes, the term price means the adjusted contract price after adjusting for the change in asphalt cement content.

313.10.01.07.01 Calculations for Thickness Payment Adjustment

The thickness payment adjustment shall apply to each surface and binder course tender items using the horizontal area of the surface course in the lot. The thickness payment adjustment shall be a reduction in payment. There shall be a tender opening date reduction factor (TODRF) of 0.5 for reductions on the thickness payment adjustment. The formulae provided in Table B shall be used to calculate the Thickness Payment Adjustment.

Table B: Thickness Payment Adjustment

Course	T _L	Thickness Payment Adjustment
Surface Course	All	lot quantity x Price x {[1.000 - (T _L /T _D)] x 2.0 x TODRF}
Binder Course	T _L ≥ [0.95 x T _D]	lot quantity x Price x {[1.000 - (T _L /T _D)]}
	[0.95 x T _D] > T _L ≥ [0.85 x T _D]	lot quantity x Price x {[1.000 - (T _L /T _D)] x 2.0 x TODRF}
	[0.85 x T _D] > T _L	lot quantity x Price x {[1.000 - (T _L /T _D)] x 3.0 x

		TODRF}
where	T_D = Design Lift Thickness specified in millimetres elsewhere in Contract Documents	
	T_L = lot mean, if lot mean is less than or equal to T_D ,	
or	$T_L = T_D$, if lot mean is greater than T_D .	

Section 313.10 of OPSS is amended by the addition of the following subsection:

313.10.08 Referee Testing for Thickness

If the referee test result is 5.0 mm or greater than the original QA test result, the Owner will bear the cost of the thickness measurement referee testing. If the referee test result is not 5.0 mm or greater than the original QA test result for the subplot retested, the Contractor will be charged the cost of the referee testing. The cost of the thickness measurement referee testing shall be \$50.00 per subplot.

CONCRETE PAVEMENT - Item No. 19

Special Provision

This special provision covers the requirements of concrete walkway on the raised bus platform.

Material

Concrete shall be 30 MPa at 28 days and conform to OPSD 1350 and OPSS 351.05.01.

Construction

Utility adjustment and isolation when required shall be conformed to OPSS 351.07.06 and 351.07.07.

Concrete placing shall be conformed to OPSS 351.07.08.

Surface finishing shall be broom finish and conformed to OPSS 351.07.09.

Joints shall be conformed to OPSS 351.07.10.01 to 351.07.10.04.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

CONCRETE PAVEMENT - Item No. 19, 132

AMENDMENT TO OPSS 350, MARCH 1998

Special Provision No. CONCRETE PAVEMENT

July 27, 2007

CONSTRUCTION SPECIAL PROVISION FOR CONCRETE PAVEMENT AND CONCRETE BASE

OPSS 350, Construction Specification for Concrete Pavement and Concrete Base (March 1998) is deleted in its entirety and replaced with the following Special Provision.

350.01 SCOPE

This Special Provision covers the requirements for the construction of concrete pavement and concrete base.

350.02 REFERENCES

This Special Provision refers to the following standards, specifications or publications:

Ontario Provincial Standard Specifications, Construction:

OPSS 314	Untreated Granular Subbase, Base, Surface, Shoulder and Stockpiling
OPSS 360	Full Depth Repair of Concrete Pavement and Concrete Base
OPSS 369	Sealing or Resealing of Joints and Cracks in Concrete Pavement
OPSS 904	Concrete Structures
OPSS 905	Steel Reinforcement for Concrete
OPSS 919	Formwork and Falsework

Ontario Provincial Standard Specifications, Material:

OPSS 1002	Aggregates - Concrete
OPSS 1302	Water
OPSS 1308	Joint Filler in Concrete
OPSS 1315	White Pigmented Curing Compounds for Concrete
OPSS 1350	Concrete - Materials and Production
OPSS 1441	Load Transfer Assemblies
OPSS 1442	Epoxy Coated Steel Reinforcement for Concrete

American Association of State Highway and Transportation Officials

AASHTO M 182 –89 Standard Specification for Burlap Cloth made from Jute or Kenaf

Canadian Standards Association:

CSA A23.1/A23.2-04	Concrete Materials and Methods of Concrete Construction/ Methods of Test for Concrete
CSA A23.2-9C-04	Compressive Strength of Cylindrical Concrete Specimens
CSA A23.2-14C-04	Obtaining and Testing Drilled Cores for Compressive Strength Testing

Ministry of Transportation Publication:

MTO Laboratory Testing Manual:

LS-101	Procedures for Calculating Percent Within Limits
LS-293	Method of Test for Correlating Profile Measuring Devices and Conducting Surface Smoothness Measurements

350.03 DEFINITIONS

For the purposes of this Special Provision the following definitions shall apply:

Concrete Base: means a rigid pavement structure, which is overlaid with asphaltic concrete, and may include concrete shoulders.

Concrete Pavement: means a rigid pavement structure with an exposed concrete surface, and may include concrete shoulders.

Cold Weather: means those conditions when the air temperature is at or below 5°C. It is also considered to exist when the air temperature is at or is likely to fall below 5°C within 96 hours after concrete placement. Temperature refers to shade temperature.

Hot Weather: means those conditions when the air temperature is at or above 28°C. It is also considered to exist when the air temperature is at or is likely to rise above 28°C within 24 hours after concrete placement. Temperature refers to shade temperature.

MIT-Scan-2: is a magnetic imaging tool specifically developed for measuring dowel and tie bar alignments in concrete pavements and concrete bases.

Percent Within Limits (PWL): means an estimate of the percentage of the lot population that is within the specified limits, determined by using the mean and standard deviation of the lot.

Profile Index: is the rate of roughness averaged over both wheel paths for a given subplot.

Rate of Roughness: is the amplitudes of all of the individual bumps and depressions outside of a blanking band, which are greater than 0.8 mm and which also extend at least 0.6 m as measured by a profile measuring device (PMD) along the profile length, that are all added together and then divided by the subplot length; expressed in mm/km.

350.04 SUBMISSION AND DESIGN REQUIREMENTS

350.04.01 Chipping Hammers

~~One week prior to the commencement of the concrete paving operation, the Contractor shall submit to the Contract Administrator the manufacturer's published specifications on the chipping hammers.~~

350.04.02 Cold Weather Protection

350.04.02.01 General

One week prior to the commencement of the concrete paving operation in cold weather, a description of the methods to be used to control the concrete temperature shall be submitted to the Contract Administrator. The submission shall be accompanied by samples of insulation, if requested by the Contract Administrator and shall contain the following information:

- a. Weather conditions for which the description applies.
- b. Type of insulation, metric "R" value and number of layers to be used.
- c. The method by which the in-place minimum concrete temperatures are to be maintained.
- d. Method of ensuring cold weather protection measures are maintained when work requiring adjustment to the protective measure is being performed.
- e. Method of withdrawal of protection to avoid sudden temperature change in the concrete.

350.04.02.02 Temperature Records

Temperature records shall be forwarded to the Contract Administrator at the end of every day. At the end of the cold weather protection period, the Contractor shall submit a complete temperature record consisting of a summary of the recorded temperatures and a graphical plot of temperature vs. time to the Contract Administrator.

350.04.03 Concrete Mix Designs

The Contractor shall be responsible for the concrete mix design and shall submit the concrete mix design to the Contract Administrator as specified elsewhere in the Contract Documents.

The Contractor shall include documentation with the submission of the mix design which demonstrates that the proposed mix design and materials meet the requirements of this Special Provision.

All supporting test data shall not be more than 12 months old, at the time the concrete mix design is submitted to the Contract Administrator.

350.04.04 Hot Weather Concreting

One week prior to the commencement of the concrete paving operation in hot weather, a description of the methods to be used to control the concrete and underlying base temperatures shall be submitted to the Contract Administrator.

350.04.05 MIT-Scan-2

350.04.05.01 Documentation

One week prior to the commencement of the concrete paving operation, the Contractor shall submit to the Contract Administrator documentation stating the following:

- a. The MIT-Scan-2 has been properly calibrated for the size of dowel bar and load transfer device to be used on the Contract.
- b. The manufacturer's specified measurement tolerances.
- c. The serial number of the MIT-Scan-2 to be used.

350.04.05.02 MIT-Scan-2 Data

The Contractor shall submit to the Contract Administrator a copy of the printouts produced from the on-board printer of the MIT-Scan-2 for every joint scanned, at the end of each days production and upon request. All printouts shall remain the property of the Owner.

Upon completion of the trial section(s) and for each week of production, the Contractor shall prepare a report from the measurements obtained. A hard copy of the report along with the electronic version of the data in Excel format shall be submitted to the Contract Administrator within three business days of completing each trial section and at the start of each working week during production.

The report shall include the following:

- a. Contract number, date, highway number and direction of traffic.
- b. Joint number, lane number and station.
- c. Bar number and x-location of dowel bar.
- d. Horizontal and vertical misalignment in mm.
- e. Side shift in mm.
- f. Depth to center of dowel bars in mm.
- g. All out-of-tolerance readings shall be highlighted in red.

350.05 MATERIALS

350.05.01 Bond Breaker for Dowel Bars and Load Transfer Devices

Dowel bars and load transfer devices shall be shop coated with RC-250, Tectyl 506 or an approved equivalent.

350.05.02 Burlap

Burlap shall be according to AASHTO M182 Class 4 and shall be free of tears, holes and any substances which are deleterious to concrete.

350.05.03 Concrete

Concrete and concrete materials shall be according to OPSS 1350 with the following exceptions:

- a. The coarse aggregate shall have a combined gradation of nominal maximum size 37.5 mm and 19.0 mm aggregate.
- b. Coarse and fine aggregate shall be according to the requirements of OPSS 1002.
- c. The minimum specified 28-day compressive strength shall be 30 MPa.
- d. The “Cementing Materials Content” subsection and the “Strength Tests and Requirements” subsection of OPSS 1350 do not apply.
- e. The Contractor shall identify a target value for the air content of the plastic concrete. The acceptable air content of the plastic concrete when tested in the field shall be within $\pm 1.5\%$ of the target value identified in the mix design.
- f. For fixed-form concrete placements, the slump shall be 70 mm \pm 20 mm.

350.05.04 Curing Compound

White pigmented curing compound for concrete shall be according to OPSS 1315.

350.05.05 Epoxy Adhesives

Epoxy adhesives shall be of the type approved for horizontal dowel bar or tie bar application and mixed in the nozzle (cartridge).

350.05.06 Expansion Joint Filler

Expansion joint filler shall be according to OPSS 1308.

350.05.07 Forms

Forms shall be according to OPSS 919.

350.05.08 Proprietary Patching Materials

Proprietary patching materials shall be from the Ministry’s list of Concrete Patching Materials. The list of proprietary patching material shall be obtained from the Contract Administrator.

350.05.09 Tie Bars, Dowel Bars and Load Transfer Devices

Tie bars and dowel bars shall be according to OPSS 1442. Dowel bars and load transfer devices shall be according to OPSS 1441.

350.05.10 Water

Water used for curing and pre-soaking of burlap shall be according to OPSS 1302.

350.06 EQUIPMENT

350.06.01 Automatic Dowel Bar Inserter

When a dowel bar inserter is used, it must be capable of automatically inserting the dowel bars at mid-depth of the slab, centred on the transverse joint locations and spaced as shown in the Contract Documents. Insertion of the bars shall be fully computerized for depth and spacing. The equipment shall be capable of automatically marking the centre of the dowel bars for the joint cutting operation, by spray painting a mark adjacent to the concrete on both sides of the slip-form paver. The equipment shall be capable of consolidating the concrete around the dowel bars.

350.06.02 Chipping Hammers

Chipping hammers shall be hand held and meet the following requirements:

- a. Chipping hammers shall have a maximum weight of 9.0 kg prior to any handle modification where applicable, and a maximum piston stroke of 102 mm.
- b. All hammers shall have the manufacturer's name and parts or model number engraved on them by the manufacturer. All information must be clearly legible. The manufacturer's published specifications shall be the sole basis for determining weight and piston stroke.

350.06.03 Consolidating Equipment

Concrete shall be consolidated by means of surface vibrators, internal vibrators, or a combination of both, that provide full depth consolidation without segregation.

350.06.04 Diamond Grinder

When a diamond grinder is used, it shall be power-driven, self-propelled equipment specifically designed to grind and texture concrete surfaces. It shall be equipped with a grinding head with at least 50 diamond blades per 300 mm of shaft. The grinding head shall be at least 0.9 m wide. The grinder shall be equipped with the capability to adjust the depth, slope and crossfall to ensure that concrete is removed to the desired dimensions and uniformly feathered and textured across the width and length of the required area. The equipment shall also include a slurry pick-up system.

350.06.05 Hand Finishing Equipment

Floats shall be made of magnesium or wood. Magnesium bull floats shall be commercially made.

350.06.06 MIT-Scan-2

The Contractor shall provide a MIT-Scan-2 which is manufactured by MIT GmbH.

The Contractor shall ensure the MIT-Scan-2 meets the following requirements:

- a. The calibration software for the specific dowel bar size or load transfer device being used is installed.
- b. The batteries are fully charged prior to each use.
- c. The MIT-Scan-2 is operating within the manufacture's tolerances.
- d. It is capable of producing a printout from the on-board printer for every joint scanned, immediately following the scan.

The Contractor shall demonstrate to the Contract Administrator that the serial number in the calibration file matches the serial number of the MIT-Scan-2 being used.

350.06.07 Profile Measuring Device (PMD)

The Contractor shall provide a computerized California profilograph meeting the requirements of LS-293. Testing shall be carried out by a PMD and operator acceptable to the Owner.

The Contractor shall ensure that the PMD is accurately calibrated for both height and distance using the method and frequency outlined in LS-293. The height calibration shall be checked on a daily basis or anytime that the PMD is re-assembled and the distance calibration shall be checked periodically or at least once a week. The Contractor shall ensure that the air pressure of the measuring wheel is within the equipment Manufacturer's allowance at all times.

The Contract Administrator shall have the right at any time to confirm the height/distance calibration of the Contractor's PMD. In the event that the calibration is not within the specified limits, and the Contractor is unable to bring it to within the specified limits by following the Manufacturer's recommended procedures in the presence of the Contract Administrator, then the faulty PMD shall not be permitted to carry out any further measurements until it has been re-calibrated by the Manufacturer and verified in the presence of the Contract Administrator.

350.06.08 Sawcutting Equipment

~~The sawing equipment shall be self-propelled, guided and capable of sawing to the depths specified in the Contract Documents. The sawcutting equipment for longitudinal joints shall also have guided wheels, which run along each longitudinal vertical face of the concrete pavement or concrete base.~~

350.06.09 Straight Edges

Two straight edges commercially made of metal, one 3 m and one 500 mm long, shall be used.

350.07 CONSTRUCTION

350.07.01 Operational Constraints

The Contract Administrator shall be notified in writing of the intent to place the concrete pavement or concrete base one week prior to the commencement of the concrete paving operation.

Concrete shall only be placed when the ambient air temperature is 1°C and rising, or is less than 32°C.

Concrete shall not be placed against any material which is at a temperature above 35°C, or against any material whose temperature is below 5°C.

Traffic, other than foot traffic and rubber-tired sawing equipment, shall not be permitted on the concrete until it has attained a compressive strength of 20 MPa. The concrete pavement or concrete base shall be protected from damage to the surface at all times when steel-tracked equipment is used.

Shouldering operations and construction of adjacent lanes may commence once the adjacent concrete has attained a compressive strength of 20 MPa. Completion of the shoulders shall be according to OPSS 314.

350.07.02 Protection of Tie Bars and Dowel Bars

Protection of dowel bars and tie bars shall be according to OPSS 905. Bars with coating damage greater than 1% of the surface area of the bar shall not be used. Bars with coating damage less than 1% of the surface area of the bar shall be repaired according to OPSS 905.

350.07.03 Installation of Load Transfer Devices

Load transfer devices shall be installed according to the Contract Documents and shall be placed a minimum of 100 m in advance of the concrete paving operation. A minimum of three (3) stakes shall be uniformly spaced on each side of the load transfer device for each lane, to prevent movement during the concrete paving operation. The spacer wires shall be each cut in two (2) places and the mid-section removed after staking assembly in position. The sections removed shall be a minimum of 300 mm in length. Load transfer devices are not required in shoulders or gore areas unless otherwise specified in the Contract Documents.

350.07.04 Concreting

Before placing concrete on granular base, the granular immediately ahead of the concrete paving operation shall be wetted down thoroughly. The wetting down shall be carried out without leaving standing water.

Concrete shall not be placed in the rain. The Contractor shall take all necessary precautions to protect plastic concrete from the rain.

Concrete shall not be placed more than 10 m ahead of the concrete paving equipment. Concrete shall be placed at or near its permanent location in such a manner so as to avoid segregation of the materials. Any excess concrete beyond the pavement edge shall be removed immediately.

When there is an interruption greater than 20 minutes in placing concrete, the surface of the concrete shall be covered with wet burlap. The Contractor shall notify the Contract Administrator immediately of any interruption resulting in a cold joint and shall submit a proposal for remedial action for approval.

350.07.05 Consolidation

For slip-form pavers, the concrete shall be consolidated by vibrators of sufficient number, spacing and frequency to provide uniform consolidation to the entire pavement width and depth. The vibrators shall not operate while the paver is stopped.

Concrete shall be thoroughly consolidated against and along the face of all forms and into the face of previously placed concrete. The vibrators shall not come in contact with the base, subbase, subgrade, forms, tie bars, dowel bars or load transfer devices.

For fixed-form placement, hand-held vibrators shall be used to supplement consolidation adjacent and along the full length of the form. They shall also be inserted at regularly spaced intervals along both sides of load transfer devices.

350.07.06 Finishing

No water or other chemical agents shall be applied to the concrete surface to aid in the finishing.

For concrete pavements where fixed forms are being used or where concrete is being placed against an existing pavement and before surface texturing, the edge of the pavement shall be finished with an edging tool having a radius of not more than 6 mm. The finished pavement edge shall be left smooth, true to line and grade.

350.07.07 Texturing of Surface

After all finishing operations are completed and before initial curing and protection of the concrete, the plastic surface of the concrete shall receive an initial texturing. The initial texturing shall be performed with a longitudinal burlap drag to produce a uniform textured surface. The burlap shall be kept in a clean and damp condition, free from tears and encrusted mortar.

Concrete pavements shall also receive a final texturing using equipment manufactured to produce transverse tines $3 \text{ mm} \pm 1 \text{ mm}$ wide on $16 \text{ mm} \pm 3 \text{ mm}$ centres with a tine depth of $4 \text{ mm} \pm 1 \text{ mm}$. Tining shall not extend within $75 \text{ mm} \pm 15 \text{ mm}$ of the pavement edge. The surface of the concrete shall be free in all cases from displaced aggregate particles and local projections. Tining for small or irregular areas may be done by hand methods.

350.07.08 Curing

Curing shall be according to OPSS 904 with the following exceptions:

- a. Curing shall be applied to all exposed surfaces as soon after the texturing operation as can be achieved without damaging the surface.
- b. For fixed-form placements, where the formwork is removed in less than 96 h, the sides of the exposed concrete faces shall be sprayed with a white pigmented curing compound at the specified rate of application.
- c. Curing compound shall not be applied to joint faces receiving sealant or to concrete surfaces to which concrete or mortar is to be bonded.

If curing compound is used on concrete bases, the Contractor shall remove it completely from the concrete surface prior to applying the tack coat and overlaying with asphalt pavement. The method of removal shall be by abrasive shot blasting and not result in any damage to the concrete surface. It shall also meet all environmental constraints as stated elsewhere in the Contract Documents.

350.07.09 Cold Weather Protection

350.07.09.01 General

The Contractor shall protect the concrete during cold weather. The cold weather protection system shall be designed for the worst conditions that can be reasonably anticipated from local weather records, forecasts, site conditions and past experience for the time period during which the protection is required.

350.07.09.02 Control of Temperature

During cold weather, the Contractor shall for a minimum period of seven days, monitor and control the temperature of the concrete to ensure that the concrete temperature does not fall below 15°C for the first three days of curing and 10°C for the subsequent four days. The monitoring shall commence at the start of the concrete paving operation. The minimum cold weather protection measures shall be according to Table 1 of OPSS 904. The Contractor shall take measures to ensure that the concrete temperature remains within the acceptable limits.

The Contractor shall supply and install thermocouple wires and digital temperature indicator(s) with a combined accuracy of $\pm 1^{\circ}\text{C}$ capable of recording and displaying the temperature. The digital temperature indicator(s) shall be left in place or one provided to the Contract Administrator to facilitate additional readings for verification purposes.

Thermocouple wires shall be embedded near the concrete surface in a minimum of four locations, equally spaced throughout each day of concrete placement, as directed by the Contract Administrator.

350.07.09.03 Temperature Records

The Contractor shall record the ambient air temperature and concrete temperature at a minimum frequency of once every four hours for the first 24 hours after concrete placement and then once every eight hours for the remainder of the curing and protection period and during the removal of the cold weather protection.

The Contract Administrator shall be provided the necessary access to the location and equipment to verify temperature readings.

350.07.09.04 Insulation Removal for Sawcutting

When the concrete pavement or concrete base requires protection by insulation, no more than 25 linear metres of concrete shall be exposed for the sawcutting operation at any one time. In no case shall any concrete be exposed for more than one hour during sawcutting.

350.07.10 Hot Weather Concreting

Hot weather concreting shall be according to OPSS 904.

350.07.11 Joints

350.07.11.01 General

Joints shall be of the type and at the location shown in the Contract Documents.

350.07.11.02 Transverse Joints

Dowel bars at transverse joints shall be installed where specified and as detailed in the Contract Documents using load transfer devices or an automatic dowel bar inserter.

Dowel bars shall be placed parallel to the longitudinal axis (vertical alignment) and horizontal plane (horizontal alignment) of the pavement within a tolerance of ± 15 mm along the length of the dowel bar.

The location of the centre of the dowel bars shall be precisely marked to permit joint forming or cutting operations directly over the centre of the dowel bars. Transverse joints shall be sawcut within a tolerance of ± 50 mm from the center of the dowel bars.

Dowel bars shall be placed mid depth of the slab within the following tolerances:

- a. For a 200 mm slab thickness, lower limit = - 6 mm, upper limit = + 6 mm
- b. For a 225 mm slab thickness, lower limit = -12 mm, upper limit = +15 mm
- c. For a 250 mm slab thickness, lower limit = -15 mm, upper limit = +25 mm
- d. For a 260 mm slab thickness, lower limit = -15 mm, upper limit = +25 mm

Transverse construction joints shall be made at the end of each day's production or when interruptions occur in the concrete paving operation. Transverse construction joints shall be formed at a transverse joint location.

350.07.11.03 Longitudinal Joints

At longitudinal joints, tie bars shall be installed where specified and as detailed in the Contract Documents within a tolerance of ± 15 mm from the specified depth. Tie bars shall not be placed within 600 mm of a transverse joint. At the request of the Contractor, tie bars may be installed bent and later straightened to facilitate construction. Before placement of the adjoining paving lane, the bent tie bars shall be straightened, without spalling the concrete around the bar.

Tie bars shall be inserted so that voids are not created around the bar. Loose, broken, cracked or otherwise damaged tie bars shall be replaced at the Contractor's expense by drilling a hole offset 75 mm horizontally from the rejected bar and installing a replacement bar. The diameter of the drill hole shall be no more than 5 mm larger than the diameter of the tie bars. Drill holes shall be thoroughly cleaned. The tie bars shall be secured into the existing concrete with an approved epoxy adhesive. The epoxy adhesive shall be injected into the back of the cleaned drill hole and the tie bar, with grout retention disk attached, shall be inserted to ensure the bars are completely encased with epoxy adhesive for the full depth of the hole.

350.07.11.04 Sawcutting and Sealing

The initial sawcut, for longitudinal and transverse joints, shall be sawn as soon as the joint can be sawcut without ravelling the joint, damaging the concrete surface and prior to any cracks developing. Longitudinal and transverse sawcutting operations shall be carried out concurrently. The initial cut shall be one third the depth of the concrete slab. Immediately after the sawcutting operation, the initial sawcut shall be flushed with water in one direction to fully remove the slurry from the joint and concrete surface.

For concrete pavements, the reservoir cut, cleaning and sealing of joints shall be according to OPSS 369. A reservoir cut and sealing are not required for concrete bases.

350.07.12 Surface Tolerance of Concrete

The surface of the concrete shall be such that when tested with a 3 m long straight edge placed in any location and direction, including the edge of pavement and joints, except across the crown or drainage gutters, there shall not be a gap greater than 3 mm between the bottom of the straight edge and the surface of the concrete pavement. For concrete bases, the tolerance over a 3 m straight edge shall be 6 mm.

Diamond grinding will be required to ensure the concrete surface meets these requirements.

350.07.13 Sampling and Testing

350.07.13.01 Air, Slump and Temperature

The Contractor shall be responsible for all aspects of sampling and testing the plastic concrete for slump, air content and temperature according to OPSS 1350. The minimum frequency of testing shall be one test from each load of concrete until satisfactory control is established. Satisfactory control is established when tests on five consecutive loads of concrete are within the Contract requirements with no field adjustments. After satisfactory control has been established, testing shall be carried out on every fifth load. If testing indicates that a load does not meet the requirements, testing shall resume on each load until control is established.

350.07.13.02 Verification of Dowel Bar Alignment

350.07.13.02.01 General

When using either load transfer devices or an automatic dowel bar inserter, the Contractor shall use the MIT-Scan-2 to verify the position and alignment of the dowel bars within the trial sections and during production, in the presence of the Contract Administrator. For load transfer devices, the MIT-Scan-2 data shall be collected for information purposes, for selection of joint cut-outs and to identify rejectable dowel bars. For automatic dowel bar inserters, the MIT-Scan-2 data shall be collected for selection of joint cut-outs, identifying rejectable dowel bars and for payment purposes.

The Contractor shall ensure that the surface to be tested is clear of any loose stone or other debris.

To facilitate data analysis, all joints shall be scanned with the MIT-Scan-2 moving in the same direction. For each joint, dowel bars shall be numbered consecutively beginning with the number “1”.

350.07.13.02.02 Trial Section

The Contractor shall construct a trial section to demonstrate their ability to successfully install dowel bars within the tolerances specified in this Special Provision. For concrete pavements, the Contractor shall also demonstrate their ability to successfully tine the surface of the concrete.

The location of the initial trial section will be the first 300 to 500 m of concrete pavement or concrete base placed on the Contract. Additional trial sections shall be required for the following:

- a. When the slip-form paving equipment has been modified to accommodate a change in the paving width, or disassembled;
- b. At the beginning of each construction season; and
- c. When the slip-form paving equipment has been replaced by another slip-form paver.

The Contractor shall measure the position and alignment of the dowel bars of every joint within the trial section using the MIT-Scan-2. When the analysis of the joints using the MIT-Scan-2 is completed, the Contract Administrator will select one transverse joint within the trial section to verify the accuracy of the dowel bar placement using the “Joint Cut-out Method” specified in this Special Provision.

Permission to proceed with the concrete paving operation on the Contract will be given when it has been demonstrated to the satisfaction of the Contract Administrator that the position and alignment of dowel bars within the trial section meet the tolerances specified and that the tining, when required, is according to this Special Provision.

~~The Contract Administrator may require an additional trial section(s) to be constructed, at the Contractor's expense, to demonstrate that modifications to the operation conform to the Contract requirements.~~

350.07.13.02.03 Verification During Production

350.07.13.02.03.01 General

The Contractor shall measure the position and alignment of the dowel bars of every 10th transverse joint using the MIT-Scan-2, in the presence of the Contract Administrator.

If the position and alignment of any of the dowel bars is found to be rejectable, scanning on each side of the joint will be required. The Contractor shall scan adjacent joints on both sides of the rejectable joint until five consecutive joints on each side are found with no rejectable dowel bars.

350.07.13.02.03.02 Load Transfer Devices

~~When load transfer devices are used, the Contractor shall evaluate each day's production using the “Joint Cut-Out Method” specified in this Special Provision. The frequency of the cut-outs shall be once per day's production until satisfactory control is established. Satisfactory control is considered to have been established when no rejectable dowel bars have been identified for three consecutive days of concrete paving. Once satisfactory control is established, one joint within every five days production shall be selected by the Contract Administrator for evaluation.~~

~~If the position and alignment of any of the dowel bars within the cut-outs is found to be rejectable, the frequency will resume to once per days production until control is established.~~

350.07.13.02.04 Joint Cut-Out Method

Evaluation of dowel bar alignment shall be carried out within 24 hours of concrete placement.

The Contract Administrator will select the transverse joint to be evaluated. At the selected joint, concrete shall be removed using a chipping hammer, to a depth exposing the full length of all the dowel bars across the entire joint. The concrete shall be removed without disturbing the dowel bars.

The Contract Administrator will inspect the joint and measure the depth, side shift, vertical and horizontal alignment of all the dowels, in the presence of the Contractor, to verify that the position and alignment of the dowel bars are according to the Contract requirements. The Contract Administrator shall provide all measurements to the Contractor upon request.

After the selected joint has been measured and evaluated by the Contract Administrator, the joint shall be removed and replaced with a 2 m full depth concrete repair according to OPSS 360.

When an automatic dowel bar inserter is used, the Contract Administrator shall compare the joint cut-out measurements to the MIT-Scan-2 data for that joint to verify the accuracy.

350.07.13.03 Early Strength Determination

The Contractor shall be responsible for all aspects of making, storage and transportation of compressive strength cylinders required for early strength determination. A minimum of one set of two cylinders per 500 m length of paving shall be cast. Samples shall remain on site as specified until time of testing.

Preparing test cylinders for compressive strength testing shall be according to OPSS 904. Concrete cylinders shall be transported to a testing laboratory designated by the Ministry. The forms on which the field data for the cylinders is recorded shall be submitted to the laboratory with the concrete cylinders.

350.07.13.04 Thickness and Compressive Strength

350.07.13.04.01 Coring

Coring shall be carried out according to CSA A23.2-14C when the concrete is 28 to 35 days old. The Contractor may elect to core for compressive strength testing prior to 28 days provided compressive strength testing is performed within two days of coring.

The location of the core in each subplot will be selected by the Contract Administrator using a table of random numbers. No core shall be taken within 250 mm of any joint or edge of slab.

The Contractor shall cut one core in each subplot. The cores shall be 100 mm in diameter and shall be drilled through the complete depth of concrete pavement or concrete base perpendicular to the surface of the slab.

350.07.13.04.02 Filling of Core Holes

The Contractor shall fill each core hole immediately after coring with a proprietary patching material. The patching material shall be comparable to the surrounding concrete in terms of strength and permeability. The patching material shall be mixed, handled, and cured according to the manufacturer's instructions. Immediately before filling, the inside surface of each core shall be cleaned of the paste left from the coring operation by nylon brushing and all free water shall be removed. The patch shall be finished flush with the surface of the surrounding concrete. All excess material shall be removed from the surface of the concrete.

350.07.13.04.03 Identification of Cores

Each core shall be legibly marked with durable ink immediately after its removal from the core hole. The core identification numbers will be specified by the Contract Administrator.

350.07.13.04.04 Transportation of Cores

The Contractor is responsible for transporting these cores in a safe manner to avoid damage to the cores. The concrete cores shall be delivered to the laboratory designated by the Owner. The cores shall be delivered on the same day they were obtained.

350.07.13.05 Surface Roughness

350.07.13.05.01 General

The Contractor shall notify the Contract Administrator in writing, 24 hours prior to the commencement of the surface roughness measurements.

The Contractor shall measure the surface of the concrete pavement or concrete base for roughness according to LS-293, in the presence of the Contract Administrator, using a PMD for all areas except:

- a. Tapers (areas where both wheel paths can no longer be accommodated due to narrowing of the lane).
- b. Shoulders.
- c. Curves with a centreline radius of less than 300 m.
- d. Within 10 m of the end of a concrete placement where the Contractor is not responsible for the adjoining surface.
- e. Within 15 m of an approach slab.
- f. Bridge decks.

The Contractor shall clearly mark out each subplot on the pavement surface or shoulder prior to testing. All marks shall remain visible until final measurements are completed and accepted.

Measurements shall be carried out in the direction of traffic, with a blanking band “B” value of 5 mm and using the Manufacturer’s recommended filter setting. The surface roughness shall be the mean of two wheel path profiles taken in each lane, with the measuring wheel of the PMD one metre to the left and right of the centreline of the lane. The Contractor shall ensure that the surface to be tested is clear of any loose stone, debris, etc. which could significantly affect the readings.

After the initial profile trace is made, all scallops with “S” values greater than 10 mm for concrete pavement and 15 mm for concrete base shall be marked on the pavement surface prior to doing any remedial work.

350.07.13.05.02 Surface Roughness Profile Records

The profile traces automatically produced by the PMD shall meet the requirements of LS-293 and include the following:

- a. Odometer count.
- b. Identified as initial, subsequent or final trace.
- c. Blanking band.

The Contractor shall fill out all required information on the forms provided in LS-293. The updated forms and a set of original traces shall be handed to the Contract Administrator at the start of each working week and prior to any remedial work taking place. All traces shall remain the property of the Owner.

For concrete base, sublots shall not be overlaid with asphalt until their final traces have been reviewed by the Contract Administrator and verified that the Contract requirements have been met.

350.07.13.05.03 Lot Size

A lot shall consist of the total quantity of concrete pavement or concrete base in the Contract that was measured by the PMD. The lot will generally contain the entire concrete pavement or concrete base tender item but exclude areas noted in clause 350.07.13.05.01 of this Special Provision.

Each lot will be divided into 100 m sublots. At the beginning of the Contract, the Contractor will present a sketch to the Contract Administrator with details of the numbering/stations of each subplot.

Upon finishing the last complete subplot in any lane, if the remaining portion of the lane is greater than or equal to 50 m in length, then that remaining portion of lane will be considered to be the last subplot in the lane and the reduction length shall be reduced accordingly. If the portion of the lane is less than 50 m in length, then it will be added to the previous subplot in the lane and the reduction length of the subplot shall be increased accordingly.

350.07.14 Remedial Work

350.07.14.01 General

The Contractor shall immediately notify the Contract Administrator in writing if any of the defects or conditions listed in section 350.08 of this Special Provision are present in the Work, the extent of the defects and an explanation of the cause. These areas shall be repaired at the Contractor's expense.

A proposal for the remedial work for the above defects and conditions shall be submitted to the Contract Administrator for review. The Contractor shall not proceed with the repairs until approval of the proposal has been given by the Contract Administrator.

350.07.14.02 Correction of Surface Roughness and Texturing of Concrete Surface

Diamond grinding shall be the only method of repair acceptable for correction of concrete roughness deficiencies including scallops and correction of tining. All diamond grinding shall be completed prior to sealing joints and opening to traffic. Diamond grinding shall always be performed parallel to the lane with each pass overlapping the previous one by up to 25 mm. There shall not be more than 3 mm of elevation differences between adjacent lanes and the pavement cross slope shall be maintained throughout the repaired area. The pavement after repair shall be of a uniform texture.

The minimum width of all repairs shall be the width of the lane being repaired.

Sublots containing diamond grinding or areas which have been removed and replaced shall be re-measured completely to ensure that the remedial work meets this Special Provision. In addition, the re-profile must include at least 15 m on each side of the repair area and if this requirement carries into the adjacent subplot, then that subplot must also be re-profiled.

350.07.14.03 Compressive Strength and Slab Thickness

If the lot Percent Within Limits (PWL) is less than 50%, the lot is rejectable and shall be subject to repair and reassessment.

If any individual core compressive strength or if any individual core thickness is less than 60% of the specified compressive strength or specified slab thickness, additional cores shall be taken by the Contractor to establish

the extent of the deficient area. The cores shall be taken at 3 m intervals along the length of the pavement in both directions starting 3 m from the location of the original core.

The area to be removed shall be bounded by the nearest transverse joint, longitudinal joint and outside edge of pavement, so that there shall be no additional joints.

350.07.14.04 Cracking

All transverse cracking, in excess of one-third the depth of the slab thickness shall be repaired as a 2 m full depth concrete repair according to OPSS 360. All longitudinal cracking in excess of one-third the depth of the slab thickness shall be repaired by removing and replacing the full panel containing the crack.

If any cracks are found to be less than one-third the thickness of the slab, the Contractor shall submit a proposal for remedial work to the Contract Administrator for review. The Contractor shall not proceed with repairs until approval of the proposal has been given by the Contract Administrator.

350.07.14.05 Position and Alignment of Dowel Bars

If any individual dowel bar is found to be rejectable, the Contractor shall submit a proposal for remedial work to the Contract Administrator for review. The Contractor shall not proceed with repairs until approval of the proposal has been given by the Contract Administrator.

350.08 QUALITY ASSURANCE

350.08.01 Inspection

The Contract Administrator will inspect the work during production and will reject all or a portion of the work based on the presence of one or more of the following defects:

- a. Tining which does not meet the requirements of this Special Provision.
- b. Cracks.
- c. Insufficient depth of initial sawcut of joints.
- d. Dowel bars not meeting the position and alignment tolerances.
- e. Tie bars and dowel bars not meeting the specified lengths or diameters.
- f. Loose, broken or cracked tie bars.
- g. Any other work that does not conform to the requirements of this Special Provision.

350.08.02 Acceptance Criteria for Position and Alignment of Dowel Bars

350.08.02.01 Lot Size

A lot shall consist of the total quantity of concrete pavement or concrete base on the Contract. Each transverse joint shall be considered a subplot.

350.08.02.02 Automatic Dowel Bar Inserter

When an automatic dowel bar inserter is used, acceptance of the dowel bar alignment for the lot will be based on the mean and standard deviation of the lot measurements for vertical alignment, horizontal alignment, side shift and depth. The dowel bar closest to the longitudinal joint shall be removed from the analysis due to possible interference of the tie bar. The Contract Administrator will calculate the PWL for each criteria as described in LS-101.

If the lot PWL is greater than or equal to 90%, the lot is acceptable for the criteria. If the lot PWL is less than 90% and greater than or equal to 50%, the lot is accepted for the criteria with a price adjustment. If the lot PWL is less than 50%, the lot is rejectable and shall be subject to repair and reassessment.

For calculation of PWL, the upper limit and lower limits for each attribute are as specified in Table 1.

TABLE 1 – Specification Limits for Position and Alignment of Dowel Bars

Attribute	Lower Limit	Upper Limit
Horizontal alignment (mm)	-15	15
Vertical alignment (mm)	-15	15
Side shift (mm)	-50	50
Depth Tolerance (for specified slab thickness):		
200 mm (mid depth - 6 mm/+6 mm)	94	106
225 mm (mid depth -12 mm/+15 mm)	100	127
250 mm (mid depth -15 mm/+25 mm)	110	150
260 mm (mid depth -15mm/+25 mm)	115	155

350.08.02.03 Load Transfer Devices

When load transfer devices are used, acceptance of the dowel bar alignment for each day’s production will be based on measurements taken within the cut-outs and on identification of rejectable dowel bars using the MIT-Scan-2. The Contract Administrator will review the measurements along with the MIT-Scan-2 data and will reject all or portion of the Work containing rejectable dowel bars.

350.08.02.04 Rejection Criteria

Any subplot which contains an individual dowel bar which exceeds any of the criteria identified in Table 2 or 3, is rejectable.

TABLE 2 – Rejection Criteria for Vertical & Horizontal Alignment and Side Shift

	Vertical Alignment	Horizontal Alignment	Side shift
	(Measurement along length of the dowel bar)		(Measurement taken from transverse sawcut)
Reject–Remove & Replace	<-38 mm or >38 mm	<-38 mm or >38 mm	<-75 mm or >75 mm

TABLE 3 – Rejection Criteria for Depth of Dowel Bars

Specified Slab Thickness	Depth of Dowel Bar (mm)			
	(Measurement taken from top of concrete surface to centre of dowel bar)			
	200 (mm)	225 (mm)	250 (mm)	260 (mm)
Reject–Remove & Replace	<90 or >110	<95 or >135	<100 or >160	<105 or >170

350.08.03 Acceptance Criteria for Tining

The Contract Administrator will reject all or a portion of the work based on the presence of one or more of the defects identified below:

- a. Width of tines less than or greater than 3 mm ± 1 mm.
- b. Distances between centres of tines less than or greater than 16 mm ± 3 mm.
- c. Depth of tines less than or greater than 4 mm ± 1 mm.

350.08.04 Acceptance Criteria for Strength, Thickness and Surface Roughness

350.08.04.01 General

Acceptance of the concrete pavement or concrete base for each lot will be based on the mean and standard deviation of the lot measurements for core compressive strength, slab thickness and surface roughness. The Contract Administrator will calculate the PWL for each criteria as described in LS-101.

350.08.04.02 Core Compressive Strength and Slab Thickness

350.08.04.02.01 General

The slab thickness will be determined based on core length for each subplot. Each core shall be measured for length prior to trimming. Four measurements rounded to the nearest millimetre shall be made around the perimeter of the core to determine the actual concrete thickness. These measurements shall be taken at the ends of two perpendicular diameters.

Cores will be tested for compressive strength when the concrete is 30 to 42 days old. If the contractor elects to core prior to 28 days, the compressive strength tests will be performed within two days of coring. The cores shall be stored in the laboratory at an ambient air temperature of > 15°C and < 25°C and moisture conditioned for 40 - 48 hours prior to testing. The testing shall be according to CSA A23.2-9C.

If the lot PWL is greater than or equal to 90%, the lot is acceptable for the criteria. If the lot PWL is greater than 90%, the lot will be accepted with a bonus for the criteria. If the lot PWL is less than 90% and greater than or equal to 50%, the lot is accepted for the criteria with a price adjustment. If the lot PWL is less than 50%, the lot is rejectable and shall be subject to repair and reassessment.

Notwithstanding the overall PWL, if any individual core compressive strength or if any individual length is less than 60% of the specified compressive strength or specified slab thickness, the Contractor shall repair the subplot.

For calculation of PWL, the lower limit is 30 MPa for compressive strength. The lower limit for thickness shall be specified as the design thickness minus 5 mm.

350.08.04.02.02 Lot Size

A lot shall consist of the total quantity of concrete pavement or concrete base on the contract of the same specified thickness. Each lot will be divided into 1000 m² sublots or a minimum of three sublots for compressive strength and thickness. The Owner will test one core from each subplot to determine the core compressive strength and slab thickness.

350.08.04.02.03 Re-testing

The Contractor or the Contract Administrator may question an individual test result within three working days of receiving the test result for that subplot. The Contractor shall notify the Owner of his intention to re-core. A new core shall be obtained from locations adjacent to the location of the original set of cores. The new core shall be obtained at a maximum age of 56 days and tested not later than 7 days after the coring. The lot will be re-evaluated as specified under basis of payment.

350.08.04.03 Surface Roughness

350.08.04.03.01 General

The Contract Administrator will calculate the PWL as described in LS-101 using an Upper Limit of 220 for concrete base and 180 for concrete pavement. When a subplot contains diamond grinding, the lot PWL will be

based on the initial profile index obtained from each subplot prior to any remedial work performed on the subplot. If part of a subplot, or the entire subplot is removed and replaced, the new initial profile index for the subplot will be used to determine the PWL for the lot.

If the lot PWL is less than 50 %, the lot is rejectable and shall be subject to repair and reassessment. If the lot PWL is greater than or equal to 50 % and less than 90 %, the lot is accepted for the criteria with a price reduction. If the lot PWL is greater than 90 %, the lot for concrete pavement will be accepted with a bonus and the lot for concrete base will be accepted at full price with no additional bonus.

Notwithstanding the PWL, any individual subplot greater than 350 shall be repaired according to clause 350.07.14.02.

Any scallops with an “S” value greater than 10 mm for concrete pavement or 15 mm for concrete base shall be repaired according to subsection 350.07.14.02.

Sublots with profile traces that are incomplete, improperly formatted, contain discrepancies or are missing shall be deemed incomplete and unacceptable for payment purposes.

350.08.04.03.02 Verification Testing

The Owner shall have the right, at any time, to verify the Contractor’s results. The Owner will verify measurements by profiling a wheel path of three consecutive and continuous sublots and comparing the mean with the Contractor’s mean value for the same wheelpath and sublots. Table 4 summarizes the action(s) taken by the Owner depending on the magnitude of the difference between the Owner’s and Contractor’s measurements.

TABLE 4

*Discrepancy	Action(s) by Owner	Contractor’s Options
within 5%	Contractor’s measurements will be accepted.	
greater than 5%	The Contractor’s PMD will not be permitted to do any further measurements until it has been re-approved by the Owner. AND All measurements taken with the faulty PMD will not be accepted.	Re-measure all sublots with a replacement PMD which has been approved by the Owner. OR Re-measure all sublots with the same PMD after it has been re-approved by the Owner. (The Owner shall be given six weeks notice to schedule the re-correlation. The Contractor shall reimburse the Owner all costs accrued by the Owner to carryout the re-correlation.)

* The Owner’s mean rate of roughness value shall be based on three (3) runs in one of the wheel path over a length of three (3) sublots.

350.09 MEASUREMENT FOR PAYMENT

350.09.01 Actual Measurement

**350.09.01.01 Concrete Pavement
Concrete Base**

Measurement will be the surface area of concrete pavement or concrete base placed in square metres.

350.09.02 Plan Quantity Measurement

350.09.02.01 Concrete Pavement Concrete Base

When measurement is by Plan Quantity, such measurement will be based on the units shown in the clause under Actual Measurement.

350.10 BASIS OF PAYMENT

**350.10.01 Concrete Pavement - Item
Concrete Base – Item**

350.10.01.01 General

Payment at the Contract price for the above tender item(s) shall be full compensation for all labour, equipment and material required to do the work subject to payment adjustments.

Payment will not be made for diamond grinding, verification of dowel bars for additional trial sections and production using the MIT Scan 2 and areas removed and replaced as detailed in this Special Provision.

350.10.01.02 Payment Adjustment for Strength, Thickness and Surface Roughness

The payment adjustment for strength, thickness and surface roughness shall be based on the following formula:

$$\text{Payment Adjustment} = \text{Quantity} \times \text{Tender Unit Price} \times (\text{PF}_{\text{Avg}} - 1.00)$$

Where: $\text{PF}_{\text{Avg}} = \frac{(\text{PF}_{\text{strength}} + \text{PF}_{\text{thickness}} + \text{PF}_{\text{surface roughness}})}{3}$

PF_{Avg} = Average pay factor of compressive strength, slab thickness and surface roughness.

$\text{PF}_{\text{strength}}$ = Pay factor for compressive strength.

$\text{PF}_{\text{thickness}}$ = Pay factor for slab thickness.

$\text{PF}_{\text{surface roughness}}$ = Pay factor for surface roughness.

Pay Factors for compressive strength and slab thickness shall be based on the following formulae and Table 5:

$$\text{PF}_{\text{strength}} = 0.55 + 0.005 \text{ PWL}$$

$$\text{PF}_{\text{thickness}} = 0.55 + 0.005 \text{ PWL}$$

TABLE 5 - Criteria For Payment When Retesting

	Difference Between New and Old Core	Test Core Used for Payment Adjustment
Thickness	Less than or equal to 5 mm	Original Core
	Greater than 5 mm	New Core
Strength	Less than or equal to 5 %	Original Core
	Greater than 5%	New Core

Payment will not be made for additional coring and testing to determine the limits of slab removal. The Owner will pay for re-coring and testing for strength and thickness only when the retests result in an increase in payment.

The Pay Factor for surface roughness for concrete pavement and concrete base shall be based on the following formulas, except that concrete base will have a maximum PF of 1.00:

$$\text{PF surface roughness} = 0.55 + 0.005 \text{ PWL}$$

The Owner will not be responsible for any associated costs including but not limited to re-correlation, work delays and as a result of excluding the Contractor's PMD from MTO work.

350.10.01.03 Payment Adjustment for Position and Alignment of Dowel Bars

When an automatic dowel bar inserter is used, the payment adjustment for position and alignment of dowel bars will be calculated on the basis of the Tender Opening Date according to Table 6. When load transfer devices are used, the payment adjustment will not apply.

TABLE 6 - Payment Adjustment for Position and Alignment of Dowel Bars

Tender Opening Date (Year)	Payment Adjustment
2006	Quantity x Tender Unit Price x [0.60 (PF _{dowel bars} - 1.00)]
2007	Quantity x Tender Unit Price x [0.80 (PF _{dowel bars} - 1.00)]
2008	Quantity x Tender Unit Price x (PF _{dowel bars} - 1.00)

The Pay Factor for position and alignment of dowel bars shall be based on the following formula:

$$\text{PF}_{\text{dowel bars}} = \text{PF}_{\text{horizontal}} + \text{PF}_{\text{vertical}} + \text{PF}_{\text{sideshift}} + \text{PF}_{\text{depth}} - 3$$

Where: PF_{horizontal} = Pay factor for horizontal misalignment

PF_{vertical} = Pay factor for vertical misalignment

PF_{sideshift} = Pay factor for sideshift

PF_{depth} = Pay factor for depth

The pay factors of the dowel bars for horizontal, vertical, sideshift and depth shall each be calculated using the equations in Table 7 to the nearest 0.01.

TABLE 7: Payment Factors

Percent Within Limits (PWL)	Payment Factor (PF)
$90 \leq \text{PWL} \leq 100$	PF = 1.00
$50 \leq \text{PWL} < 90$	PF = 0.55 + 0.005PWL

WARRANT: Always with OPSS 350, March 1998.

PRECAST CONCRETE CURB - Item No. 23

Special Provision

Scope

Contractor shall supply and install precast concrete curb as shown on the Contract Drawings. Final location of precast concrete curb to be determined by the Contract Administrator.

References

This special provision refers to Ontario Provincial Standard Drawing OPSD 603.020, Precast Concrete Curb.

Materials

Concrete for precast curbs shall conform to OPSS 1350 with a nominal minimum 28 day compressive strength of 30 MPa.

Steel reinforcement spikes shall conform to OPSS 1440.

Measurement For Payment

Measurement is by Plan Quantity, as may be revised by Adjusted Plan Quantity, for each precast concrete curb placed.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

RAISED CONCRETE SLAB ISLAND - Item No. 25

Special Provision

Scope

This special provision covers the work for:

- The preparation and construction of raised concrete median islands at the west, south and east sides of the Woodbine Avenue/Ravenshoe Road intersection as shown in the contract drawing.
- The layout, excavation and granular backfill as necessary to construct the median islands.

Materials

All concrete to be used shall conform to OPSS 904, 1002 and 1303 and the class of concrete shall be 30 MPa at 28 days.

Construction

Contractor shall lay out and construct the median islands in according to the lines and grades as shown on the contract drawings.

Contractor shall saw cut and remove the existing pavement, compact the exposed underlying granular base and backfill granular material as necessary to the correct grade before placing the concrete.

Construction of the raised concrete slab median island shall follow the typical details of the current York Region Standard Drawing (E-6.03).

Measurement For Payment

The unit of measurement for this tender item is square meter.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

PIPE SUBDRAINS - Item No. 26

Special Provision

Geotextile for Wrapped Trench

This special provision covers the requirements of the supply and installation of the geotextile for the wrapped trench of subdrain as shown on the Contract Drawings.

Geotextile shall be Class I, Non-Woven, F.O.S. 75-150um, 1mm minimum thickness.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

OIL-GRIT SEPARATOR SYSTEM - Item No. 35

Special Provision

Scope

This special provision covers the work for:

- The supply and installation of precast stormceptor manhole and its associated hardware components, also included cover and grate, grade adjusters, safety grate (if warranted) and grouting of pipes.
- The layout, excavation and granular backfill of the precast stormceptor manhole.

As shown in the contract package.

Materials

All concrete to be used shall conform to OPSS 904 and the class of concrete shall be 32 MPa at 28 days.

Construction

Contractor shall lay out and install the precast stormceptor manhole in according to the lines and grades of the manhole as shown on the contract drawings.

The precast stormceptor manhole shall be ordered by Contractor from the following acceptable products suppliers:

Hanson Pipe & Products Canada, Inc.
RR #2 Cambridge, Ontario, N1R 5S3
Tel.: 519-622-7574

Imbrium System Inc.
2 St. Clair Avenue W,
Suite 2100, Toronto, Ontario, M4V 1L5
Tel.: 416-960-9900

Lecuyer et Fils Ltee
17 Du Moulin,
St-Remi, Quebec, J0L 2L0
Tel.: 450-454-3928

Measurement For Payment

The unit of measurement for this tender item is each.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

200 MM PIPE SEWER - Item No. 36
300 MM PIPE SEWER - Item No. 37
500 MM PIPE SEWER - Item No. 38
600 MM PIPE SEWER - Item No. 39
800 MM PIPE SEWER - Item No. 40
1200 MM PIPE SEWER - Item No. 41
500 MM PIPE CULVERT - Item No. 44
700 MM PIPE CULVERT - Item No. 45
800 MM PIPE CULVERT - Item No. 46
900 MM PIPE CULVERT - Item No. 47
1000 MM PIPE CULVERT - Item No. 48

Special Provision

Sewer Construction in Stages

406.07 CONSTRUCTION

406.07.07 Pipe Installation

406.07.07.01 General

Sub-section 406.07.07.01 of MTC Form 406, August 1982, is amended by the addition of the following:

The Contractor may be required to construct pipe sewers in stages. The Contractor shall determine where staged construction is required and complete the work accordingly.

Sewers partially completed shall be plugged temporarily

406.10 BASIS OF PAYMENT

406.10.01 All Inclusive Price Method

Subsection 406.10.01 of MTC Form 406, August 1982, is amended by the addition of the staged construction and temporary plugging and subsequent plug removal to the basis of payment.

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

CLAY SEAL - Item No. 49

Special Provision

Scope

This specification covers the requirements for the Clay Seal liner of the stormwater management ponds and outlet pipes of Stormwater Management Pond #8.

Materials

The Contractor must ensure that a minimum 0.6 m thick Clay Seal liner is provided at the stormwater management pond areas as shown on the Contract Drawings. The Contractor has the option of constructing the clay seal liner using suitable earth fill or confirm that sufficient thickness of native soils exist that meet the specifications for Clay Seal liner material as described below.

The clay liner material may consist of native or imported clayey silt to silty clay, or clayey silt till to silty clay till and have the following properties:

- Plasticity Index greater than 7 percent (ASTM D422);
- Meet the following gradation requirements (ASTM D 422);
- 100% percent of the particles passing the 75 mm sieve size;
- Not less than 50 percent of the particles, by weight, passing the U.S. No. 200 standard sieve (75 µm openings);
- Not less than 15 percent of the particles, by weight, greater than 0.002 mm size.

If the existing in-situ native soils are being considered for use as Clay Seal liner material, the Contractor must excavate test pits or expose areas of the proposed Clay Seal liner material to verify that clayey silt, silty clay, clayey silt till or silty clay till soils (minimum 0.6 m thick) are present within the design elevations shown on the Contract Drawings to the acceptance of the Quality Verification Engineer (QVE). If native cohesive soils are not present within the design Clay Seal liner elevations, the existing subgrade will need to be subexcavated to the base of the proposed Clay Seal liner elevation and replaced with suitable earth fill meeting the specifications above.

Soil classification tests consisting of Atterberg limits, water content, and grain size distribution including hydrometer tests should be performed by the QVE on the Clay Seal liner material at each stormwater management pond area to ensure conformance with the specifications listed above. These tests should be performed at a frequency of one test per 1,000 cubic metres of liner material placed or a minimum of 3 tests per stormwater management pond on either the in-situ or imported material to confirm suitability of the material.

Construction

Suitable earth fill meeting the Clay Seal liner specifications above should be placed in accordance with SP206S03 and be placed in maximum 0.3 m thick lifts and compacted to a minimum 95% Standard Proctor Maximum Dry Density of the material.

The Clay Seal liner should be protected from disturbance due to construction procedures, inclement weather conditions, and frost penetration during construction. Ballast soil cover should be placed on top of the Clay Seal liner as soon as practicable after construction. The ballast soil cover is paid under the separate tender item of Earth Excavation (Grading).

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

REMOVAL OF CONCRETE CURB AND GUTTER - Item No. 54

Special Provision

Removal of Existing Concrete Gutter Outlet/Spillway

The existing concrete gutter outlet/spillway on the north side of the Esso Gas Station on Woodbine Avenue, north of Ravenshoe Road shall be removed together with the existing mountable curb and gutter during the road rehabilitation.

All concrete debris resulted from the gutter outlet/spillway removal shall be deposited off site. Any soft spots located under and/or surrounding the existing outlet/spillway shall be removed. Bottom of the removal shall be compacted and proof-rolled before backfill with suitable native backfill to the new subgrade elevation.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

REMOVAL OF FENCE - Item No. 57

Special Provision

SCOPE

This special provision describes the requirements of removing existing gates along Woodbine Avenue and Ravenshoe Road.

Locations of Existing Gates

Woodbine Avenue

Sta. 9+807, offset 13.5 RT
Sta. 9+941, offset 14.8 LT
Sta. 10+149, offset 22.6 RT
Sta. 10+357, offset 20.8 RT

Ravenshoe Road

Sta. 9+760, offset 17.0 LT

Boag Road

Sta. 9+768, 7.9 Lt

Contractor shall plan and arrange to have all materials resulted from the removal (posts, footings, gate panels, etc.) to be disposed off site.

BASIS OF PAYMENT

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work. No additional compensations for the removal of gates and arrangement of disposal off site.

RIP RAP - Item No. 58

Special Provision

Geotextile Under Rip Rap in Ponds

This special provision covers the requirements of the supply and installation of the geotextile under the rip rap inside the stormwater management ponds as shown on the Contract Drawings.

Geotextile shall extend 300mm min. beyond the outside edges of rip rap and buried underground.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

GRAVEL SHEETING - Item No. 59

Special Provision

Locations of gravel sheeting Application

Subject to the site condition, gravel sheeting shall be placed at locations as directed by the Contract Administrator.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING OBLITERATING - BY GRINDING - Item No. 61

Special Provision

Pavement Marking Obliterating

In areas of broken pavement markings, the grinding shall be continuous longitudinally, with no breaks between pavement markings.

Measurement for Payment

Subsection 532.09.02.01 of OPSS 532 is deleted and replaced with the following:

Measurement for Pavement Marking Obliterating is by Plan Quantity, as may be revised by Adjusted Plan Quantity, of the horizontal length in metres of 10 cm wide line, including gaps.

Wider lines are measured in 10 cm equivalents.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING - Item No. 62

Special Provision

Permanent Pavement Markings – Traffic Paint

To install yellow directional dividing lines and/or white edge lines on the following regional roads:

- Woodbine Avenue
- Ravenshoe Road

Materials shall conform to the requirements of OPSS 1712 and OPSS 1750.

The pavement markings shall be applied in the locations shown on the Contract Drawings and in accordance with OPSS 532.

Two coats of paint shall be applied to new surfaces and for first time applications. One coat is sufficient when painting over existing pavement markings.

Measurement for Payment

Measurement for lines shall be by the horizontal length in metres of 10cm wide lines, excluding gaps. Wider lines shall be measured in 10cm equivalents.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING - Item No. 62

PAVEMENT MARKING, DURABLE - Item No. 64, 122

Special Provision No. 532F03M

December 1999

Marking Requirements

532.07.06 Short Term Pavement Marking

The first paragraph of subsection 532.07.06 of OPSS 532, June 1991, is deleted and replaced by the following:

Short term pavement marking is required when a paved roadway is to be opened to the general public prior to the application of permanent pavement markings, on any milled, levelling, binder or top course pavements where existing lane widths, arrangements and alignments are maintained.

The second paragraph of subsection 532.07.06 of OPSS 532, June 1991, is deleted and replaced by the following:

As part of the work of the pavement marking, the Contractor shall apply short term pavement markings for the centerline, lane lines and 10 cm. wide continuous edge of pavement lines. Short term pavement markings shall not be measured for payment.

The fifth paragraph of sub-section 532.07.06 is deleted and replaced by the following:

The Contractor shall use paint for short term pavement markings, except for the short term pavement markings that are to be replaced on a final surface course which shall be temporary, preformed, removable, pavement marking tape.

Table 1 of OPSS 532 is amended by the addition of the following: All types of short term pavement markings shall be Type D.

PAVEMENT MARKING SYMBOLS - Item No. 63

Special Provision

Disabled Access (wheelchair) Symbol in Commuter Parking Lot

The disabled access (wheelchair) symbol in each disabled parking stall shall be a white international symbol (wheelchair) with blue background and white border.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work. There will be no additional payment for the blue background and white border of the disabled access symbol.

PAVEMENT MARKING, DURABLE - Item No. 64

Special Provision

The following York Region's requirements are applicable to regional roads only: Woodbine Avenue and Ravenshoe Road.

General Requirements

Scope of Work

The Contractor shall supply and apply reflectorized, non-coning, traffic paint for pavement markings.

The Contractor shall provide pre-marking to establish the position of all pavement markings in accordance with OPSS 532.

Included under the Work of this item, the Contractor shall ensure that all freshly painted lines are protected from being tracked or smeared by the travelling public, by the use of appropriate traffic control measures.

A self-propelled pavement marking unit, capable of producing top quality markings, with true edges, free from waviness or variations, shall be used. The unit shall have positive skip line mechanisms capable of varying both line and skip distances from a 3 metre line and a 3 metre skip to a 3 metre line and a 6 metre skip to a 3 metre line and a 9 metre skip. The unit shall be capable of spraying paint and glass beads at the rate required. The lane line unit shall be equipped with two tanks with a minimum combined capacity to hold 1900 litres of paint, three paint guns (two left and one right), two outboard booms (one left and right), paint heaters, paint pumps and a pressurized glass bead system with dispensers. The unit shall have a large sign with a checkerboard border mounted on the rear of the vehicle to advise motorists that line painting operations are in progress and shall be equipped with a full complement of lights for safety.

Equipment Requirements

The Contractor shall supply and operate the following equipment during the performance of the Work, at minimum:

- Two safety warning trucks equipped with a full complement of lights for safety.
- Rotating amber lights mounted on each vehicle and clearly visible from the front and the rear of each vehicle.
- Four way flashers on each vehicle.
- Rear mounted bi-directional arrow board sign (TC 12), in accordance with the Ontario Traffic Manual, Book 7, for each vehicle.
- All vehicles shall be mobile radio equipped for direct truck to truck communication.

The equipment shall be subject to inspection by the Region.

Materials

All non-coning traffic paint and reflectorizing glass beads supplied for the Work under this Contract shall be from sources indicated in the Ministry of Transportation Designated Sources Manual (DSM).

Non-coning traffic paint shall meet the requirements of OPSS 1712 and reflectorizing glass beads shall meet the requirements of OPSS 1750.

The Contractor shall provide proof that the material is from an approved source under the Ministry's DSM and meets the requirements of the applicable OPSS, referenced above.

Operations

The Contractor shall ensure that all pavement marking Work is carried out in accordance with OPSS 532, or as amended herein:

1. Traffic control is maintained in accordance with the requirements of the Ontario Traffic Manual, Book 7. The Contractor shall ensure that freshly painted lines are not tracked or smeared by motorists.
2. All Work is carried out in compliance with the Occupational Health and Safety Act, Highway Traffic Act and Environmental Protection Act and all applicable Regulations of these statutes.
3. Actual painting operations shall be restricted to the hours between 9:00 a.m. and 4:00 p.m. These hours of work may be extended only with the prior written approval of the Region.
4. Qualified operators are provided who have all of the necessary licensing requirements to carry out the Work.
5. Paint application is to have a wet film thickness of 0.40 mm and a dry film thickness of 0.30 mm, plus or minus 10%. No paint thinners shall be used. The rate of paint application shall be a minimum of 20 metres per litre and a maximum of 18 metres per litre.
6. Glass beads shall be applied at the rate of 0.7 kg/litre of raw paint applied.

7. The minimum width of line applied shall not be less than 100 mm. Where double line is applied, the space between the two lines shall not be less than 100 mm. The maximum width of the above described line or space shall not exceed 115 mm.
8. Centre line markings shall be yellow 10 cm wide line(s).
9. Pavement markings shall be applied when the temperature is above 10 degrees Celsius and the pavement is completely dry, as determined by the Region.
10. Any workmanship that does not conform to the requirements of OPSS 532 shall be corrected at the Contractor's expense.
11. It shall be the Contractor's responsibility to correct any severe tracking situation which was created by the Contractor, or as a direct result of poor traffic control operations by the Contractor.
12. Any claims received as a result of the Contractor's operations shall be the Contractor's responsibility for settlement. The Contractor shall provide the contact information for forwarding any received claims to the Contractor for settlement.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

Special Provision

Permanent Pavement Marking, Durable - Inlaid

To install Crosswalk lines (white) and Stop Bar Lines (white) at the following intersections:

- Woodbine Avenue and Ravenshoe Road intersection
- S-N/S Ramp and Woodbine Avenue intersection

Materials shall conform to OPSS 1713.

These pavement markings shall be applied to the final surface course in the locations shown on the Contract Drawings and in accordance with OPSS 532.

The Contractor shall provide pre-marking to establish the position of all pavement markings in accordance with OPSS 532.

The surface shall be routed, by mechanical means, to a uniform cross-section for the full width as specified and to a minimum depth of 5 millimetres. The material shall be applied to fill the groove and extrude above by 2 millimetres and overlap the groove by 12.5 to 17.5 millimetres on each side.

Measurement for Payment

Measurement for cross walks shall be by the horizontal length in metres of 15cm wide lines, excluding gaps.

Wider lines shall be measured in 10cm equivalents.

Measurement for stop bars shall be by the horizontal length in metres of 45cm wide lines, excluding gaps. Wider lines shall be measured in 10cm equivalents.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

Special Provision

Permanent Pavement Marking, Durable

To install white dashed and solid lane lines, including left and right turn lanes and white dashed and solid bike lane lines on the following regional roads:

- Woodbine Avenue
- Ravenshoe Road

Materials shall conform to OPSS 1714.

The pavement markings shall be applied to the final surface course in the locations shown on the Contract Drawings and in accordance with OPSS 532.

Measurement for Payment

Measurement for lines shall be by the horizontal length in metres of 10cm wide lines, excluding gaps. Wider lines shall be measured in 10cm equivalents.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING, DURABLE - Item No. 64

PAVEMENT MARKING SYMBOLS, DURABLE - Item No. 65

Non Standard Special Provision

March 2010

Amendment to OPSS 532, June 1991

532.07.08 Selection of Materials

The second paragraph of the Subsection 532.07.08 is deleted and replaced by the following:

When the item Pavement Marking, Durable or Pavement Marking Symbols, Durable is called for, the Contractor's choice of material is restricted to:

- durable preformed plastic tape
- thermoplastic pavement marking material

WARRANT: Always with these tender items, when the highway is not illuminated.

PAVEMENT MARKING, TEMPORARY - Item No. 66

Non Standard Special Provision PV(Draft1)

March, 2002

OPSS 532, June 1991 is amended as follows:

532.02 REFERENCES

Section 532.02 of OPSS 532 is amended by the addition of the following:

American Society for Testing and Materials:

ASTM D 6359-98, Standard Specification for Minimum Retroreflectance of Newly Applied Pavement Marking Using Portable Hand Operated Instruments

532.03 DEFINITIONS

Section 532.03 of OPSS 532 is amended by the addition of the following:

Retroreflection – a reflection in which the reflected rays are returned in direction close to opposite of the direction of the incident rays

Retroreflectivity – property of a material or device in which, when directionally irradiated, the reflected rays are preferentially returned in directions close to the opposite of the direction of the incident rays, this property being maintained over wide variations in the direction of the incident rays.

532.05 MATERIALS

Section 532.05 of OPSS 532 is amended by the addition of the following subsection:

532.05.08 Traffic Paint

Traffic paint shall meet the performance requirements of ASTM D 6359-98.

532.07 CONSTRUCTION

532.07.09 Application

532.07.09.01 General

Clause 532.07.09.01 of OPSS 532 is revised by the addition of the following after the first paragraph:

All pavement markings shall remain retroreflective, visible and effective for the duration of their required use. Pavement markings that fail to perform as required shall be reapplied at no additional cost to the Owner.

The Owner shall be the sole authority in determining when pavement markings have failed to perform and the extent of the failure.

532.07.09.02 Organic Solvent Based Traffic Paint

Clause 532.07.09.02 of OPSS 532 is deleted and replaced with the following:

532.07.09.02 Organic Solvent Based Traffic Paint

Paint shall be applied when the pavement surface temperature is 5°C and above, unless otherwise approved in writing by the Authority. Paint shall be applied at a rate which results in a uniform thickness of 230 ± 25 microns dry film. Reflectorizing glass beads, conforming to OPSS 1750, shall be applied uniformly immediately after paint application, to ensure embedment of the glass beads.

The paint temperature shall be between 40°C and 70°C when applied to the pavement.

532.07.09.06 Preformed Plastic Tape

Clause 532.07.09.06 of OPSS 532 is revised by the addition of the following:

When the Contractor elects to use preformed plastic tape and weather conditions do not permit reapplication, when required, the Contractor shall use traffic paint to provide the necessary pavement markings.

Section 532.07 of OPSS 532 is amended by the addition of the following subsection:

532.07.10 Access for Testing of Quality of Traffic Paint

The Contractor shall provide access to the Owner to conduct quality testing of cured traffic paint, from which all excess glass beads have been removed, within 14 calendar days of applying the paint.

The Contractor shall provide 3 business days notice to the Owner to conduct the testing.

The Contractor shall ensure that the paint surface is dry and free of foreign debris. In the event of unacceptable testing conditions, the Contractor shall reschedule the testing date and shall notify the Owner at least 3 business days prior to the re-scheduled test date.

The Contractor shall provide the same access and test date notification to the Owner for assessment of reapplied traffic paint.

532.08 QUALITY ASSURANCE

Section 532.08 of OPSS 532 is amended by the addition of the following subsection and clause:

532.08.04 Testing of Traffic Paint

Random testing of traffic paint will be carried out by the Owner to assess line quality.

Sampling frequency will be as described in Section 6 of ASTM D 6359-98.

532.08.04.01 Acceptance of Traffic Paint for Retroreflectance

Acceptance of traffic paint for retroreflectance will be based on criteria detailed in ASTM D 6359-98.

532.09 MEASUREMENT FOR PAYMENT

Subsections 532.09.01.01 and 532.09.02.01 of OPSS 532 are deleted in their entirety.

Subsections 532.09.01.02 and 532.09.02.02 of OPSS 532 are amended by the addition of the following:

Reapplication of pavement marking symbols will not be measured for payment.

532.10 BASIS OF PAYMENT

Subsection 532.10.01 of OPSS 532 is amended by the addition of the following:

Pavement markings shall be reapplied, when required, at no additional cost to the Owner:

If more than 30 cumulative lineal meters per lane kilometre of pavement marking tape fails to perform, the Contractor shall reapply pavement marking tape in the failed areas within 48 hours of the occurrence of the failure, at no additional cost to the Owner.

If less than 30 cumulative lineal meters per lane kilometre of pavement marking tape fails to perform, the Contractor shall reapply pavement marking tape in the failed areas within 7 calendar days of the occurrence of the failure, at no additional cost to the Owner.

If any temporary pavement marking symbol consisting of pavement marking tape fails to perform, the Contractor shall reapply the symbol within 48 hours of the occurrence of the failure, at no additional cost to the Owner.

If traffic paint fails to meet the requirement of ASTM D6359-98, the paint within the failed zone of measurement shall be reapplied within 7 calendar days of notification of failure, at no additional cost to the Owner.

Failure to reapply pavement markings within the stipulated timeframes will result a penalty of \$5,000.00 per day for each calendar day, or part thereof, that the failed pavement markings remain un-repaired beyond the noted timeframes.

The Owner shall be the sole authority in determining the time of occurrence and extent of the failures.

Notes to Designer: Special Provision No.532S04 must not be used when this NSSP is used.
 Special Provision No.532F06 must not be used when this NSSP is used.

WARRANT: Always with these tender items

HIGHWAY FENCE - Item No. 68

Special Provision

Fence Fabric

540.05 MATERIALS

540.05.01 Highway Fence

Subsection 540.05.01 of OPSS 540 is amended by the addition of the following:

Fence Fabric shall be according to OPSS 1540 amended as follows:

1540.05 MATERIALS

1540.05.01 Fence Fabric

Subsection 1540.05.01 of OPSS 1540 is amended by deleting the first sentence and replacing it with the following:

Fence fabric shall be according to ASTM A 116 and Design Numbers 949-12-9 or 948-16-9¾.

CHAIN LINK FENCE - Item No. 71

Special Provision

Wildlife Fence Attachment

This special provision covers the requirements for the supply and installation of the 0.6m high wildlife fence attachment to the bottom of chain link fence where shown on the contract drawings.

Materials

Galvanized steel plate shall be 1cm thick. Galvanized steel wire shall be 1.0mm diameter. Galvanizing shall be in according to CAN/CGSB 138.2 Top edge of the plate must be rounded to form a soft edge.

Construction

A 0.6m high solid wildlife funnel fence attachment shall be attached to the bottom portion of the new chain link fence.

This solid attachment shall have finished face on the far side (away from the highway) and be attached to the outside of the chain link fence to funnel the wildlife from outside the highway corridor toward the precasted culvert to cross Highway 404.

The solid steel plate shall be attached to the chain link fence securely with galvanized steel wire through the drilled holes on the plate (spacing of holes not exceeding 1m), and at a height such that no gap shall be left on the ground. If the existing ground where the fence located is not flat, the ground outside the fence shall be graded/fill to ensure that the plate is matching or below the existing ground with no gap in between.

Double Fences for Wildlife

The installation of “25m-5m gap-25m” configuration of the chain link fence (OPSD 972.130) on west side of Highway 404 corridor, between Sta. 33+604 and Sta. 34+002, as shown on the contract drawings is to provide refuge, to facilitate free movements and to funnel of the wildlife to the skewed pre-cast culvert crossing at Sta. 34+013. Measurement of payment for this section of fence is the total length of the fence installed excluding all the 5m gaps.

The wildlife fence attachment installed to the bottom of another row of chain link fence is to prevent the smaller wildlife trapped in the mesh of the fence. No additional payment for the supply and installation of the wildlife fence attachment to the chain link fence.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work including the wildlife fence attachment.

TRAFFIC CONTROL SIGNING - Item No. 73

Special Provision 543F01M

April 2006

OPSS 543, December 1990 is amended by the following:

543.02 REFERENCES

Section 543.02 References, is amended by the addition of the following:

ASTM International (formerly American Society for Testing and Materials):

ASTM D4956-01a - Standard Specification for Retroreflective Sheeting for Traffic Control

543.03 DEFINITIONS

Section 543.03 of OPSS 543 is deleted and replaced with:

Construction Signs: means all traffic control signs and associated devices identified in the Ontario Traffic Manual (OTM) including vehicles and sign trailers, required to support signs and equipment to supply sign lighting, including the Major Contract Information Signs (MCIS) and speed fine signs (Type A, B and C), French contract information signs (MCIS (FR)) and excluding highway number markers. TC-71 signs shall not be used.

Manual: means the “Ontario Traffic Manual, Book 7 – Temporary Conditions (Field Edition)” and “Ontario Traffic Manual, Book 7 – Temporary Conditions (Office Edition)”.

543.07 CONSTRUCTION

543.07.01 Traffic Control Signing

The first paragraph of subsection 543.07.01 of OPSS 543 is amended by the deletion of the last sentence and replacement with the following:

The Major Contract Information Signs (MCIS) (*a*) shall be supplied by the Authority and installed, maintained, and removed by the Contractor. The Contractor shall provide all materials required to install these signs.

Subsection 543.07.01 is further amended by the addition of the following:

Lights on Lane Closure Arrow Signs (TC-12) shall change in intensity during the twilight period by 50%.

Subsection 543.07.01 is further amended by the addition of the following clauses:

543.07.01.01 Major Contract Information Signs

The Major Contract Information Signs will be supplied by the Authority and shall be erected, maintained and removed by the Contractor. These signs remain the property of the Authority and shall be returned to the Authority upon completion of the contract.

The Major Contract Information Signs shall be available for pickup by the Contractor at

**MTO Provincial Sign Shop
1927 Kipling Avenue
Rexdale, Ontario**

Time: 8:00am – 2:00pm Monday to Friday (except holidays)

Contact and phone number: Tracey Johnston 416-314-1898 Ext. 303

with 2 weeks advance notice.

Upon removal at the end of the contract, the Major Contract Information Signs shall be removed and delivered by the Contractor to a location indicated by the Contract Administrator with 48 hours advance notice.

One Major Contract Information Sign (MCIS) shall be placed on each approach to the contract on the main alignment. A contract should have either a TC-81 sign or an MCIS sign, but not both. If the contract is in a designated bilingual area, one MCIS and one MCIS (FR) sign shall be placed on each approach to the contract on the main alignment. The MCIS (FR) will be downstream of the MCIS sign.

543.07.01.02 Speed Fines Signs

The contractor shall supply, install, maintain and remove all Speed Fines signs. The Speed Fines signs shall be installed at each approach of the contract limits as per the sign layout and on major intersecting roadways where a Construction Ahead sign has been placed. In designated bilingual areas, the corresponding French signs shall also be installed.

The “Speed Fines Doubled When Workers Present” tab sign (Type A) shall be installed below the MCIS and MCIS (FR) signs on the same supports.

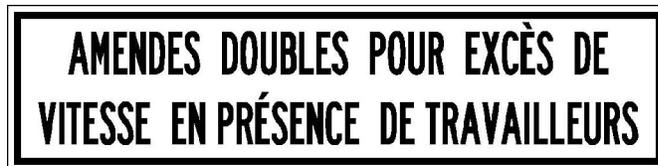
The “Speed Fines Doubled When Workers Present” tab sign (Type B) shall be installed below the “Construction Zone Begins Rb-090A sign and on intersecting roads below the “Construction Ahead” (TC –1) sign.

The “Speed Fines Doubled in Construction Zones When Workers Present” (Type C) is a stand-alone sign and shall be installed as per the sign layout.

Type A: Tab Sign under the MCIS Contract Identification sign



Size 600 x 2400 mm
Font @ 150 mm
Legend & Border – Black
Background - White
Reflective Engineering
Grade

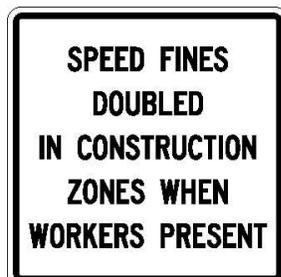


Type B: Tab Sign under the Rb-090A Construction Begins sign



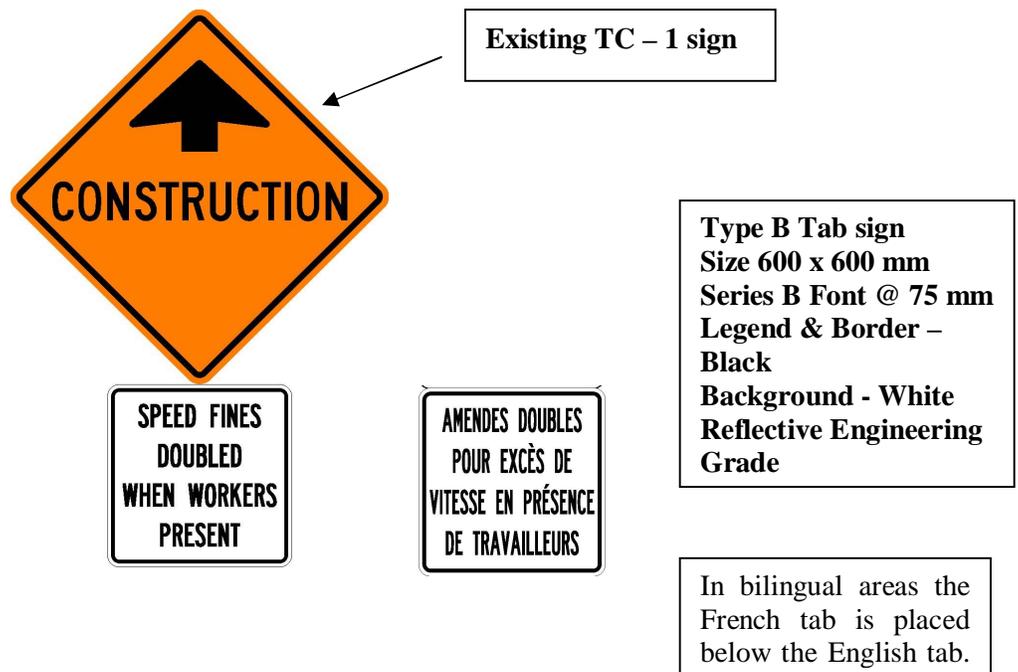
Tab Size 600 x 600 mm
Series B Font @ 75mm
Legend & Border – Black
Background - White
Reflective Engineering
Grade

Type C: Standalone sign within the construction zone

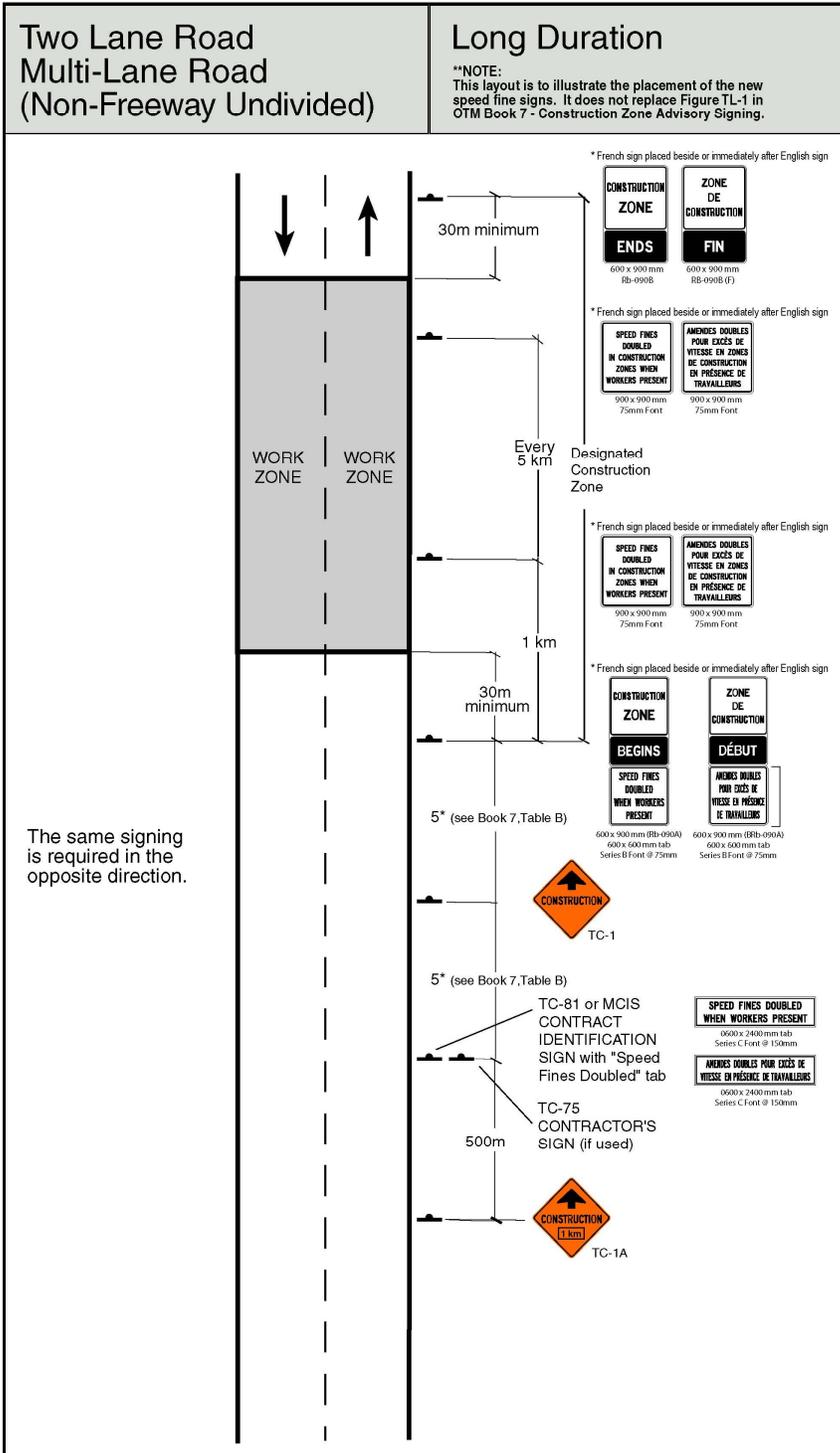


Size 900 x 900 mm
75 mm Font
Legend & Border – Black
Background - White
White Reflective

Signing on intersecting roadways



Schedule A - Provincial Roads



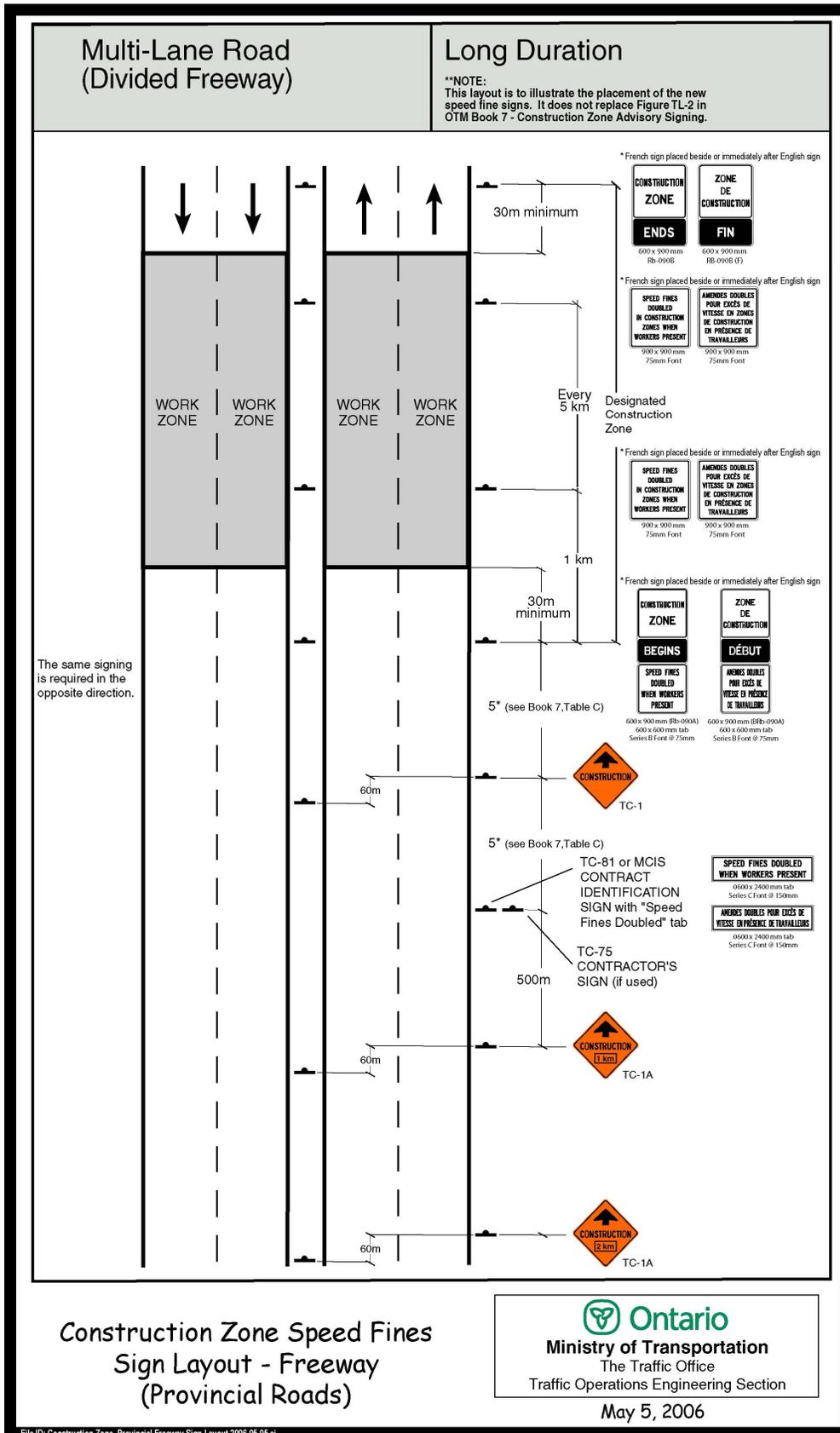
Construction Zone Speed Fines Sign Layout - Non-Freeway (Provincial Roads)

 **Ontario**
 Ministry of Transportation
 The Traffic Office
 Traffic Operations Engineering Section

May 5, 2006

File ID: Construction Zone Provincial Non-Freeway Sign Layout 2006-05-05.ai

Schedule B - Provincial Roads



543.07.03**Seasonal Shutdown**

Subsection 543.07.03 of OPSS 543, is amended by the deletion of the sentence “Construction signs placed, replaced or repaired by the Authority during seasonal shutdown will become the property of the Contractor” and will be replaced with:

Major Contract Information signs (MCIS, MCIS (FR)) placed, replaced or repaired by the Authority during seasonal shutdown will remain the property of the Authority. All other construction signs placed, replaced or repaired by the Authority during seasonal shutdown will become the property of the Contractor.

MCISa

Highway Improvement
Next 1.5 km
Completion (Winter 2012)

MCISa (FR)

Amélioration de la route
sur 1.5 km
Terminé (à l’hiver 2012)

GROUND MOUNTED SIGNS - Item No. 74

Special Provision

Signboards for the Bike Route

The following new signboards for the bike route along Woodbine Avenue will be supplied by the York Region and installed by the Contractor:

- Bike Route (Rb-169, 60cm x 60cm)
- Bike Yield (60mc x 60cm)
- Bike Crossing (60cm x 60cm)

For signboards supplied by the Region of York, Contractor shall contact the coordinator four weeks prior to the sign and hardware pick-up:

The Coordinator
Sign Shop Graphics,
Tel. 905-830-4444, ext. 5234

Signage Installation for the GO Transit Bus Facility/Commuter Parking Lot

Contractor shall contact the following GO Transit signage coordinator two weeks prior to the signage installation:

John Forestieri,
Tel. 416-869-3600, Ext.5413

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work, including to make all contacts and pick-up.

Special Provision

Signboards for the Bike Route

The following new signboards for the bike route along Woodbine Avenue will be supplied by the York Region and installed by the Contractor:

- Bike Route (IB-23, 45cm x 45cm)
- Yield (Ra-102, 75cm)
- Bike Crossing Ahead (Wc-14, 60cm x 60cm)
- Crossing Tab (Wc-14t, 30cmx60cm)

For signboards supplied by the Region of York, Contractor shall contact the coordinator four weeks prior to the sign and hardware pick-up:

Tina Chantler, Coordinator
Sign Shop Graphics,
Tel. 905-830-4444, ext. 5234

Installation of Rb-125 (Keep Right) Sign and Object Marker

Rb-125 sign and object marker in median islands shall be installed in accordance with York Region's standard drawing E-7.01.

Signage Installation for the GO Transit Bus Facility/Commuter Parking Lot

Contractor shall contact the following GO Transit signage coordinator two weeks prior to the signage installation:

John Forestieri,
Tel. 416-869-3600, Ext.5413

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work, including to make all contacts and pick-up.

Special Provision No. 543S03M

Scope

This Special Provision covers the requirements for the installation of new permanent ground mounted signs, as well as the relocation and removal of existing ground mounted signs.

References

This Special Provision refers to the following:

OPSS 510 - Removals
OPSS 543 - Traffic Control Signing
Ontario Traffic Manual (OTM)
Sign Support Manual
King's Highway Guide Signing Policy Manual
Highway Traffic Act (HTA), Regulation 615

Definitions

Relocation: means moving an existing sign to a permanent new chainage and/or offset.

Sign Assembly - Includes one or more signs, mounted on one or more sign post or support.

Construction**New and Relocated Signs**

Timber or steel posts as well as sign boards shall be installed in accordance with the OTM, Section 6 of the Sign Support Manual, King's Highway Guide Signing Policy Manual, and Regulation 615 of the HTA, at the locations indicated in the contract.

Footing depths for sign boards requiring more than one timber post as the support structure shall be in accordance with Section 6.1.5 of the Sign Support Manual. All other posts shall be placed to a minimum depth of 1.0 m below the final ground surface.

Relocated signs shall be installed with new posts and new hardware.

The signs shall not obstruct the view of existing permanent signs. The existing permanent signs and roadside objects shall not obstruct the view of the signs. The sign boards shall be covered until they are appropriate for display.

Sign Boards

New sign boards shall be supplied by MTO.

New sign boards will be ordered by the Contract Administrator a minimum of 8 weeks prior to being picked up by the Contractor. The Contract Administrator will confirm with the Provincial Sign Shop a minimum of 2 weeks prior to the Contractor's picking up of the new sign boards.

New sign boards shall be picked up at:

Location: Provincial Sign Shop, 1927 Kipling Avenue, Rexdale, Ontario, M9W 4J4

Time: 8:00 am to 2:00 pm, Monday to Friday (except Holidays)

Contact and phone number:

Tracey Johnston,
Tel. 416-314-1898 ext 305

Relocation and Removal

Existing signs shall be relocated or removed as indicated in the contract.

Removals shall be in accordance with OPSS 510.

Measurement for Payment

Measurement is by Plan Quantity as may be revised by Adjusted Plan Quantity for each sign assembly installed, relocated or removed.

Basis of Payment

Payment at the contract price for the above tender item shall be full compensation for all labour, equipment and material to do the work.

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
RELOCATE							
Woodbine Avenue							
10+322	LT	Twp. Sign	Welcome to the Town of East Gwillimbury	Wood – 2 Posts	Special	10+319	LT
10+348	RT	T-3pA	York Region	Wood – 2 Posts	60x240	10+345	RT
		T-5pA	Red Barn Theatre, Straight Arrow		120x240		
10+412	LT	Twp. Sign	Within the Town of East Gwillimbury	Wood – 2 Posts	Special	10+408	LT
10+420	LT	Twp. Sign	Town of East Gwillimbury Our Town, Our Future	Wood – 2 Posts	Special	10+417	LT
10+436	RT	T-3pA	York Region	Wood – 2 Posts	60x240	10+434	RT
		T-7	Marker, Butterfly Conservatory, Right Arrow		60x240		
		T-7	Marker, Georgina Arts Crt & Gallery, Straight Arrow		60x240		
		T-7	Marker, Lyndhurst Golf		60x240		

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
			Course, Right Arrow				
10+672	RT	Reg./Twp. sign	York Region Town of Georgina Population 47,000	Wood 10x10 – 2 posts	Special	10+672	RT
NEW							
Hwy 404							
N/A	N/A	Rb-1A	Maximum 100 km/h		60x90	33+770	RT
N/A	N/A	M.h-2	404	Wood 10x10	45x72	33+775	RT
		M.h-13t	NORTH		30x45		
N/A	N/A	G.f-2 (Mod)	59 (Interchange Number Tab)	Special	610x1524 (mm)	34+010	RT
		G.f-1 (Mod)	77, Queensville Sideroad 1 km		2134x4877 (mm)		
N/A	N/A	G.f-13t	Distance Marker with km Tab	Wood 10x10	80x20	34+990	LT
N/A	N/A	G.f-13t	Distance Marker with km Tab	Wood 10x10	80x20	34+990	RT
N/A	N/A	Wa-103R	Curve – Right	Wood 10x10	75x75	36+525	RT
N/A	N/A	Wa-33L	Object Marker (One Direction)	Steel	30x90	36+919	RT
N/A	N/A	Wa-33R	Object Marker (One Direction)	Steel	30x90	36+956	RT
N/A	N/A	G.f-13t	Distance Marker with km Tab	Wood 10x10	80x20	36+990	RT
N/A	N/A	G.f-13t	Distance Marker with km Tab	Wood 10x10	80x20	36+990	LT
N/A	N/A	G.r-11a	Boag Road	Wood 15x15 – 2 posts	60x150	37+065	RT
N/A	N/A	G.r-11a	Boag Road	Wood 15x15 – 2 posts	60x150	37+109	LT
N/A	N/A	G.f-10	Carpool Marker, GO Transit Marker	Special	244x366	37+167	RT
N/A	N/A	Wa-33R	Object Marker (One Direction)	Steel	30x90	37+228	LT
N/A	N/A	Wa-33L	Object Marker (One Direction)	Steel	30x90	37+258	LT
N/A	N/A	G.f-2 (Mod)	65 (Interchange Number Tab)	Special	610x1524 (mm)	37+467	RT
		G.f-1 (Mod)	8, Woodbine Avenue 1 km		2134x4877 (mm)		
N/A	N/A	G.f-12 (Mod)	Newmarket 19 Toronto 60	Special	1524x4877 (mm)	38+055	LT
N/A	N/A	G.f-3 (Mod)	Hwy 404 ENDS 800 m Reduce Speed	Special	2143x3658 (mm)	38+167	RT
N/A	N/A	Wa-132	80 km/h	Wood	90x120	38+197	RT

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
				15x15			
N/A	N/A	Wa-132	80 km/h	Wood 15x15	90x120	38+217	RT
N/A	N/A	Wa-103L	Curve - Left	Wood 10x10	75x75	38+335	LT
N/A	N/A	Rb-1A	Maximum 100 km/h	Wood 10x10	60x90	38+375	LT
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	38+441	RT
		M.h-10	Straight Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-10	Straight Arrow		45x60		
N/A	N/A	M.h-2	404	Wood 10x10	45x72	38+475	LT
		M.h-13S	SOUTH		30x45		
N/A	N/A	Wa-108R (Mod)	Checkerboard (with amber flashers)	Wood 15x15	120x120	38+467	RT
N/A	N/A	G.f-3 (Mod)	8, Woodbine Avenue, Arrow	Special	1524x5486 (mm)	38+467	RT
N/A	N/A	Wa-123L	Lane Ends	Wood 15x15	90x90	38+555	LT
Ramp S-N/S							
N/A	N/A	Wa-132	60 km/h	Wood 15x15	90x120	10+326	LT
		Rb-20	Wrong Way		60x120		
N/A	N/A	Wa-132	60 km/h	Wood 15x15	90x120	10+343	RT
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	10+393	LT
		M.h-10	Straight Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-10	Straight Arrow		45x60		
N/A	N/A	Rc-4A	No Littering	Wood 10x10	60x90	10+505	LT
N/A	N/A	G.r-12d	8, Woodbine Avenue, Adv. Left Arrow, North, South, Adv. Right Arrow	Wood 15x15 – 2 posts	90x240	10+533	LT
		Non-Std.	Adv. Left Arrow, To, 32, Ravenshoe Road		45x240		
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	10+535	RT
		M.h-10	Straight Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-10	Straight Arrow		45x60		
N/A	N/A	Wb-202A	Traffic Signals Ahead (with 2 Flashing Ambers)	Wood 15x15 – 2 posts	120x120	10+575	RT
		Wb-102t	Prepare To Stop When Flashing		75x120		
N/A	N/A	G.r-12d	8, Woodbine Avenue, Adv. Left Arrow, North, South, Adv. Right Arrow	Wood 15x15 – 2 posts	90x240	10+594	RT
		Non-Std.	Adv. Left Arrow, To, 32, Ravenshoe Road		45x240		
N/A	N/A	Rb-41	Left Turn Arrow	Wood	60x60	10+616	LT

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
		Rb-41	Left Turn Arrow	15x15	60x60		
		Rb-44	Straight Through or Right Turn Only Arrows		60x60		
N/A	N/A	Rb-41	Left Turn Arrow	Wood 10x10 – 2 Posts	60x60	10+616	RT
		Rb-41	Left Turn Arrow		60x60		
		Rb-44	Straight Through & Right Turn Arrow		60x60		
N/A	N/A	Rb-19	Do Not Enter	Wood 10x10	60x60	10+665	LT
N/A	N/A	Rb-19	Do Not Enter	Wood 10x10	60x60	10+665	RT
N/A	N/A	Rb-41	Left Turn Only	Wood 10x10 – 2 Posts	60x60	10+681	LT
		Rb-41	Left Turn Only		60x60		
		Rb-44	Straight Through or Right Turn Only		60x60		
N/A	N/A	Rb-19	Do Not Enter	Traffic Light Pole	60x60	10+694	LT
N/A	N/A	Rc-4A	No Littering	Wood 10x10	60x90	10+694	LT
N/A	N/A	Rb-10	No Straight Through	Mast Arm	60x60	10+696	LT
N/A	N/A	Rb-19	Do Not Enter	Wood 10x10	60x60	10+700	RT
N/A	N/A	Rb-10	No Straight Through	Mast Arm	60x60	10+705	LT
N/A	N/A	Rb-79R	No Right Turn On Red	Mast Arm	60x90	10+705	LT
Interim Ramp S-S							
N/A	N/A	Rb-68	No Pedestrians or Bicycles	Steel	60x60	10+010	RT
Ramp N-S							
N/A	N/A	Rc-68	No Pedestrians or Bicycles	Steel	60x60	10+225	RT
N/A	N/A	Wa-116 (mod)	Merge	Wood 15x15	90x90	10+414	LT
N/A	N/A	Wa-123	Lane Ends	Wood 15x15	90x90	10+606	LT
		Wa-123t	300 m		45x90		
Holborn Rd.							
N/A	N/A	Wa-8	Checkerboard	Wood 10x10	75x75	9+942	CL
N/A	N/A	Wa-8	Checkerboard	Wood 10x10	75x75	10+054	CL
Boag Rd.							
N/A	N/A	Wa-25	Pavement Ends	Wood 10x10	75x75	9+993	RT
		Wa-25t	Pavement Ends Tab		30x60		
N/A	N/A	Wa-25	Pavement Ends	Wood 10x10	75x75	10+007	LT
		Wa-25t	Pavement Ends Tab		30x60		
Woodbine Ave.							
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	9+375	RT
		M.h-8	Advance Right Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-8	Advance Right Arrow		45x60		

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
		Wa-23R	Road Narrows		75x75	9+400	LT
N/A	N/A	Wb-102	Traffic Signals Ahead	Wood 10x10	75x75	9+428	RT
N/A	N/A	Wa-123R	Lane Ends	Wood 15x15	90x90	9+488	LT
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	9+623	RT
		M.h-11	Right Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-11	Right Arrow		45x60		
N/A	N/A	Wa-123R	Lane Ends	Wood 15x15	90x90	9+638	LT
		Wa-123t	Distance Tab		45x90		
N/A	N/A	Rb-125	Keep Right	Steel	60x90	9+679	LT
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Wa-33L	Object Marker (One Direction)	Steel	30x90	9+696	LT
N/A	N/A	Rb-11	No Right Turn	Mast Arm	60x60	9+699	LT
N/A	N/A	Rb-121	One Way	Steel	60x180	9+701	LT
N/A	N/A	Rb-121	One Way	Steel	60x180	9+701	LT
N/A	N/A	Rb-125	Keep Right	Steel	60x90	9+703	LT
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Rb-11	No Right Turn	Mast Arm	60x60	9+703	LT
N/A	N/A	Rb-121	One Way	Steel	60x180	9+730	LT
N/A	N/A	Rb-121	One Way	Steel	60x180	9+730	LT
N/A	N/A	Rb-12	No Left Turn	Mast Arm	60x60	9+746	CL
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	9+747	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	IB-23	YORK REGION – Bike Route	On Pole	45x45	9+747	RT
N/A	N/A	Rb-12	No Left Turn	Mast Arm	60x60	9+755	RT
N/A	N/A	G.r-3	Advanced Left Arrow, 404, South, Toronto	Wood 15x15 – 2 posts	120x240	9+775	RT
N/A	N/A	Rb-125	Keep Right	Steel	60x90	9+787	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	9+811	LT
		M.h-11	Left Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-11	Left Arrow		45x60		
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	9+840	LT
		Wa-23R	Road Narrows		75x75	9+965	RT
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	9+975	LT
		M.h-8	Advance Right Arrow		45x60		
		B-18	GO Transit Marker		60x60		

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
		M.h-8	Advance Right Arrow		45x60		
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	9+999	LT
N/A	N/A	G.r-4	404, South, Toronto, Left Arrow	Wood 15x15 – 2 posts	120x240	10+000	RT
N/A	N/A	Ra-102	YORK REGION – Bike Yield	Wood 15x15	90x90	10+011	LT
N/A	N/A	Wc-14	YORK REGION – Bike	Wood 15x15	90x90	10+050	LT
		Wc-14t	YORK REGION – Crossing		90		
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	10+071	RT
N/A	N/A	G.r-108	32, Ravenshoe Road	Wood 15x15 – 2 posts	60x180	10+090	RT
		G.d-3	Straight Arrow, Sutton		30x180		
		G.d-4	Brown Hill, Right Arrow		30x180		
N/A	N/A	Ra-102	YORK REGION – Bike Yield	Wood 15x15	90x90	10+181	LT
N/A	N/A	Wc-14	YORK REGION – Bike	Wood 15x15	90x90	10+214	LT
		Wc-14t	YORK REGION – Crossing		90		
N/A	N/A	G.r-2	404, South, Toronto, Turn Off Right Arrow	Wood 15x15 – 2 Posts	90x210	10+227	LT
N/A	N/A	Wa-3R	Curve	Steel	60x60	10+250	LT
N/A	N/A	Wa-57R	Two Right Lane Exit	Wood 15x15	120x120	10+259	LT
N/A	N/A	Wb-102	Traffic Signals Ahead	Wood 10x10	75x75	10+304	RT
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	10+337	RT
N/A	N/A	Rb-1A	Maximum 80 km/h	Steel	60x90	10+338	LT
N/A	N/A	Wa-56R	Right Lane Exits	Wood 15x15	90x90	10+357	RT
N/A	N/A	G.r-1	404, South, Toronto, Advance Turn Right Arrow	Wood 15x15 – 2 posts	120x240	10+400	RT
N/A	N/A	Wa-51R	Right Lane Exits, Next Lane Exit or Through	Wood 15x15	120x150	10+437	LT
N/A	N/A	Wa-56R	Right Lane Exits	Wood 15x15	90x90	10+451	RT
N/A	N/A	M.h-4	County/Regional Road Marker	Steel	45x45	10+455	LT
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	10+483	LT
N/A	N/A	Rb-125	Keep Right	Steel	60x90	10+496	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Wa-56R	Right Lane Exits	Wood	90x90	10+511	RT

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
				15x15			
N/A	N/A	Rb-125	Keep Right	Steel	60x90	10+523	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	10+579	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Rb-184A	Reserved Bicycle Lane (Ground-mounted)	Wood 15x15	90x90	10+582	LT
		Rb-185t	End Tab		30x90		
N/A	N/A	M.h-22	To 404	Wood 15x15	45x45	10+591	LT
		M.h-13S	SOUTH		30x45		
		M.h-10	Straight Arrow		30x45		
		B-18	Carpool Marker	Wood 15x15	60x60		
		M.h-10	Straight Arrow		45x60		
		B-18	GO Transit Marker		60x60		
N/A	N/A	M.h-10	Straight Arrow		45x60		
		Rb-21	One Way	Steel	30x90	10+595	RT
IB-23	YORK REGION – Bike Route	45x45					
N/A	N/A	Rb-125	Keep Right	Steel	60x90	10+601	RT
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	G.l-1	Municipality	TBD	165x240	10+672	RT
		Rb-152 (mod)	No Parking (With Days and Times)		60x90		
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	10+687	RT
N/A	N/A	Rb-1	Maximum 80	Steel	60x75	10+699	RT
N/A	N/A	M.h-4	Region, 8, York	Steel	45x45	10+730	RT
N/A	N/A	Wb-102	Traffic Signals Ahead	Wood 10x10	75x75	10+789	LT
Ravenshoe Rd.							
N/A	N/A	M.h-22	To 404	Wood 15x15	45x45	9+313	RT
		M.h-13S	SOUTH		30x45		
		M.h-8	Advanced Right Arrow		30x45		
		B-18	Carpool Marker		60x60		
		M.h-8	Advanced Right Arrow		45x60		
		B-18	GO Transit Marker		60x60		
N/A	N/A	M.h-8	Advanced Right Arrow		45x60		
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	9+575	LT
N/A	N/A	Rb-125	Keep Right	Steel	60x90	9+606	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	M.h-22	To 404	Wood 15x15	45x45	9+704	RT
		M.h-13S	SOUTH		30x45		
		M.h-11	Right Arrow		30x45		

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
		B-18	Carpool Marker		60x60		
		M.h-11	Right Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-11	Right Arrow		45x60		
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	9+632	LT
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	9+686	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	M.h-22	To 404	Wood 15x15	45x45	9+613	RT
		M.h-13S	SOUTH		30x45		
		M.h-11	Left Arrow		30x45		
		B-18	Carpool Marker		60x60		
		M.h-11	Left Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-11	Left Arrow		45x60		
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	9+712	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	M.h-4	Region, 32, York	Steel	45x45	9+731	RT
N/A	N/A	IB-23	YORK REGION – Bike Route	Steel	45x45	9+750	RT
N/A	N/A	G.r-108	Turn-off	Wood 10x10 – 2 posts	60x180	9+923	LT
		G.d-3	Destination Tab		30x180		
		G.d-4	Destination Tab		30x180		
		G.d-4	Destination Tab		30x180		
N/A	N/A	Wb-2	Traffic Signal Ahead	Steel	75x75	9+965	LT
N/A	N/A	M.h-22	To 404	Wood 15x15	45x45	9+995	LT
		M.h-13S	SOUTH		30x45		
		M.h-8	Advanced Left Arrow		30x45		
		B-18	Carpool Marker		60x60		
		M.h-8	Advanced Left Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-8	Advanced Left Arrow		45x60		
Commuter Parking Lot Entrance							
N/A	N/A	G.f-15	8, Woodbine Avenue, Left Arrow, North, South, Right Arrow	Wood 15x15 – 2 Posts	45x120	10+016	RT
		Non-Std.	Left Arrow, To, 32, Ravenshoe Road		30x150		
N/A	N/A	B-18	Carpool Marker	Wood 15x15	60x60	10+016	RT
		M.h-10	Straight Arrow		45x60		
		B-18	GO Transit Marker		60x60		
		M.h-10	Straight Arrow		45x60		
N/A	N/A	Rb-9a	Cross Other Side	On Pole	30x45	10+018	LT
N/A	N/A	Rb-125	Keep Right	On Pole	60x90	10+022	CL
		Wa-33L	Object Marker (One		30x90		

Existing Location		Sign Type	Message	Support Type	Sign Size (cm)	Proposed Location	
Station	Offset					Station	Offset
			Direction)				
N/A	N/A	G.r-12a	To 404 South, Turn-off Arrow	Wood 15x15 – 2 Posts	90x240	10+037	LT
N/A	N/A	Rc-13	Seat Beat	Steel	60x60	10+037	LT
N/A	N/A	Wa-32	20 km/h	Steel	60x90	10+037	RT
N/A	N/A	Wa-32	20 km/h	Steel	60x90	10+044	RT
N/A	N/A	Wa-2L	Sharp Curve	Steel	60x60	10+053	RT
N/A	N/A	Rb-125	Keep Right	Wood 10x10	60x90	10+057	CL
		Wa-33L	Object Marker (One Direction)		30x90		
N/A	N/A	B-45	Carpool Lot ID	Steel	120x240	10+059	RT
		B-64	Carpool Lot ID Tab		30x240		
N/A	N/A	8095	MTO Disclaimer	Wood 10x10	45x60	10+073	RT
		8107E	Time Restrictions (English)		60x90		
N/A	N/A	8093	Commercial Vehicles Restriction	Steel	60x90	10+097	RT
N/A	N/A	Rb-51	No Parking	Steel	30x30	10+100	LT
N/A	N/A	Rb-51	No Parking	Steel	30x30	10+100	LT
N/A	N/A	8094	Car Pool Parking Only	Wood 15x15 – 2 Posts	120x240	N/A	N/A
N/A	N/A	Rb-51	No Parking	Steel	30x30	N/A	N/A
N/A	N/A	Rb-51	No Parking	Steel	30x30	N/A	N/A
N/A	N/A	Rb-93	Disable Parking Permit	Steel	30x45	N/A	N/A
N/A	N/A	Rb-93	Disable Parking Permit	Steel	30x45	N/A	N/A
N/A	N/A	Rb-93	Disable Parking Permit	Steel	30x45	N/A	N/A
N/A	N/A	Rb-93	Disable Parking Permit	Steel	30x45	N/A	N/A
N/A	N/A	Rb-93	Disable Parking Permit	Steel	30x45	N/A	N/A
REMOVALS							
Woodbine Ave.							
10+090	RT	G.r-8	32, Ravenshoe Road	Wood 10x10 – 2 posts	60x180	N/A	N/A
		G.d-4B	Straight Arrow, Sutton		30x180		
		G.d-4B	Brown Hill, Right Arrow		30x180		
10+338	LT	Rb-1A	Maximum 80 km/h	Steel	60x90	N/A	N/A
10+455	LT	M.h-4	Region, 8, York		45x45	N/A	N/A
10+699	RT	Rb-1	Maximum 80 km/h	Steel	60x75	N/A	N/A
10+789	LT	Wb-102	Traffic Signals Ahead	Steel	75x75	N/A	N/A
Ravenshoe Rd.							
9+731	RT	M.h-4	Region, 32, York	Steel	45x45	N/A	N/A
9+923	RT	G.r-8	8, Woodbine Avenue	Wood 10x10 – 2 posts	60x180	N/A	N/A
		G.d-4B (mod)	Straight Arrow, Keswick		30x180		
		G.d-4B (mod)	Left Arrow, Newmarket		30x180	N/A	N/A
		G.d-4B (mod)	Sutton, Right Arrow		30x180		

ADVANCED NOTIFICATION/WARNING/DETOUR ROUTE TC-64 SIGNS - Item No. 75

Non-Standard Special Provision

July 2001

SCOPE

This Special Provision covers the requirements for placing Advance Notification/ Warning/ Detour Route TC-64 Signs as well as amending existing Ground Mounted and Overhead Signs.

CONSTRUCTION

The Contractor shall install, maintain, relocate, and remove Advanced Notification/ Warning/ Detour Route TC-64 Signs as indicated in the contract. In addition, the Contractor shall install and remove all temporary overlays to amend existing Ground Mounted and Overhead Signs as indicated in the contract.

All Advanced Notification/Warning/Detour Route TC-64 Signs, as well as any temporary overlays to amend existing signs, shall conform to the guidelines specified in the "*Temporary Conditions Traffic Management*" (April 2001) manual as revised by the following.

The Advanced Notification TC-64 Sign phase shall be installed a minimum of _____* calendar days prior to any lane reductions or closures. If any changes to the message details (i.e. dates, times, etc.) are required, as a result of the contractor's operations during the construction period they shall be completed with no additional payment to the Contractor.

Placement and removal of tabs, permanent and temporary overlays, shall be as indicated in the contract.

Temporary overlays placed on Ground Mounted and Overhead Signs shall be installed with self-tapping #3 Teks screws placed at 30cm centres.

There shall be no more than 2 overlays on Advanced Notification/Warning/Detour Route TC-64 Signs at any one time.

MEASUREMENT FOR PAYMENT

Measurement is by Plan Quantity as may be revised by Adjusted Plan Quantity for each sign installed.

BASIS OF PAYMENT

Payment at the contract price for the above tender item shall be full compensation for all labour, equipment, and material required to do the work. Progress Payments shall be made on the following basis:

- 60% for initial installation;
- 20% for maintenance, relocation, placement and removal of tabs and overlays;
- 20% for removal.

On each occasion when the Contractor fails to install the Advanced Notification/Warning/Detour Route TC-64 Signs in accordance with the above requirements, fails to revise the TC-64 signs as required by the TCTM manual, or fails to remove the TC-64 signs within two hours of re-opening of the affected roadway, the

Ministry will assess a penalty of \$2,000.00. A further penalty of \$2000.00 per calendar day or part thereof, with no maximum penalty, shall be assessed until such time as the situation is rectified.

To obtain a copy of the above noted manual, contact:

Ministry of Transportation of Ontario
Central Region Traffic Office
1201 Wilson Avenue
Building D, 6th Floor
Toronto, Ontario
M3M 1J8

Telephone: 416-235-5595

NOTES TO DESIGNER:

- * Insert the applicable number of days required for the Advanced Notification Signs to be in place prior to construction beginning, as required by the Temporary Conditions Traffic Management Manual.
- The Designer shall show each sign location in plan view on the contract drawings or attached to this NSSP.
- The Designer shall show individual message details including permanent and temporary overlays and tabs for each TC-64 sign, as well as amendments to existing Ground Mounted and Overhead Signs, either on the contract drawings or attached to this NSSP.
- Plan view drawings and message details require approval of the Regional Traffic Office.
- The Design shall show individual line entries on the quantity sheet by stages, for each sign showing Hwy, station, location and offset.
- This is a non-standard item. Contact the Contract Documentation and Control Unit (MTO), for the item to be inserted on the Form of Tender.

WARRANT: Always with this tender item.

DELINEATOR POSTS - Item No. 76

Special Provision

Median Snow Plow Markers Installation

Median snow plow marker (Wz-4, 25cmx25cm) shall be installed along the northbound and southbound median lanes and at 2m offset from the edge of traveled portion with the bottom of marker approximately 1.2m above the traveled portion.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work including the supply and installation of these median snow plow markers.

TEMPORARY CONCRETE BARRIER - Item No. 81

Special Provision

Sept. 28, 1993

Stinson Delineator

Section 553.05 of OPSS 553 is extended to include the following:

Materials

Barrier Delineators

Delineators shall be "Stinson Concrete Barrier Markers" available from:

Stinson Equipment
Concord, Ontario
L4K 1P2
(416) 669-2360

Section 553.07 of OPSS 552 is extended to include the following:

Construction

Signing

Delineators shall be installed according to manufacturers instructions on every second barrier unit at a spacing of 8 m.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

Retro Reflectors and Portable Temporary Barrier Delineators

553.07.04 Reflectors

Subsection 553.07.04 of OPSS 553, February 1991 is amended by the addition of the following:

Retro reflectors shall be high intensity and placed on top of the temporary concrete barrier and maintained at all times. The reflectors shall be anchored in place by ramset on every concrete barrier section at 4 metre centres.

Reflectors shall be clearly visible at all times and shall be a minimum of 75mm square.

Reflectors shall be visible in both directions for two-way traffic when applicable.

The reflectivity shall be at least equal to C.G.S.B. Standard 62-G.P.-11M for classification a (Section 4) Type 1, Reflectivity Level 2 Engineering Grade and shall be of any class.

TEMPORARY CONCRETE BARRIER LEFT IN PLACE - Item No. 82

Special Provision

Temporary Concrete Barrier To Remain Property of Owner

553.05 MATERIALS

553.05.03 Precast Concrete Barrier

Subsection 553.05.03 of OPSS 553 is amended by the addition of the following:

All temporary concrete barrier identified as permanent installation shall be new temporary concrete barrier conforming to the requirements specified in OPSS 553.

553.07 CONSTRUCTION

553.07.02 Temporary Concrete Barrier

Subsection 553.07.02 of OPSS 553 is amended by the addition of the following:

All temporary concrete barrier identified as permanent installation shall be left on site at the completion of the project in accordance with the details specified elsewhere in the Contract and will become the property of the Owner.

553.10 BASIS OF PAYMENT

553.10.04 Temporary Concrete Barrier Left in Place - Item

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

STEEL BEAM ENERGY ATTENUATING TERMINAL SYSTEM - Item No. 83

Special Provision

Snow Plow Markers and Object Markers Installation

This specification covers the requirements for snow plow and object markers installation at the following locations:

Object markers (Wa-33L, or Wa-33R) and snow plow markers (Oversize Wz-2, 25cmx25cm) shall be installed in accordance with the MTOD 984.201 at the northbound and southbound approach ends of steel beam energy attenuating terminal system connected to the Boag Road twin overpass structures.

Snow plow marker (Wz-2) shall be installed at the leaving ends of Boag Road twin overpass structures.

Object marker (Wa-33L, Wa-33R) and snow plow marker (Oversize Wz-2, 25cmx25cm) shall be installed at the approach and leaving ends of the toe wall on Boag Road connected to abutments of twin overpass structures.

Snow plow markers shall be picked up, delivered on site and installed by the contractor together with the steel beam energy attenuating terminal systems and toe walls.

Object markers (Wa-33R, Wa-33L) shall be picked up, delivered and installed by the contractor together with the steel beam energy attenuating terminal system/toe wall. Object markers shall be paid as part of the Traffic Control Signing tender item.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work, including the pick up, temporary storage, deliver and installation of these object markers/snow plow markers. No other additional payment shall be made to the Contractor.

HEAVY-DUTY SILT FENCE BARRIERS - Item No. 85

STRAW BALE FLOW CHECK DAMS - Item No. 86

OPSS 577, **Construction Specification For Temporary Erosion And Sediment Control Measures, February 1996**, is amended as follows:

CONSTRUCTION

577.07.01 Operational Constraints

Subsection 577.07.01 of OPSS 577, February 1996, is amended by the addition of the following:

577.07.01.03 Timing of Control Measure Installation and Removal

Further to requirements specified in the Contract Documents, the following items shall be installed and removed according to the timing constraints set out below:

Item Description	Location	Timing Constraints	
		Installation	Removal
??	??	??	??
??	??	??	??
??	??	??	??

PERMANENT ROCK FLOW CHECKS - Item No. 87

Special Provision

SCOPE

This special provision describes the requirements for installation, maintenance of rock flow checks.

MATERIALS

Flow Check Rock

Flow check rock shall comply with the requirements for riprap and gabion stone as specified in Subsection 1004.05.06.01 of OPSS 1004.

Geotextile

Rock flow check geotextile shall conform to the requirements of OPSS 1860 and shall be free of holes, tears, and punctures. It shall contain stabilizers or inhibitors to resist deterioration by ultra-violet radiation. It shall be a woven, Class II geotextile and have a filtration opening size (FOS) of 300 micrometres maximum, meeting CAN/CGSB 148.1, Method 10.2.

CONSTRUCTION

Installation

Rock flow checks shall include protection placed at the low point of the flow checks, against the downstream side, so that any overflow is prevented from causing soil scour, erosion or both.

Rock flow checks shall be installed so as to prevent sediment passage from the upstream to the downstream side of the flow check, and in compliance with Table `T` (below).

TABLE `T`

LOCATION OF ROCK FLOW CHECKS	REQUIRED TIMING FOR FLOW CHECK INSTALLATION
Outlet channel of stormwater Management Pond #7	After completion of channel, before seeding and mulch is in place.

A first lift of rock shall be piled across the ditch or channel to a height of 450 mm above the lowest point of the ditch or channel. The upstream slope of the flow check shall be 1.5 : 1 maximum. The downstream slope of the flow check shall be 4 : 1 maximum. The top of the first lift shall be of sufficient width to accommodate the second lift of rock.

A trench measuring approximately 200 mm wide by 200 mm deep shall be excavated along the entire length of the upstream side of the flow check. A sheet of rock flow check geotextile shall be placed on the downstream side of the trench so as to extend the entire length of the completed flow check as follows:

- (a) a minimum of 300 mm into the trench;
- (b) over the first lift of rock;
- (c) up the side-slopes of the ditch or channel to the fullest extent covered by the completed flow check; and
- (d) a minimum of 2 m downstream of the first lift of rock.

The trench shall be backfilled to existing grade so as to hold the geotextile firmly in place.

A second lift of rock shall be placed over the geotextile and first lift of rock so as to form a spillway and anchor the geotextile as follows:

- (a) The minimum depth of rock over the geotextile shall be 100 mm.
- (b) The tops of the ends of the completed flow check shall be a minimum of 700 mm above the lowest point of the ditch or channel.
- (c) A level spillway measuring 150 mm deep shall be formed in the top of the flow check so that it extends from the upstream to the downstream side, and is centred over the lowest portion of the ditch or channel. Where rock flow checks are to be installed in V-shaped ditches, the spillway shall be 600 mm centred on the ditch. Where rock flow checks are to be installed in channels or trapezoidal-shaped ditches, the spillway shall extend to the greater of the following:

- (i) 600 mm centred on the ditch; or
- (ii) to the point where the channel or ditch side slopes meet the bottom of the channel or ditch.

Maintenance

At all times including winter shutdown, rock flow checks shall be maintained in place, without gaps, and without undermining, so as to prevent sediment passage through or under the flow check.

Sediment Removal

Accumulated sediment shall be removed in a manner that avoids escape to the downstream side of the flow checks and avoids damage to them. Sediment shall be removed to the level of the grade existing at the time of flow check installation and shall be in compliance with the following:

- (a) Accumulated sediment shall be removed when it reaches a depth of one-half the effective height of rock flow checks (determined relative to the lowest point of the flow check).
- (b) Accumulated sediment shall be removed as necessary to effect maintenance repairs.

Accumulated sediment shall be managed as excess earth material, as specified elsewhere in the Contract.

MEASUREMENT FOR PAYMENT

Plan Quantity Measurement

Measurement will be by Plan Quantity, as may be revised by Adjusted Plan Quantity, of the number of rock flow checks installed. The unit of measurement is each.

BASIS OF PAYMENT

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work, with the following exceptions:

Sediment removal will be paid according to Extra Work provisions of the Contract.

Where, in the opinion of the Contract Administrator, damage to rock flow checks has not resulted from the Contractor's operation, or failure to provide maintenance and sediment removal as specified, repair of damage to rock flow checks will be paid in accordance with Extra Work provisions of the Contract.

Payment will be made as follows:

- 60% for supply and initial installation.
- 40% to be prorated over the length of time of the contract.

ENERGY ATTENUATOR - PERMANENT, SINGLE SIDED - Item No. 89
ENERGY ATTENUATOR - TEMPORARY, NARROW - Item No. 90

Special Provision

Snow Plow Markers, Flexible Delineator Post and Object Markers Installation

This specification covers the requirements for snow plow and object markers installation at the temporary and permanent energy attenuators.

The snow plow marker shall be oversized Wz-2 sign, 25x25cm as per MTOD 984.203 and 984.204.

Snow plow markers shall be picked up, temporary storage if required, delivered on site and installed by the contractor together with the energy attenuators.

Flexible delineator posts shall be supply and installed by the contractor as per the MTOD.

Object markers (Wa-33R, Wa-33L, Wa-33LR) shall be picked up, delivered, installed by the contractor together with the energy attenuator and shall be paid as part of the Traffic Control Signing tender item.

Construction

On approach end, the markers shall be installed 2.0m in front of the energy attenuator as per the applicable MTOD. For temporary installation, flexible delineator posts shall be installed in front of the markers on shoulder of less than 2.0m wide and at the gore area.

Roadway widening for the installation of single side energy attenuating terminals grading shall be done as per MTOD 202.033.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work. No additional payment for the supply of flexible delineator posts and pick up, delivery of the snow plow markers, object markers and flexible delineator posts.

GEOGRID - Item No. 91

Special Provision

Scope of Work

This special provision covers the requirements for placing geogrid as shown in the contract drawings.

Material

The geogrid shall be Tensar BX1100 or equivalent. Suppliers wishing to bid on the project should provide proof that their products are equivalent or better than BX1100.

Construction

The grade shall be uniform and shaped for drainage prior to placing the geogrid. A geotextile shall be placed beneath the geogrid as shown on the contract drawings. The geogrid shall be placed with rolls extending in the longitudinal direction. A 300 mm minimum overlap shall be provided at longitudinal seams and a 600 mm minimum overlap at transverse seams. The seams shall be securely tied to make one continuous mat and be free of folds or tears. No construction equipment shall be permitted directly on the geogrid. A minimum

thickness of 300 mm granular material shall be placed over the geogrid before spreading and compaction equipment is used.

Measurement for Payment

Geogrid will be measured in place in square metres with no allowance for overlap.

Basis for Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

Special Provision

Scope of Work

This special provision covers the requirements for placing geotextile as shown in the contract drawings.

Material

The geotextile shall be non-woven, Class II according to OPSS 1860, with a FOS of 75-150um.

Construction

The grade shall be uniform and shaped for drainage prior to placing the geotextile. Geotextile shall be placed free of folds or tears with all seams overlapped a minimum of 500 mm. The placement operation shall be such that the geotextile is not exposed to daylight for more than 3 days. Geotextile shall be wrapped down into the ground a minimum of 300 mm at termination points. No construction equipment shall be permitted directly on the geotextile. A minimum thickness of 300 mm granular material shall be placed over the geotextile before spreading and compaction equipment is used.

Measurement for Payment

Geogrid will be measured in place in square metres with no allowance for overlap.

Basis for Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments to do the work.

SNOW FENCE - Item No. 92

Special Provision

Scope

This specification covers the requirements for the supply, erection and maintenance of the snow fence where shown on the Contract Drawings.

Materials

Steel T-posts shall conform to OPSS 1540.

Construction

A 1.2 m high snow fence shall be constructed of standard wood lath, or approved equivalent, supported by steel T-posts placed at a minimum spacing of 2.4 m, without breaks. Additional T-posts are required to secure the ends.

End posts should be 1.8m or less from the adjacent post to facilitate bracing. The end post should be braced with a steel post driven into the ground at an angle so as to extend from the near top of the end post to the ground line of the adjacent post and wired into place.

The 2.0m high steel T-posts with clips shall be driven a minimum of 1.0 m below grade. A bottom gap of 15cm should be left under the fence. Care shall be taken in driving the steel T-posts to ensure they will not be bent.

Minor undulations which would interfere with the construction and effectiveness of the fence shall be levelled prior to starting fence construction.

The snow fence shall be erected, maintained erect and in good repair throughout the duration of construction operations. After completion of the contract, the snow fence shall be kept on site at locations as specified in the Contract Drawings. Snow fence shall be monitored and maintained during the warranty period upon completion of the Contract.

Measurement For Payment

Measurement for payment will be made along the centreline of the snow fence in metres as erected, measured from end to end of installation.

Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

CONCRETE IN TOE WALL - Item No. 93

Special Provision

1.0 SCOPE

This special provision covers the requirements for the construction of the concrete toe wall as identified on the contract drawings.

2.0 MATERIAL

Concrete shall conform to OPSS 904.

Granular “A” backfill shall conform to OPSS 206, 902, 1010.

Pipe sub drains (if required) shall conform to OPSS 405.

3.0 CERTIFICATES OF CONFORMANCE

The Contractor shall submit to the Contract Administrator a certificate of conformance for the reinforcing steel placement in the wall. The certificate of conformance shall state that the reinforcing steel on the shop drawing has been fabricated in accordance with the contract drawings.

The Contractor shall submit to the Contract Administrator a certificate of conformance for the construction of the wall. The certificate of conformance shall state that the reinforcing steel has been placed in accordance with the contract drawings and that all the elevations and dimensions of the wall are also in accordance with the contract drawings.

4.0 CONSTRUCTION

Excavation and backfill shall conform with the requirements of OPSS 902.

Construction of the concrete wall shall conform with the requirements of OPSS 904.

Reinforcing steel bar supply and placement shall conform with the requirements of OPSS 905.

5.0 BASIS OF PAYMENT

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work. This includes, but is not limited to, all excavation and backfilling as well as the construction of the toe wall.

OUTLET STRUCTURES - Item No. 94

Special Provision

Scope

This special provision covers the work requirements for the construction of the outlet structures at the five (5) stormwater management ponds at the locations shown on the contract drawings.

The concrete headwall, grate, site access, temporary sediment and erosion controls, and any restoration requirements (i.e. landscaping) are not included as part of this item.

The scope of work for this tender item includes the following, all as detailed on the contract drawings:

At Stormwater Management Pond, SWM#6:

- A 1500mm diameter pre-cast Manhole #4 (OPSD 701.011) complete with the two (2) orifice plates, one (1) grate and frame (OPSD 400.120);

- A 10.2m long 300mm diameter PVC reverse flow pipe connected to Manhole #4, complete with granular bedding/cover materials;
- A 1200mm diameter pre-cast Manhole #6 (OPSD 701.010) complete with a 200mm diameter gate valve for the 200mm PVC pipe, grate and frame (OPSD 401.010-Type A);
- A 16.2m long 200mm diameter PVC pipe connected to Manhole #6.
- Granular backfill to the structures.
- Manhole construction as per OPSS 407 (MTC Form 407, March 1984) and compaction as per OPSS 501.
- Earth excavation as required.

At Stormwater Management Pond, SWM#7:

- A 1500mm diameter pre-cast Manhole #9 (OPSD 701.011) complete with the two (2) orifice plates, one (1) grate and frame (OPSD 400.120);
- A 11.3m long 200mm diameter PVC reverse flow pipe connected to Manhole #9, complete with granular bedding/cover materials;
- A 1200mm diameter pre-cast Manhole #7 (OPSD 701.010) complete with a 200mm diameter gate valve for the 200mm PVC pipe, grate and frame (OPSD 401.010-Type A);
- A 19.3m long 200mm diameter PVC pipe connected to Manhole #7.
- Granular backfill to the structures.
- Manhole construction as per OPSS 407 (MTC Form 407, March 1984) and compaction as per OPSS 501.
- Earth excavation as required.

At Stormwater Management Pond, Holborn Road:

- A 1500mm diameter pre-cast Manhole #13 (OPSD 701.011) complete with the two (2) orifice plates, one (1) grate and frame (OPSD 400.120);
- A 7.9m long 200mm diameter PVC reverse flow pipe connected to Manhole #13, complete with granular bedding/cover materials;
- Earth excavation as required.
- Granular backfill to the structures.
- Manhole construction as per OPSS 407 (MTC Form 407, March 1984) and compaction as per OPSS 501.

At Stormwater Management Pond, SWM#8:

- A 2400mm diameter pre-cast Manhole #15 (OPSD 701.013/OPSD703.023) for twin inlets, complete with the two (2) orifice plates, two (2) grate and frame (OPSD 400.120);
- A 8.3m long 300mm diameter PVC reverse flow pipe connected to Manhole #15, complete with granular bedding/cover materials;
- A 1200mm diameter pre-cast Manhole #16 (OPSD 701.010) complete with a 150mm diameter gate valve for the 150mm PVC pipe, grate and frame (OPSD 401.010-Type A);
- A 18.5m long 300mm diameter PVC maintenance drain pipe connected to Manhole #16.
- Earth excavation as required.
- Granular backfill to the structures.
- Manhole construction as per OPSS 407 (MTC Form 407, March 1984) and compaction as per OPSS 501.

At Stormwater Management Pond, SWM#9:

- A 1500mm diameter pre-cast Manhole #26 (OPSD 701.011), complete with the two (2) orifice plates, grate and frame (OPSD 400.120);

- A 10.3m long 300mm diameter PVC reverse flow pipe connected to Manhole #26, complete with granular bedding/cover materials;
- Earth excavation as required.
- Granular backfill to the structures.
- Manhole construction as per OPSS 407 (MTC Form 407, March 1984) and compaction as per OPSS 501.

Construction

The Outlet Structures for five (5) stormwater management ponds shall be constructed in accordance with the Contract Drawings and shall adhere to all specified elevations including, but not limited to, the top of concrete bases in the CSP risers, inlet and outlet inverts, and centreline of reverse flow pipe. Orifices shall be placed in accordance with the manufacturer’s specifications and orifice opening sizes shall adhere to those specified on the Contract Drawings. The inlets of the reverse flow pipes are to be connected to headwalls as shown on the Contract Drawings.

Upon completion of upstream grading and planting, any sediment that has been collected in the ponds and any sediment collected within and around the outlet structures shall be removed.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

Payment for earth excavation for forming the stormwater management ponds will be made under the tender item of Earth Excavation (Grading).

Payment for other manholes and sewer pipe in the stormwater management ponds will be made under their respective tender items.

RAMP CLOSURE GATES - Item No. 95

Special Provision

August 2010

CONSTRUCTION SPECIFICATION FOR RAMP CLOSURE GATES

TABLE OF CONTENTS

1.0	SCOPE
2.0	REFERENCES
3.0	DEFINITIONS - Not Used
4.0	SUBMISSION AND DESIGN REQUIREMENTS
5.0	MATERIALS
6.0	EQUIPMENT - Not Used

7.0 CONSTRUCTION
8.0 QUALITY ASSURANCE
9.0 MEASUREMENT FOR PAYMENT
10.0 BASIS OF PAYMENT

1.0 SCOPE

This Special Provision covers the requirements for the supply and installation of ramp closure gates.

2.0 REFERENCES

This Special Provision refers to the following standards and specifications:

Ontario Provincial Standard Specifications, Material:

OPSS 1601 Wood, Preservative Treatment, and Shop Fabrication

Canadian Standards Association (CSA)

HA.4-M1980 Aluminum and Aluminum Alloy Plate and Sheet

HA.7-M1980 Aluminum and Aluminum Alloy Drawn Seamless Tube, extruded Seamless Tube, and Seamless Pipe

W59.2-M1991 (R2008) Welded Aluminum Construction

4.0 SUBMISSION AND DESIGN REQUIREMENTS

4.01 Submissions

4.01.01 Shop Drawings and Welding Procedures

Four copies of the manufacturer's shop drawings and welding procedures shall be submitted to the Contract Administrator. The applicable welding procedures, stamped as approved by the Canadian Welding Bureau, shall be attached to the shop drawings.

Installation of the ramp closure gate shall not commence until the Contract Administrator has received the copies of the shop drawings and welding procedures.

5.0 MATERIALS

5.01 Aluminum

Extruded aluminum tubing for the ramp closure gate shall be 6061-T6 alloy according to CSA HA.7. Aluminum sheet and plate for the ramp closure gate shall be 6061-T6 alloy according to CSA HA.4.

5.02 Gate Posts

All posts shall be of galvanized steel pipe, and shall conform to CAN2/CGSB-138.2.

(a) at each single ramp closure gate installation to which the free end of the gate will be secured when it is in the closed and open positions; and

(b) at each double ramp closure gate installation to which the free end of each gate will be secured when in the open position. Double ramp closure gates will be secured to each other by means of a chain when they are in the closed position.

Ramp closure gates shall be secured to the post by means of the padlock supplied by the Ministry as described in Section 5.03 below. Wooden posts shall be direct buried.

5.03 Gates and Posts

Ramp closure gates shall be manufactured according to the Contract Documents and all joints shall be welded according to CSA W59.2.

Ramp closure gate latches and the chain to secure the double gate in the closed position shall be suitable for the use of padlocks which can be attached and operated from either side of the gate. The Ministry will supply the padlocks with a 5/16" shaft which will require a minimum 3/8" hole.

Ramp closure gates shall be supplied completely assembled and shall be obtained from one of the following designated suppliers:

AMG Metals Inc. 34 Holtby Avenue Brampton ON L6X 2M1 Phone: 905-453-6113 Fax: 905-453-9664 Email: info@amgmetals.com	A.J. Braun Mfg. Limited 116 Hanson Avenue Kitchener ON N2C 2E2 Phone: 519-745-5812 Fax: 519-745-0271 Email: info@ajbraun.com
--	--

5.04 Fittings and Accessories

All required fittings and accessories shall be made of aluminium unless otherwise specified in the Contract Documents.

7.0 CONSTRUCTION

7.01 General

Ramp closure gates and posts shall be installed according to and at locations specified in the Contract Documents.

7.02 Site Preparation

Prior to the erection of the ramp closure gate, any debris shall be removed and ground undulations shall be corrected to obtain a smooth, uniform gradient.

Trees, stumps, and brush shall be cut off at ground level and any overhanging branches that would interfere with the operation of the gate shall be removed.

7.03 Post Installation

Gate posts shall be installed plumb and set to the alignment and grade at the locations specified in the Contract Documents, regardless of the material encountered.

Post shall be cut to the height specified in the Contract Documents.

7.04 Concrete Footings

All posts set in earth, loose or friable rock, or where overburden to solid rock is 450 mm or greater, shall be set in concrete footings, shall be rough cast in the ground and domed above grade to shed water, and to the dimensions shown in the contract. Where the size of the hole exceeds the minimum dimensions of the footings, the Contractor shall either place the footing against undisturbed ground or shall backfill the hole with suitable earth material compacted to a density of 95% of maximum dry density and then bore a hole to the required minimum dimensions.

All posts in solid rock or where overburden is less than 450 mm, holes for posts shall be drilled in the rock to a minimum depth of 380 mm with the diameter 25 mm greater than the outside diameter of the post. The annular space around the post shall be filled with non-shrink cement grout.

For footings required in concrete, non shrink cement grout shall be placed as shown in the contract.

Concrete placing, curing, testing and protection from the elements shall conform to OPSS 904.

7.05 Ramp Closure Gate Vertical Clearance

The vertical clearance above the ramp pavement shall be according to the Contract Documents. The surface grade within the required gate sweep area shall be low enough to permit free movement of the gate.

7.06 Management of Excess Material

Management of excess material shall be according to OPSS 180.

7.07 Zinc Coating Repairs

All abraded and damaged galvanized surfaces shall be cleaned and painted. Damaged areas shall be thoroughly wire brushed and all loose and cracked zinc coating removed, after which the cleaned area shall be painted with two coats of a zinc pigmented paint approved by the Authority for this purpose.

8.0 QUALITY ASSURANCE

The Contract Administrator may request documentation and obtain and test components to ensure compliance with this specification.

The Contract Administrator may perform a visual inspection to determine conformance with the workmanship, design, and dimensional requirements of this specification, including but not limited to the following:

- All posts shall be true to alignment and plumb; and
- Gates shall move freely.

Material not in compliance shall be removed from the work area and replaced.

9.0 MEASUREMENT FOR PAYMENT

9.01 Ramp Closure Gate

Measurement is by Plan Quantity as may be revised by Adjusted Plan Quantity, for the supply and installation of complete gates and concrete footing. Measurement will be made in units of each, regardless of the size and type of gate erected.

10.0 BASIS OF PAYMENT

Ramp Closure Gate – Item

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

Cost associated with any required repairs or removals and replacements of defective materials or workmanship shall be the Contractor's responsibility at no extra cost to the owner.

SWING GATES - Item No. 96

Special Provision

1.0 SCOPE

This specification covers the requirements for the construction of swing gates for pond access.

2.0 REFERENCES

This specification refers to the following standards, specifications or publications:

Ontario Provincial Standard Specifications, Construction:

OPSS 904, January 1995	Construction Specification for Concrete Structures
OPSS 180, January 1994	Management and Disposal of Excess Material

Ontario Provincial Standard Specifications, Material:

OPSS 1350, January 1995	Concrete (Materials and Production)
-------------------------	-------------------------------------

Canadian Standards Association:

CSA-G164-M1981	Hot Dip Galvanizing of Irregularly Shaped Articles
CSA-W59-M1989	Welded Steel Construction (Metal Arc Welding)

3.0 DEFINITIONS

For this specification the following definitions shall apply:

Gate: Defined as the distance between the inside faces of the gate posts.

Gate Posts: The two posts forming a gateway.

Non Shrink Cement Grout: means a bedding compound that is inert and free from shrinkage.

4.0 MATERIALS

4.1 Posts

All posts shall be of galvanized steel pipe, and shall conform to CAN2/CGSB-138.2.

4.2 Gate

Gates shall be constructed from galvanized steel pipe frames and braces, conforming to CAN/CGSB-138.4. All joints shall be electrically welded and coated with a zinc rich paint after welding, or otherwise treated by a procedure approved by the Authority as providing equivalent protection.

All gates shall be supplied with galvanized malleable iron hinges, latch and latch catch and shall be capable of opening 180 degrees. Gate latches shall be suitable for the use of padlocks which can be attached and operated from either side of the gate.

Gates shall be supplied completely assembled as specified elsewhere in the Contract.

4.3 Fittings and Accessories

All required fittings and accessories and galvanizing of such material shall conform to CAN/CGSB-138.2.

All posts shall be fitted with waterproof metal caps designed to fit and fasten securely over the posts.

4.4 Zinc Coating

Zinc coatings shall conform to CAN2/CGSB-138.1, CAN2/CGSB-138.2 and CAN/CGSB-138.4.

4.5 Concrete

Concrete shall conform to OPSS 1350 for 20 MPa concrete.

5.0 CONSTRUCTION

5.1 Site Preparation

Prior to the erection of the swing gate, the Contractor shall remove any debris and correct ground undulations to obtain a smooth, uniform gradient.

The Contractor shall cut off at ground level, such trees, stumps and brush and remove and dispose of such logs, debris and overhanging branches which would interfere with the operation of the gate.

5.2 Post Installation

All posts shall be placed plumb and set accurately in line and position as specified by the Authority.

Posts shall be cut to the required height above the ground to present a smooth and uniform profile.

5.3 Concrete Footings

All posts set in earth, loose or friable rock, or where overburden to solid rock is 450 mm or greater, shall be set in concrete footings, shall be rough cast in the ground and domed above grade to shed water, and to the dimensions shown in the contract. Where the size of the hole exceeds the minimum dimensions of the footings, the Contractor shall either place the footing against undisturbed ground or shall backfill the hole with suitable earth material compacted to a density of 95% of maximum dry density and then bore a hole to the required minimum dimensions.

All posts in solid rock or where overburden is less than 450 mm, holes for posts shall be drilled in the rock to a minimum depth of 380 mm with the diameter 25 mm greater than the outside diameter of the post. The annular space around the post shall be filled with non-shrink cement grout.

For footings required in concrete, non shrink cement grout shall be placed as shown in the contract.

Concrete placing, curing, testing and protection from the elements shall conform to OPSS 904.

5.4 Site Restoration

After gate erection, the Contractor shall clean and trim the site, and restore the ground to a neat and original condition existent prior to the construction of the gate.

5.5 Zinc Coating Repairs

All abraded and damaged galvanized surfaces shall be cleaned and painted. Damaged areas shall be thoroughly wire brushed and all loose and cracked zinc coating removed, after which the cleaned area shall be painted with two coats of a zinc pigmented paint approved by the Authority for this purpose.

5.6 Gate

The work shall include the installation of the size and type of gate as specified in the contract documents, with the necessary fittings and hardware.

5.7 Gate Production and Installation

All gates shall be supplied with galvanized malleable iron hinges, latch, and latch catch and shall be cable of opening approximately 180 degrees. Gate latches shall be suitable for use with padlocks that can be attached and operated from either side of the gate.

Gates shall be supplied completely assembled and all gates shall have a chain hook to hold the gate open .

The surface grade within the required gate sweep area shall be low enough to permit free movement of the gate.

5.8 Management and Disposal of Excess Material

Management and disposal of excess material shall be according to OPSS 180.

6.0 QUALITY CONTROL/ASSURANCE

6.1 Material

The Contractor shall upon request furnish certification of compliance with the material specifications. The Contract Administrator may test any samples supplied at the Contractor's expense, to ensure compliance with the material specifications. Products, represented by the samples, not in compliance shall be removed from the Contract site and replaced at the Contractors expense.

6.2 Construction

The Contractor shall certify that the installation complies with the standards and specifications as detailed in the contract.

The Contract Administrator may perform a visual inspection to determine conformance with the workmanship, design and dimensional requirements of this specification, including but not limited to the following.

All posts shall be true to alignment and plumb. Gates shall move freely.

Failure to conform to the specifications will result in a complete inspection of the installation, and removal or replacement of all defective workmanship or materials. The inspection as well as any required removals or replacement shall be at the Contractors expense. Inspection costs will be \$40 per hour with a minimum charge of \$500.

6.3 Warranty

The Contractor shall correct promptly, at no additional cost to the Owner, defects or deficiencies in the work which appear prior to and during the period of 12 months from the date of substantial performance of the Work, as set out in the Certificate of Substantial Performance of the work, or where there is no Substantial Performance Certificate, 12 months from date of Completion of the Work as set out in the Completion Certificate. The Owner will promptly give the Contractor written notice of observed defects or deficiencies. Failure to correct deficiencies within 14 calendar days of receiving notice will result in the Owner having the work done with cost recovery from the Contractor.

The Contractor shall correct or pay for damage resulting from corrections made under the requirements of the above paragraph of this subsection. Cost associated with any required removals and replacements of defective workmanship or materials shall be the Contractor's responsibility at no cost to the Owner.

7.0 MEASUREMENT FOR PAYMENT

Measurement will be made in units of each, regardless of the size and type of gate installed.

8.0 BASIS OF PAYMENT

Payment at the contract price of the above tender item shall include all labour, materials and equipments required to do the work.

WILDLIFE PASSAGE SUBSTRATE - Item No. 97

Special Provision

Scope

After completion of the wildlife culvert footings and concrete crossing beams, Contractor shall backfill excavation areas inside the wildlife culvert with suitable native materials from the culvert crossing site. Contract Administrator shall inspect the natural materials to be used for backfilling of the culvert substrate.

After backfilling, the disturbed natural substrate within the pre-cast wildlife culvert crossing limits shall be restored to its original natural condition. Excessive and all non natural materials resulted from the culvert footing excavation which is not suitable for substrate backfill shall be disposed off site.

References

OPSS 501, February 1996 Compaction
 OPSS 180, January 1994 Management and Disposal of Excess Material

Materials

Suitable native material shall include the original soil, topsoil and natural fill removed from the original culvert crossing site. All boulders, rock fragments , debris and any non natural materials shall not be used for the wildlife culvert substrate. Contract Administrator shall approve the natural material to be used for the substrate before backfilling.

Measurement For Payment

Measurement for payment for the above tender item is by cubic metre.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

MONITORING WELLS - Item No. 98

Special Provision

Installation, Monitoring and Decommissioning of New Monitoring Wells

Scope

Installation, monitoring and decommissioning of standpipe piezometers are required in conjunction with the Permit to Take Water for the construction of stormwater management ponds and the Boag Road structures. Groundwater levels will be required to be measured periodically in existing monitoring wells and in water wells on neighbouring properties. The frequency of the monitoring will be specified in the Permit to Take Water but as a minimum will include monitoring pre-construction, during construction at regular intervals and post-construction.

Location

The monitoring wells shall be installed in the following locations:

	Adjacent	NAD83-17		OCS-Zone 10	
		East	North	East	North
MW-1	SWM Pond 8	624057	4892150	308945	4892448

MW-2	Holborn SWM Pond	624336	4890752	309198	4891045
MW-3	SWM Pond 6	624835	4889662	309677	4889946
MW-4	Boag SBL Overpass E	624084	4892768	308983	4893066
MW-5	Boag NBL Overpass W	623945	4892793	308845	4893094

Construction

As some existing monitoring wells / piezometers will need to be removed for the construction of stormwater management ponds and bridge structures, the contractor shall install a replacement monitoring well and maintain at each of the stormwater management pond and Boag Road structure locations. Existing monitoring wells / piezometers shall be used for monitoring if they are not damaged or removed by construction.

New standpipe piezometers shall intersect the groundwater table and water bearing strata and extend to the lowest excavation elevation at each location. All piezometers should be installed in accordance with Ontario Regulation 903 by licensed water well contractors.

All new monitoring wells / piezometers installed by the contractor for the construction shall be decommissioned in accordance with Ontario Regulation 903 by licensed water well contractors. A well abandonment record shall be prepared and filed with the Ontario Ministry of the Environment by the licensed contractor.

Existing monitoring wells / piezometers on site shall be decommissioned and payment shall be made under separated tender item of Well Decommissioning.

Measurement For Payment

The unit of measurement for this tender item is each of existing well / piezometer installed, monitored and removed.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

Progress payments shall be made as follows:

- 50% - for initial installation
- 30% - for monitoring
- 20% - for removal

WELL DECOMMISSIONING - Item No. 99

Special Provision

Decommissioning Existing Wells/Standpipe Piezometers

Scope

This specification covers the removal of existing wells / piezometers that are part of the construction and cannot be used as monitoring wells as part of the Permit to Take Water.

Location

The following existing wells/piezometers shall be decommissioned:

Well/Borehole	ID	Northing	Easting
1	BR-2	4893061.0	308899.6
2	BR-3	4893085.8	308888.5
3	BR-8	4893076.7	308942.0
4	BR-9	4893098.1	308931.4
5	HD1-1	4890029.2	309626.0
6	HD1-2	4890169.4	309553.5
7	HD2-1A	4890412.1	309464.8
8	HD2-1B	4890410.6	309464.8
9	HD2-4	4890573.9	309493.5
10	HD3-1	4890831.6	309369.6
11	HD4-3	4891138.4	309360.2
12	HD5-2	4891829.3	309223.0
13	HD5-3	4891853.3	309125.2
14	HD6-3	4892992.5	308897.4
15	HD6-6	4893142.7	308936.9
16	HD7-1	4893421.2	308913.2
17	HD7-3	4893549.4	308989.9
18	HD7-6	4893665.4	308962.7
19	HD7-7	4893701.8	309032.3
20	HD8-1	4894134.3	309212.1
21	HD8-6	4894371.6	309303.8
22	C2-1	4890050.4	309545.5
23	C2-3	4890085.8	309582.1
24	C2-4	4890107.6	309601.6
25	C2-6	4890149.3	309640.6
26	SWM8-BH3	4892320.8	308942.0
27	SWM8-BH4	4892485.0	309121.0

Construction

Existing wells / piezometers shall be decommissioned prior to construction in accordance with Ontario Regulation 903 by a licensed water well contractor. A well abandonment record shall be prepared and filed with the Ontario Ministry of the Environment by the licensed contractor.

Measurement For Payment

The unit of measurement for this tender item is each of existing well / piezometer removed.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

CONCRETE BLOCK SPILLWAY - Item No. 100

Special Provision

Scope

The scope of work for this tender item includes the supply and construction of interlock concrete grid pavement system including subgrade treatment, filter fabric placement and concrete units placement. The work included the following:

- Subgrade preparation.
- Furnishing and placement of the filter fabric.
- Furnishing and placement of concrete units.

Standard

Articulating Concrete Block:

ASTM C 1319 - Standard Specification for Concrete Grid Paving Units

ASTM C140 - Standard Method of Sampling and Testing Concrete Masonry Units.

Geotextile Filter:

ASTM D 3786 - Mullen Burst

ASTM D 4491 - Flow Rate

ASTM D 4491 - Permittivity

ASTM D 4533 -Trapezoidal Tear

ASTM D 4751 - Standard Test Method for Apparent Opening Size

Soils:

ASTM D 698 - Moisture Density Relationship for Soils, Standard Method

ASTM D 422 - Gradation of Soils

ASTM D 424 - Atterberg Limits of Soils

ASTM D G51 - Soil pH

Materials

Concrete blocks shall be dry-cast concrete units that interlock together to form a supported turf matrix.

Concrete blocks shall be 400 x 600 x 100 mm with a maximum tolerance of plus or minus 6.4 mm for each dimension.

Concrete units shall have a minimum weight of 33kg per block. Color shall be Grey.

Concrete units shall have a minimum 28-day compressive strength of 35 MPa as tested in accordance with ASTM C 140. The concrete shall have a maximum moisture absorption rate of 5 percent to ensure adequate freeze-thaw protection.

Filter fabric shall be permeable synthetic fabric, either woven mono-filaments or nonwoven material. The selection of the appropriate filter fabric should satisfy criteria of retention, permeability, anti-clogging, and survivability/durability based on a specific site condition. Generally, a commonly used geotextile for filtration will have an Apparent Opening Size ranging between 0.149 and 0.210 mm (U.S. Sieve Sizes 100 to 70) and a minimum unit weight of 135 grams per square meter. The coefficient of permeability will typically range between 0.1 and 0.3 cm/second. Filter fabric shall be placed on top of subgrade.

Granular Base

The granular base material shall be crushed stone conforming to ASTM C 33 No 57, as presented in Table 1.

**TABLE 1
GRANULAR BASE
GRADING REQUIREMENTS**

ASTM C 33 No. 57	
Sieve Size	Percent Passing
1 ½ in (37.5 mm)	100
1 in (25 mm)	95 to 100
½ in (12.5 mm)	25 to 60
No.4 (4.75 mm)	0 to 10
No.8 (2.36 mm)	0 to 5

The bedding sand shall conform to the grading requirements of ASTM C 33 as shown in Table 2.

**TABLE 2
BEDDING SAND
GRADING REQUIREMENTS**

ASTM C 33	
Sieve Size	Percent Passing
3/8 in (9.5 mm)	100
No.4 (4.75 mm)	95 to 100
No.8 (2.36 mm)	85 to 100
No.16 (1.18 mm)	50 to 85
No.30 (600 um)	25 to 60
No.50 (300 um)	10 to 30

No.100 (150 um)	2 to 10
-----------------	---------

Concrete blocks shall be supplied by the following manufacturers/suppliers:

Unilock Toronto
 287 Armstrong Avenue
 Georgetown, ON L7G 4X6
 416-646-9000

Hanson Hardscapes
 7447 Bren Road
 Mississauga, ON L4T 1H3
 905-672-1388, 1-800-562-8490

Construction

The Contractor must have the necessary experience for the project and have successfully completed projects of similar scope and size.

The installing contractor shall check all materials delivered to the site to ensure that the correct materials have been received and are in good condition.

The Contractor shall store and handle all materials in accordance with manufacturer’s recommendations and in a manner to prevent deterioration or damage due to moisture, temperature changes, contaminants, breaking, chipping or other causes.

1. Inspection

The Contract Administrator is responsible for verifying that the contractor meets all the requirements of the specification. This includes the use of approved materials and their proper installation.

The Contractor shall have demonstrated experience and be qualified to direct all work related to the articulating concrete block revetment construction.

2. Construction Tolerances

The following tolerances are the maximum allowable deviation from the planned construction.
 Subgrade: 0 to +/- 12.7mm over a 3.05m straight edge

3. Subgrade Construction

Examine subgrade upon which concrete blocks will be placed for improper grade, poor compaction, and quality of the work. Do not proceed with installation until conditions are satisfactory.

Subgrade shall be compacted thoroughly to a 95% Modified Proctor, until no further movement of the soil is observed.

Areas that cannot be consolidated by rolling shall be removed and replaced with sound material or combined with gravel to develop the required stability.

4. Filter Fabric Placement

Filter fabric is recommended especially for vehicular traffic areas. It is placed between the subbase and the granular base. Filter fabric shall be placed within the limits as shown in the Construction Drawings.

Filter fabric shall be placed directly on the prepared area. Longitudinal and transverse joints shall be overlapped at least 460mm.

The filter fabric panels shall be placed so that the upstream strip of fabric will overlap the downstream strip.

As needed, securing staples shall be inserted through both strips of overlapped fabric along one line through the midpoint of the overlap to temporarily hold the filter fabric panels in place until the articulating concrete blocks can be placed.

Each securing staple shall be pushed through the fabric until it bears against the fabric and secures it firmly to the ground. Job site sewing of fabric panels shall be allowed in lieu of overlapping methods as approved by Project Engineer.

5. Granular Base

Aggregate base shall be placed in uniform lifts not exceeding 150 mm loose thickness and roller compacted according to the AASHTO guidelines for installing open graded aggregates. Because the base is open graded aggregated material, a method specification is appropriate for guidance in all aggregate compactive force.

Granular Base thickness shall be: 200mm.

The granular base shall be trimmed to within 0 to 10 mm of the specified grade. The surface of the prepared base shall not deviate more than 10 mm from the bottom edge of a 3.05m straight edge laid in any direction.

Before commencing the placing of the concrete units, the base shall be inspected by the Contract Administrator.

6. Edge Restraints

Adequate concrete edge restraint shall be provided along the perimeter of all paving as specified. The face of the concrete edge restraint, where it abuts pavers, shall be vertical down to the subbase.

All concrete edge restraints shall be constructed to dimensions and level specified and shall be supported on a compacted subbase not less than 150 mm thick.

Concrete used for the construction of the edge restraints shall be air-entrained and have a minimum compressive strength as specified. All concrete shall be in accordance with ASTM C 94 requirements.

7. Concrete Units Installation

The bedding sand shall be spread evenly over the base course and screed to uniform 25mm-38mm thickness. The screeded sand should be maintained in a loose condition and not to be disturbed. Bedding sand to be sharp concrete sand.

1. Protect from rain and traffic prior to and following screeding. Do not screed in advance of the installation to an extent that paving will not be completed over sand setting bed on the same day.
2. The sand bedding layer will not exceed 25mm – 38mm in thickness following compaction of the units.

Setting Concrete Units:

1. Install paver in the pattern shown on drawings.
2. Pavers with excessive chips, cracks, or other defects shall not be installed.
3. Use string lines or chalk lines to maintain true pattern lines.
4. Concrete block should be installed hand-tight to adjacent concrete units.
5. Required cuts shall be made with a masonry saw to provide clean, sharp unchipped edges.

Compacting:

1. After the units are set in place, they shall be swept clean and inspected.
2. Before ending each day's work, fully compact installed units within 0.91m of the laying face. Cover remaining uncompacted edge of the laying face and sand with waterproof covering.
3. Compact with 3 or more passes of a plate-type compactor capable of 3500–5000-pound centrifugal force. A rubber mat should be attached to the compactor to protect the units from cracking or chipping.

Spreading Topsoil or Gravel

1. Topsoil or gravel should be broadcast directly on surface and swept into the openings.
2. Disperse grass seed and fertilizer on top of topsoil.
3. Final level of topsoil or gravel should be 20mm below the surface of the concrete units.
4. The concrete units should be vibrated again once the voids are full.

Cleaning and Final Inspection

Upon completion of work, remove rubbish, debris, dirt, equipment, and excess material from site. Clean adjoining surfaces which are soiled by, and during the course of the work.

The final surface elevation shall not deviate more than 3mm under a 3.05m long straightedge.

The surface elevation of concrete units shall be 3mm to 6mm above adjacent drainage inlets, concrete collars, or channels.

Surface shall be true to levels and grades as shown on drawings.

Measurement of Payment

Measurement will be by Plan Quantity, as may be revised by Adjusted Plan Quantity, in square metres of interlock concrete grid units supplied and installed. No additional measurements will be made for the underlying bedding sand, granular base and filter fabric (geotextile).

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work, including supply and place underlying bedding sand, granular base, filter fabric (geotextile) and all the preparation work.

SEED AND MULCH - Item No. 103
SEED AND BONDED FIBRE MATRIX - Item No. 104

Special Provision

Amendment to OPSS 572, August 1990

OPSS 572, Construction Specification for Seeding and Mulching, Temporary Cover, and Erosion Control Blanket is deleted and replaced with the following special provision:

Construction Specification for Seeding and Cover

572.01 SCOPE

Seeding consists of the hydraulic application of specified, perennial seed mixes and cover onto designated areas. Cover is a general term referring to various cover applications such as hydraulic mulch, straw mulch, bonded fibre matrix and erosion control blanket. This specification covers the requirements for seeding with either hydraulic/straw mulching, bonded fibre matrix or erosion control blanket application.

572.02 REFERENCES

This special provision refers to the following standards, specifications or publications:

Canada Seeds Act and Regulations, September 1987
Canada Fertilizer Act and Fertilizer Regulations, June 1993

Ontario Provincial Standard Specifications, Construction

OPSS 180 - Management and Disposal of Excess Material

Ontario Provincial Standard Specifications, Materials

OPSS 1103 - Emulsified Asphalt

Ontario Ministry of the Environment and Energy (MOEE)

Water Management Policies, Guidelines Provincial Water Quality Objectives

572.05 MATERIALS

572.05.01 Seed

572.05.01.01 Supply of Seed

All seed and seed mixes specified shall be supplied by the Contractor.

572.05.01.02**Grade Standards**

All seed, supplied either as single crop kind, or as a seed mix shall comply with the provisions of the Canada Seeds Act and Regulations and the grade standards for that particular crop kind.

Standard Roadside Mix shall be labelled Canada No. 1 Lawn Grass Mixture.

Crown Vetch Mix shall be labelled Common No. 1 Forage Mixture.

Birdsfoot Trefoil Mix shall contain certified Blue Tag Leo Birdsfoot Trefoil and shall be labelled Common No. 1 Forage Mixture.

Salt Tolerant Mix shall be labelled Canada No. 1 Ground Cover Mixture.

Lowland, and Acidic Soil Mixes shall be labelled Common No. 1 Forage Mixture.

E. Lowland Mix shall contain the following species.

Creeping Red Fescue (<i><u>Festuca rubra</u></i>)	45%
Brome Grass (<i><u>Bromus neres</u></i>)	25%
Kentucky Bluegrass (<i><u>Poa pratensis</u></i>)	15%
Birdsfoot Trefoil 'Leo' (<i><u>Lotus corniculatus</u></i> 'Leo')	5%
(hydroseeder prill-on, inoculant coated)	
White Clover (<i><u>Trifolium repens</u></i>)	5%
Perennial Ryegrass (<i><u>Lolium perenne</u></i>)	5%

F. Naturalized Wetland Mixture shall contain the following species.

Swamp Milkweed (<i><u>Asclepias incarnata</u></i>)	1/2%
Nodding Bur Marigold (<i><u>Bidens ceruna</u></i>)	5%
Canada Bluejoint (<i><u>Calamagrostis canadensis</u></i>)	1/2%
Fringed Sedge (<i><u>Carex crinata</u></i>)	12%
Awl Sedge (<i><u>Carex stipata</u></i>)	6%
Fox Sedge (<i><u>Carex vulpinoidea</u></i>)	35%
Spotted Joe Pye Weed (<i><u>Eupatorium maculatum</u></i>)	1/2%
Bonset (<i><u>Eupatorium perfoliatum</u></i>)	1/2%
Soft Rush (<i><u>Juncus effusus</u></i>)	18%
Rice Cutgrass (<i><u>Leersia oryoides</u></i>)	3%
Hard Stem Bulrush (<i><u>Scirpus acutus</u></i>)	1/2%
Green Bulrush (<i><u>Scirpus atrivirens</u></i>)	18%
Soft Stem Bulrush (<i><u>Scirpus validus</u></i>)	1/2%

572.05.04**Cover****572.05.04.02****Hydraulic Mulch**

Hydraulic mulch shall be capable of dispersing rapidly in water to form a homogeneous slurry and remain in such a state when agitated or mixed with other specified materials. When applied, hydraulic mulch shall be capable of forming a uniform, cohesive mat. Hydraulic mulch shall not inhibit growth or germination of the

seed mix. Hydraulic mulch shall be dry, free of weeds and other foreign materials, and shall be supplied in factory sealed packages bearing the manufacturer's label indicating product name and mass.

572.05.06 Bonded Fibre Matrix

Bonded Fibre Matrix (BFM) shall be a hydraulically-applied product, which upon drying, is capable of adhering to the soil in the form of a uniform and continuous, 100% biodegradable erosion control blanket. The non-hydrated BFM shall be comprised of not less than 70% (by weight) long stranded wood fibres held together by organic (10%) and mineral bonding (<2%) agents. When hydrated, the BFM shall form a viscous material which, when dry, creates a high strength, porous and erosion resistant mat. The bonding agent shall not dissolve or disperse upon re-wetting. The BFM shall have a water holding capacity of 1000g water/100g of matrix and shall not inhibit the germination or growth of plant material.

572.07 CONSTRUCTION

572.07.01 Operational Constraints

Seeding and cover installation shall not be carried out under adverse field conditions such as high wind, frozen soil or soil covered with snow, ice or standing water.

Seeding shall not commence until approval of surface preparation and layout of permanent seed mixes has been given by the Contract Administrator.

No seeding or cover application shall come in contact with the foliage of any trees, shrubs, or other vegetation.

Bonded Fibre Matrix (BFM) shall be installed by a Contractor certified and trained by the manufacturer in the proper mixing and installation of the product. BFM shall not be applied during, or immediately after, a rainfall or in advance of a rainfall, so that a 24 hour drying/curing period is ensured for the matrix.

572.07.02 Surface Preparation for Seeding

All surface areas designated for seeding shall be fine graded to a uniform surface to meet all design requirements. The surface shall be uniformly cultivated to a minimum depth of 50 mm. The surface shall be prepared not more than 7 calendar days before the seeding operation.

Surface stones greater than 50 mm in diameter, weeds, other unwanted vegetation, and other surface litter and debris shall be disposed of in accordance with OPSS 180.

572.07.03 Layout

The locations of the different, permanent seed mixes shall be staked out on the ground surface in accordance with the contract drawings. The stakes shall be marked to indicate the limits of each type of seed mix.

572.07.04 Seeding

Seed and fertilizer shall be thoroughly mixed into a homogeneous water slurry and shall be distributed uniformly over the designated surface area via the hydraulic seeder/mulcher and applied within two hours of being charged into the hydraulic seeder/mulcher tank. Alternatively, seed and fertilizer can be applied via the cyclone spreader. Seeding shall overlap adjoining ground cover by 300 mm.

572.07.04.01

Application Rates for Seed, Fertilizer and Water

All application rates are minimum quantities per 10,000 m²(ha)
 Minimum water rates for all applications shall be 7,600 litres/hectare (l/ha)

TABLE 1 - APPLICATION RATES FOR SEED AND FERTILIZER

Permanent Seed Mixes	Rate of Permanent Seed Mix kg/ha	Fertilizer Rate kg/ha			Nurse Crop Species Rate kg/ha
		8-32-16	0-46-0	0-0-60	Fall Rye Grain or Winter Wheat Grain
Lowland Mix	100	350			60
Naturalized Wetland Mixture	25	350			22

The Contractor shall certify the layout of seed mixes on site and in accordance with the design requirements.

The Contractor shall certify the fertilizer, seed mixes and application thereof in accordance with this specification.

All seeded areas will be approved by the Contract Administrator at prescribed intervals following the seeding and cover operation.

572.09

MEASUREMENT FOR PAYMENT

Measurement of seeding and cover is by Plan Quantity as may be revised by adjusted Plan Quantity, of the area measured in square metres following the contours of the ground with no allowance for overlap.

572.10

BASIS OF PAYMENT

Payment at the contract price for the above item shall include all necessary labour, materials and equipments to do the work.

SHRUBS, 600 MM HEIGHT - Item No. 105

CONIFEROUS TREES, 1.25 M HEIGHT - Item No. 106

- CONIFEROUS TREES, 1.5 M HEIGHT - Item No. 107**
- CONIFEROUS TREES, 2.0 M HEIGHT - Item No. 108**
- DECIDUOUS TREES, 2.5 M HEIGHT - Item No. 109**
- DECIDUOUS TREES, 50 MM CALIPER - Item No. 110**
- DECIDUOUS TREES, 60 MM CALIPER - Item No. 111**

LANDSCAPE SPECIFICATION FOR TREE AND SHRUB PLANTING

1.0 SCOPE

This special provision covers the requirements for supplying and planting trees and shrubs.

2.0 REFERENCES

This special provision refers to the following specifications or publications:

Canadian Nursery Trades Association/Landscape Canada; "Canadian Standards for Nursery Stock", latest edition.

Ontario Provincial Standard Specification, Construction;
OPSS 565 - The Protection of Trees

3.0 DEFINITIONS - Not Used

4.0 SUBMISSION AND DESIGN REQUIREMENTS - Not Used

5.0 MATERIALS

5.1 Horticultural Topsoil and Soil Amendments

Horticultural topsoil shall be a fertile, friable, natural loam containing not less than 5% organic matter. After the addition of soil amendments, the organic matter content shall not exceed 30%. Topsoil shall be free of stones greater than 50 mm in diameter, subsoil, refuse or other extraneous material and be capable of sustaining healthy plant growth. Topsoil that is in a frozen or muddy condition shall not be used.

Soil amendments shall be mixed with horticultural topsoil in the following ratio:

Topsoil	1 Cubic Metre (m ³)
Baled Peatmoss	0.2 cubic metre (m ³)
Superphosphate	0.6 kilograms (kg)

The mixing of the topsoil and soil amendments according to the specified proportions shall be performed using a mechanical shredder. If the mixing is to be performed off the contract site, the Contract Administrator shall be notified prior to mixing.

5.2 Baled Peat Moss

Peat moss shall consist of partially decomposed fibrous or cellular stems and leaves of sphagnum mosses, with a texture varying from porous fibrous to spongy fibrous. It shall be elastic and

homogenous, with a pH value between 4.5 and 6.5. It shall be baled and be free of decomposed colloidal residue, wood, sulphur and iron, be brown in colour, be finely shredded, and be suitable for horticultural purposes. Shredded particles shall not exceed 16 mm in size.

5.3 Fertilizer

Fertilizer used at the time of planting shall be in granular form, dry, free flowing, free of lumps and shall consist of superphosphate, with a minimum analysis of 20% phosphoric acid.

All fertilizer shall be supplied in bags bearing the manufacturer's label indicating mass and analysis.

5.4 Stakes

All stakes shall be new wood with a hole drilled 50 mm from the top to accommodate a tie wire.

Stakes used for staking tees shall be 50 mm by 50 mm by 1.25 m.

Stakes used for guying trees shall be 50 mm by 50 mm by 600 mm.

5.5 Support Wire

Wire for staking trees shall be new No. 12 galvanized steel wire.

Wire for guying trees shall be new No. 10 galvanized steel wire.

5.6 Guy Wire Tighteners

Guy wire tighteners shall be galvanized turnbuckles or an acceptable manufactured device which twists and locks guy wires.

5.7 Support Hose

Support hose used for shielding wire bracing from tree trunks shall be new rubber hose or 13 mm traffic counter hose.

5.8 Anti-Desiccant

Anti-desiccant emulsion shall be a product specifically manufactured to provide a flexible surface film to reduce transpiration yet not impede passage of carbon dioxide and oxygen.

5.9 Mulch Material

Mulching material shall be one of: hardwood chips from 20 mm to 50 mm in length and width, or shredded bark mulch.

5.10 Tree Guards

Tree guards to protect deciduous trees from rodent damage shall be the following as they apply to Section 7.3.8:

- 13 mm wire mesh (hardware cloth) guard of 0.5 mm galvanized steel supplied in 600 mm wide rolls,

- an expanded diamond pattern wire mesh of 0.4 mm galvanized steel supplied in 600 mm width,
- 150 mm plastic drainage pipe, ultra-violet protected supplied in minimum 600 mm lengths,
- a spiral plastic tree wrap, perforated and ultra-violet protected supplied in minimum 600 mm lengths.

Hog rings or clips for fastening wire mesh tree guards shall have a minimum diameter of 1.5 mm.

5.11 Plant Material

All plant material shall conform to the requirements of Table 2 and shall comply with the "Canadian Standards for Nursery Stock".

All plant material shall be clearly identified by labels indicating species, size and supplier.

All plant material supplied and planted under this contract shall be protected from damage in accordance with OPSS 565 during construction operations. All plant material shall be considered as "Specimen Trees" for the purposes of protection.

Plant material shall be acceptable when it is structurally sound, well furnished with living foliage, normal colour, show adequate annual growth and formation of buds and be free from blight of any description. Plant material which does not meet this standard or which has severely "died back" and has regrown from a bud or shoot or has been damaged by rodents shall be considered unacceptable.

Plant material shall not be collected or dug from native stands or established woodlots.

Container grown plant material shall have been grown in the same container for a minimum period of 6 months.

Plant material shall not be cut back from larger sizes to meet the material requirements.

The seed source of the specified plant material and the plant material itself shall be supplied from no more than one hardiness zone difference from the hardiness zones in this contract.

Bare root plant material shall not have broken bud at the time of delivery to the contract site.

Where balled and burlapped plant material is specified, the burlap, rope, and any tie materials shall be manufactured from natural organic fibres.

5.12 Tree Trunk Wrap

Wrapping material for tree trunks shall be new burlap, at least 270 g/m² in weight and not less than 150 mm nor more than 250 mm in width, or a heavy waterproof crepe paper not less than 100 mm nor more than 150 mm wide.

5.13 Water

Water shall be free from concentrations of any contaminants which would adversely affect growth.

6.0 EQUIPMENT

6.1 Tank(s)

Tank(s) used for storage, mixing or application of water shall be clean and free of any contaminants which may be hazardous to the growth and development of trees and shrubs or to the environment in general.

6.2 Volume Certification

Prior to commencing operations, the volume capacity of any tank(s) shall be confirmed in writing to the Contract Administrator.

6.3 Pumps

Pumps used for watering trees and shrubs shall be capable of producing water pressure to reach the limits of the right-of-way. The outlet end of the hose(s) shall be 25 mm in diameter with a quick shut-off valve connected to a functioning water injection pipe.

6.4 Pruning Tools

All pruning equipment shall be designed specifically for tree work and shall be clean, sharp and in proper, safe, working order. Pruning equipment shall be capable of producing clean, flush cuts without tearing or fraying the bark.

7.0 CONSTRUCTION

7.1 Operational Constraints

Planting shall be performed within the time periods specified in Table 1.

Where plant type cannot be planted within the designated season or time period, because of limitations imposed by the timing of the contract award or construction staging, such planting shall be performed in the next year within the same designated season or time period.

The Contractor may, at no additional cost, substitute container grown or balled and burlapped plant material of the same species and variety in order to extend the planting time period for bare root plants.

Tree and shrub planting work shall be carried out in the presence of the Contract Administrator.

The locations of trees and the perimeter of areas to be planted with shrubs shall be staked.

Excavation shall commence following the Contract Administrator's inspection of staking.

TABLE 1 - TIME CONSTRAINTS FOR PLANTING

PLANT TYPE	Southwestern Ontario That area south of a line joining Grand Bend and Clarkson	Southern Ontario That area between the boundaries of Southwestern and Northern Ontario	Northern Ontario That area north of a line joining Waubaushene, Severn Bridge, Bancroft and Ottawa
Bare Root Deciduous Shrubs and Trees	Spring frost free conditions, to May 31	Spring frost free conditions, to June 7	Spring frost free conditions, to June 15
Balled and Burlapped or Container Grown Deciduous Shrubs and Trees	Spring frost free conditions, to November 15	Spring frost free conditions, to November 7	Spring frost free conditions, to October 31
Balled and Burlapped or Container Grown Coniferous Trees	Frost free conditions	Frost free conditions	Frost free conditions

7.2 Plant Acceptance

Planting of plant material shall not commence until permission to proceed has been granted by the Contract Administrator.

Plant material deemed unacceptable will be rejected and shall be removed from the work site and replaced with acceptable material.

Plants shall be removed from the site within twenty-four hours of notification of rejection.

7.3 Plant Material - Handling and Planting

The work shall consist of: the provision of all plant materials for inspection; the digging, transportation and storage of bare root, balled and burlapped and container grown stock; the excavation of the planting pits; planting; initial watering, guying, staking and tying, tree trunk wrapping and pruning; installation of tree guards; mulching; and restoration and clean-up, as herein specified.

7.3.1 Digging, Transportation and Storage for Bare Root Stock

All bare root material shall be dug in accordance with the "Canadian Standards for Nursery Stock".

Bare root material shall be moved while dormant with the major portion of the fibrous root system provided.

Roots shall be kept moist at all times.

Roots, trunks and branches of all trees and shrubs shall be protected from sun and wind while in transit and until planted.

All deciduous trees and shrubs which have broken bud shall be thoroughly sprayed with an anti-desiccant.

Bare root material shall not be stored on the contract site unless properly "heeled in" and kept moist.

7.3.2 Digging, Transportation and Storage for Balled and Burlapped or Container Grown Stock

Balled and Burlapped or container grown plant material shall be dug and potted in accordance with the "Canadian Standards for Nursery Stock".

Rootballs, trunks and branches of all trees and shrubs shall be protected from sun and wind while in transit and until planted.

All deciduous trees and shrubs which have broken bud and all coniferous trees shall be thoroughly sprayed with an anti-desiccant.

Balled and burlapped or container grown material shall not be stored on the contract site unless the rootball or container is kept moist.

7.3.3 Excavation of Planting Pits

For bare root plant material, all planting pits shall be excavated and prepared to accommodate the size of the bare root.

For all other plant material, planting pits shall be excavated and prepared according to the sizes specified in Table 2.

The bottom of all planting pits shall be protected from freezing. The sides of the planting pit shall be gently tapered and scarified so that water and roots can readily penetrate.

TABLE 2 - ROOTBALL, CONTAINER AND PLANTING PIT DIMENSIONS

Plant Type and Size	Rootball Minimum Diameter	Rootball Minimum Depth	Container Size	Planting Pit Minimum Diameter	Planting Pit Minimum Depth
Deciduous Trees					
Seedlings	no min	-	-	-	-
1.00m hgt	300mm BR	-	#5	300mm	-
1.25m hgt	300mm BR	-	#5	300mm	-
1.50m hgt	300mm BR	-	#5	300mm	-
1.75m hgt	300mm BR	-	#5	300mm	-
2.00m hgt	400mm BR	-	#7	700mm	-
2.50m hgt	500mm BR	-	#15	800mm	-

3.00m hgt	600mm BR	-	#15	900mm	-
45mm cal	550mm BB	365mm	-	1.05m	315mm
50mm cal	600mm BB	400mm	-	1.10m	350mm
60mm cal	650mm BB	450mm	-	1.15m	400mm
70mm cal	750mm BB	500mm	-	1.25m	450mm
Coniferous Trees					
500mm hgt	300mm BB	225mm	#3	600mm	175mm
600mm hgt	350mm BB	260mm	#5	650mm	210mm
800m hgt	400mm BB	300mm	#7	700mm	250mm
1.00m hgt	450mm BB	330mm	#15	750mm	280mm
1.25m hgt	500mm BB	360mm	#15	800mm	310mm
1.50m hgt	600mm BB	400mm	-	900mm	350mm
2.00m hgt	800mm BB	530mm	-	1.10m	480mm
Deciduous Shrubs & Vines					
500mm hgt/sprd	250mm BR	-	#2	500mm	-
600mm hgt	300mm BR	-	#2	550mm	-
800mm hgt	350mm BR	-	#3	600mm	-
1.00m hgt	450mm BR	-	#5	700mm	-
1.25m hgt	500mm BR	-	#5	800mm	-

Legend: BB = Balled and Burlapped cal. = caliper
BR = Bare Root hgt. = height

7.3.4 Planting

All plant material shall be placed in the planting pit on undisturbed ground.

All trees shall be planted so that their normal root crown is 50 mm above existing grade. All shrubs shall be planted so that their normal ground elevation is 25 mm above existing grade.

Plant material supplied in plastic containers shall have the containers carefully removed prior to planting. The rootball shall be slit vertically 3 times evenly around the circumference to a maximum depth of 13 mm.

Plant material supplied in fibre pots shall have the top two-thirds of the pot removed prior to planting.

Plant material supplied bare root shall be placed so that the roots lie in their natural position.

Plant material supplied balled and burlapped shall have the burlap, ropes, and ties removed from the top of the rootball by folding down at least 100 mm into the excavated pit. All synthetic materials shall be removed prior to planting.

Plant material supplied in wire baskets shall have the burlap, ropes and ties removed from the top of the rootball by folding down at least 100 mm into the excavated pit. The top 100 mm of the wire basket shall be removed from the entire circumference of the wire basket after placement of the plant material and prior to backfilling.

The planting pit shall be backfilled with the horticultural topsoil and soil amendment mixture in firmly tamped layers of 150 mm depth, taking care not to injure the root system. Air pockets shall not form when backfilling.

When the planting pit has been backfilled to existing grade, an earth berm of maximum 100 mm height and maximum 150 mm width shall be formed around each planting pit. The berm may be formed from the excavated material. This berm will serve to retain water over the root area. If the pit is on a slope, the lower edge and sides shall be built up to catch and hold water.

7.3.5 Initial Watering

Initial watering of all plant material shall be completed immediately after planting. Sufficient water shall be applied to each plant to thoroughly soak the root zone.

Water shall be uniformly applied to each tree by two injection applications directly into the soil. Both injections shall be located at the outer edge of the planting pit area and shall penetrate the ground to a depth of 450 mm at the commencement of the watering operation. The second injection shall be located 180 degrees from the initial injection.

Water shall be uniformly applied to each shrub at a maximum precipitation rate of 5 mm per hour. A soft spray nozzle shall be used to thoroughly soak the root zone and to avoid damage or dislodging of the soil.

7.3.6 Guying, Staking and Tying

All trees requiring staking and guying shall be staked and guyed immediately following planting to ensure vertical alignment and plant stability.

All shrubs, deciduous trees less than 2.0 m in height and all coniferous trees less than 1.5 m in height do not require staking or guying.

All deciduous trees 2.0 m to 3.0 m in height require one stake. All deciduous trees 45 mm and 50 mm caliper, require two stakes. All deciduous trees 60 mm and 70 mm caliper require guying.

All coniferous trees 1.5 m in height and larger require guying.

Rubber hose shall be used as a cover over tie and guy wires to protect the tree bark from damage. The rubber hose shall be cut to sufficient length to loosely encircle the tree trunk, be twisted at least once and provide the necessary support.

Bright red plastic surveyor's tape shall be tied to all guy wires. The tape shall be tied halfway up the length of wire and shall be clearly visible. Guy wires shall be tightened using galvanized turnbuckles or guy wire tighteners.

7.3.7 Initial Pruning

Upon the completion of planting of each deciduous tree or shrub, pruning shall be carried out to remove dead, broken or injured branches and to compensate for root loss resulting from transplanting. The natural shape or habit of the plant shall not be changed. Pruning shall be carried out according to size and species in accordance with accepted arboricultural practice.

In addition, shrubs shall be pruned by thinning out branches and foliage by approximately one third. This pruning shall include some branch removal from the shrub base as well as end tip pruning.

Coniferous trees shall be pruned only to remove dead, broken or injured branches.

7.3.8 Tree Guards

Protective guards shall be installed around all deciduous trees to prevent rodent damage. Guards shall be installed prior to the application of wood chip mulch.

Deciduous trees larger than 1.75 m in height shall be protected using one of; 13 mm hardware cloth wire mesh guard, expanded diamond pattern wire mesh guard or 150 mm plastic drainage pipe.

Wire mesh guards shall be cut in lengths sufficient to complete a circumference of the tree trunk, maintaining a minimum 50 mm distance from the tree trunk, as well as providing a minimum 25 mm overlap. Guards shall be a minimum of 600 mm in height. Wire mesh guards shall be fastened using a minimum of 4 hog rings or clips per guard.

Plastic drainage pipe shall be cut to a minimum 600 mm length and then slit once vertically and placed around the tree trunk.

Deciduous trees less than 1.75 m in height shall be protected using a spiral, plastic, perforated tree wrap installed as per manufacturer's recommendations. Wrap should be cut short of branches if branches are lower than 600 mm.

7.3.9 Mulching

Immediately after planting, initial watering and placement of tree guards is completed, wood chip mulch shall be applied in a uniform continuous blanket of 100 mm minimum depth to the surface area surrounding each individual plant.

For all trees the wood chip surface area shall extend over the actual planting pit and the earth berm and include a 200 mm radius beyond the circumference of the tree pit.

For shrubs the complete surface area of each shrub bed, including the entire surface area within the perimeter of the shrub grouping shall be covered with mulch. Wood chips shall extend a minimum of 500 mm from the centre of the outside row of shrubs.

In addition to the above, special areas as indicated on the contract drawings may require wood chip mulching.

Other means of mulching specific sizes of trees may be specified under separate NSSP(s).

7.3.10 Tree Trunk Wrapping

The main stem of each tree having a caliper of 60 mm or greater shall be wrapped. The wrapping shall be applied in a spiral manner with overlap, starting at grade and extending upwards to just above the second group of branches. All wrapping shall be neat and snug and held in place by cord.

7.3.11 Restoration and Clean-up

At the completion of planting operations, all areas disturbed or damaged from execution of this work shall be restored to their original condition, including, but not restricted to clean-up and regrading, and seeding and mulching.

8.0 QUALITY ASSURANCE

Upon delivery to the contract site, all plant material will be inspected by the Contract Administrator.

9.0 MEASUREMENT FOR PAYMENT

9.1 Actual Measurement

Measurement will be the number of plants supplied and placed.

9.2 Plan Quantity Measurement

Measurement will be by Plan Quantity, as may be revised by Adjusted Plan Quantity, of the number of plants supplied and placed.

10.0 BASIS OF PAYMENT

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

Where replacement of plant material is required because of rejection, compensation for all costs associated with replacement shall be deemed to be included in the contract prices for the various tender items where such replacement is required.

MAINTENANCE AND WARRANTY FOR LANDSCAPE PLANTING - Item No. 112

Special Provision

October 1998

A. Description

The Contractor shall provide maintenance and warranty of all plant material in accordance with this Special Provision.

B. Selected Items

For the purposes of this Special Provision, the term "Selected Items" refers to the following tender items:

Item Shrubs, 0.5 m Height
Item Coniferous Trees, 0.5 m Height
Item Deciduous Trees, 2.0 m Caliper

C. Duration

The duration of the maintenance and warranty phase shall be 365 consecutive calendar days following the date of acceptance of the supply and planting phase of this contract.

D. Maintenance

The Contractor shall ensure that all plant material is maintained in a manner acceptable to the Contract Administrator.

This includes watering and fertilizing, control of weeds and grasses in all wood chip mulched areas, application of rodent repellent, attention to stakes, ties, wire and hose, tree guards, and the wrapping and unwrapping of all coniferous trees for winter protection.

E. Warranty

The warranty shall cover any defects in material and workmanship. The Contractor shall replace any plant material that is found to be unacceptable to the Contract Administrator within the duration of the maintenance and warranty period.

Plant material shall be acceptable when it is structurally sound, when it is well furnished with living foliage, when it has normal colour, when it shows adequate annual growth and formation of buds and when it is free from blight of any description. Plant material which does not meet this standard or which has severely "died back" and has regrown from a bud or shoot or has been damaged by rodents shall be considered unacceptable.

F. Inspection

All plant material will be regularly inspected by the Contract Administrator until the end of the maintenance and warranty period. Inspections will include all original and replacement material. The Contractor shall be notified in writing by the Ministry of all plant material requiring replacement.

G. Replacement

Units of plant material which are unacceptable will be replaced by the Contractor at the earliest opportunity in accordance with the Tree and Shrub Planting Specification of this contract.

H. Basis of Payment

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

The contract price for this item shall not be less than **20% of the total tender price for the following tender items:**

Item Shrubs, 0.5 m Height
Item Coniferous Trees, 0.5 m Height
Item Deciduous Trees, 2.0 m Caliper

Two equal payments shall be made during the maintenance and warranty period, 50% after six months and a final payment. Payments for this contract item shall occur only if all plant material has been properly maintained and unacceptable plant material properly replaced.

I. Default

In the event that the Contractor fails to respond to maintenance and warranty requests the Contract Administrator will deduct or retain monies owing the Contractor as determined by GC3.01, Contract Administrator's Authority and GC8.02.03.11, Owner's Set Off, of the General Conditions.

EARTH EXCAVATION (GRADING) - Item No. 126

Special Provision

Modification to Quantities of Stripping Balance in Quantity Sheet

Stripping balance shall be used in slope flattening for Option B (Rigid Pavement Design) as shown on the contract drawings.

Due to the limitations of Earth Excavation (Grading) quantity sheet, stripping balance is modified as follows to accommodate the input of stripping balance used in slope flattening:

Stripping Balance: 116299 m³

Stripping used in slope flattening: 88,147 m³ (approximate only)

Excess Stripping: 28,152 m³

Excess stripping shall be disposed off site.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING, BLACK BASE CONTRAST MARKING - Item No. 134

Amendment to OPSS 532

SCOPE

Work includes surface preparation and permanent installation of surface applied spray type field reacted polymeric black base contrast markings on concrete pavement. Black base contrast markings shall be installed as shown on the contract drawings.

532.07.02 Surface Preparation

Sub-Section 532.07.02 of OPSS 532, June 1991, is amended by the addition of the following after the first paragraph:

All concrete surfaces shall be mechanically blast cleaned. All surface and embedded accumulations of hardened concrete layers, laitance, trowel finishes and other similar characteristics shall be completely removed leaving a bare concrete surface with exposed upper fascia of concrete aggregate. Care shall be taken not to, bruise or internally damage the substrate.

Prepare the pavement surface a minimum of 10 cm wider and longer than the pavement markings to be placed, such that an additional 5.0 cm of prepared area is on all sides of the pavement markings after they are applied.

Conduct all pavement surface preparation including curing compound removal in a manner that the pavement or joint materials is not damaged or left in condition that will mislead or misdirect the motorist. Repair any damage caused to the pavement, or joint material caused by surface preparation or the removal; of curing compounds by acceptable methods at no additional cost to the Owner.

A minimum of 90 percent of the existing markings must be removed to ensure proper adhesion.

After preparation, traces or accumulations of spent abrasives, laitance, removed markings and other debris shall be removed by oil-free compressed air.

All areas that are high-pressure water blast cleaned shall be allowed to dry sufficiently prior to the application of the pavement markings.

Surfaces that are to receive pavement markings shall be dry, cleaned of all dirt, loose material and other contaminants. Pavement surfaces shall be thoroughly dry immediately prior to the application of pavement markings.

Where pavement marking materials are applied in recessed cut applications, the above surface preparation is not required.

532.07.07 Permanent Pavement Marking

Sub-Section 532.07.07 of OPSS 532, June 1991, is amended by the addition of the following:

532.07.07.01 Pavement Marking, Black Base Contrast Marking

A solid black line shall be applied to match skip lines. The total width of the contrast marking shall be an additional 10cm wider than the standard width specified. This additional 10 cm width shall be black non-reflective film with 5 cm on each side of the white or yellow film.

For unmarked pavements, a premark line may be required for each line prior to installation of the marking and with the full approval of the project engineer.

The black non-reflective marking material shall be applied at a minimum dry film thickness of 500 µm and **must be compatible with the material to be placed as the permanent pavement marking material**. A black aggregate (black beauty, coal slag medium grade or equivalent) shall be applied at a minimum rate of 4.0 kg/l to the surface of the black marking material to aid in reducing glare from the marking surface.

532.07.08 Selection of Materials

Section 532.07.08 is amended by the addition of the following after the last paragraph, The contractor is restricted to the use of the following material for the work:

- field reacted polymeric

Refer to the appropriate D.S.M. listing for specific products and supplier information.

532.09 MEASUREMENT FOR PAYMENT

Subsection 532.09.02 of OPSS 532, June 1991, is amended by the addition of the following:

532.09.02.01 Pavement Marking, Black Contrast Markings

Clause 532.09.02.01 of OPSS 532, June 1991, is amended by the addition of the following tender item:

Pavement Marking, Black Contrast Markings

532.10 BASIS OF PAYMENT

532.10.01 Pavement Marking, Black Contrast Markings

Subsection 532.10.01 of OPSS 532, June 1991, is amended by the addition of the following tender item:

Pavement Marking, Black Contrast Markings

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

PAVEMENT MARKING, BLACK BASE CONTRAST MARKING - Item No. 134
PAVEMENT MARKING, SPRAY FIELD REACTED POLYMERIC - Item No. 135

Special Provision

Pavement Markings on Concrete Pavement

No pavement makings shall be applied on concrete pavement until 14 days after placement of concrete pavement.

If curing compound is used, the Contractor shall remove it completely from the concrete surface prior to applying the markings.

The method of removal shall be by abrasive water blasting and not result in any damage to the concrete surface. It shall also meet all the environmental constraints as stated elsewhere in the Contract Documents.

Removal Equipment

TABLE OF APPROVED WATER BLASTING SUPPLIERS AND REMOVAL EQUIPMENTS

SUPPLIER	EQUIPMENT BRAND NAME & MODEL	EQUIPMENT TYPE	REMOVAL METHOD
Total Traffic Services Inc. 2685 Rena Road Mississauga, ON L4T 1G6 Tel: (905) 678-9779 Fax: (905) 678-9776	T.T.S. High Pressure Pavement Marking Removal System with Vacuum.	Line removal system.	Water blasting.
TAK Enterprises 78-280 McClellan Rd Nepean, ON K2H 8P8 Tel: (613) 596-4360 Fax: (613 596) 5560	NLB Ultra-Clean 40 Stripe Removal System.	STARJET long Line removal system.	Water blasting.

or approved equivalent.

The Contractor’s operation shall be carried out in accordance with approved methods of operating the water blasting equipments, so as to control any dust or effluent generated by the operation.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work, including the water blasting operation required to remove the curing compound on concrete pavement. No additional payment should be made for this required water blasting operation.

PAVEMENT MARKING, SPRAY FIELD REACTED POLYMERIC - Item No. 135

Amendment to OPSS 532

SCOPE

This specification covers the requirements for surface preparation and permanent installation of inlaid or surface applied spray type field reacted polymeric markings on concrete pavement.

The spray field reacted polymeric markings may be applied over new black spray field reacted polymeric material as shown in the contract documents. The field reacted polymeric spray markings shall be applied within the same time period of the spray black field reacted polymeric material application. In the event that the spray field reacted polymeric markings can not be applied within the specified time limit, the black markings shall be inspected to ensure that they are dry, cleaned of all dirt, loose material and other contaminants prior to spray field reacted polymeric application.

Markings shall be installed within the limits of the project as shown on the contract drawings and in accordance with O.T.M. Book 11 and the contract documents.

532.05 MATERIALS

Section 532.05 of OPSS 532, June 1991, is amended by the addition of the following:

532.05.08 Spray Field Reacted Polymeric Material

Marking shall be a plural-component, liquid-applied field reacted polymeric material capable of full cure without external heat sources. Binder resins shall be 100% reactive, solvent-free and highly elastic to accommodate various substrate conditions. Markings shall include a glass bead dressing for retroreflectivity.

The spray field reacted polymeric material **must be compatible with the black contrast marking material if applied**. Refer to the appropriate D.S.M. listing for specific products and supplier information.

Under no circumstances shall the manufacturer be allowed to alter the formulation of previously submitted and approved materials. Any changes shall result in forfeiture of eligibility and require re-submittal for approval.

532.05.09 Glass Bead Material

Appearance - Beads shall be transparent, clean, dry, free-flowing, free from air inclusions and foreign matter including carbon residues.

Size - Bead size shall be in accordance with the manufacturer's recommendation. Beads shall be produced as a result of directly spherodizing glass from a molten glass tank. Any component of the batch process utilizing recycled glass shall be sourced from North American waste streams.

Coating - silane coupling agent compatible with selected spray field reacted material. Other silanes, moistureproof or flotation coatings shall not be permitted.

Refractive Index - Beads shall have a refractive index of 1.9 or higher as required to meet the minimum retroreflectivity levels for the prescribed period.

Refer to the appropriate D.S.M. listing for specific products and supplier information.

532.07.09 Application

Sub-Section 532.07.09 of OPSS 532, June 1991, is amended by the deletion of the second paragraph and its replacement with the following:

Markings shall be installed following the manufacturer's recommendations in accordance with the contract documents. Where applicable, marking thickness, height, width, pattern, skip length and interval shall meet the requirements of the contract administrator.

The spray field reacted polymeric marking material shall be applied at a minimum dry film thickness of 500 µm.

Glass beads shall be applied at the rate specified by the manufacturer to allow for proper embedment and retroreflectivity.

A test marking shall be applied by the contractor prior to the start of installation. This shall be performed on roofing felt or other approved material to demonstrate the process to the acceptance of the project contract administrator. Tests shall be repeated until the contract administrator is satisfied to allow the project to begin.

The applicator shall demonstrate 10cm. blocks, 20cm.blocks, and 20cm solid line (20cm.blocks to be seamless). Beginning and ending of blocks and solid lines to be straight and true.

All markings shall be fully cured prior to opening the area to traffic. Until cured, cones shall be placed in areas where traffic is anticipated.

Work areas shall not be opened to traffic until fully marked and safe for driving.

532.07.02 Surface Preparation

Sub-Section 532.07.02 of OPSS 532, June 1991, is amended by the addition of the following after the first paragraph:

All concrete surfaces shall be mechanically blast cleaned. All surface and embedded accumulations of hardened concrete layers, laitance, trowel finishes and other similar characteristics shall be completely removed leaving a bare concrete surface with exposed upper fascia of concrete aggregate. Care shall be taken not to, bruise or internally damage the substrate.

Prepare the pavement surface a minimum of 10 cm wider and longer than the pavement markings to be placed, such that an additional 5 cm of prepared area is on all sides of the pavement markings after they are applied.

Conduct all pavement surface preparation including curing compound removal in a manner that the pavement or joint materials is not damaged or left in condition that will mislead or misdirect the motorist. Repair any damage caused to the pavement, or joint material caused by surface preparation or the removal; of curing compounds by acceptable methods at no additional cost to the Owner.

A minimum of 90 percent of the existing markings must be removed to ensure proper adhesion.

After preparation, traces or accumulations of spent abrasives, laitance, removed markings and other debris shall be removed by oil-free compressed air.

All areas that are high-pressure water blast cleaned shall be allowed to dry sufficiently prior to the application of the pavement markings.

Surfaces that are to receive pavement markings shall be dry, cleaned of all dirt, loose material and other contaminants. Pavement surfaces shall be thoroughly dry immediately prior to the application of pavement markings.

Where pavement marking materials are applied in recessed cut applications the above surface preparation is not required.

532.09 MEASUREMENT FOR PAYMENT

Subsection 532.09.02 of OPSS 532, June 1991, is amended by the addition of the following:

532.09.02.01 Pavement Marking, Spray Field Reacted Polymeric

Clause 532.09.02.01 of OPSS 532, June 1991, is amended by the addition of the following tender item:

Pavement Marking, Spray Field Reacted Polymeric

532.10 BASIS OF PAYMENT

532.10.01 Pavement Marking, Spray Field Reacted Polymeric

Subsection 532.10.01 of OPSS 532, June 1991, is amended by the addition of the following tender item:

Pavement Marking, Spray Field Reacted Polymeric

Payment at the contract price of the above tender item shall include all necessary labour, materials and equipments required to do the work.

GO BUS PYLON ID SIGN - Item No. 141

Special Provision

Scope

This special provision covers the work for:

- The design, manufacturing, supply and installation of pylon sign and display cases.
- The supply and installation of electrical power for pylon sign
- The concrete foundation of the pylon sign
- The supply and installation of the pylon sign

As shown in the contract package.

References

CAN/CSA-G164/M, Hot Dip Galvanizing of Irregularly Shaped Articles

CSA W59-M, Welded Steel Construction

CSA W59.2-M, Welded Aluminum Construction

Submission and Design Requirement

Submit two (2) sets of detailed shop drawings for all structural design, electrical design, materials and graphic elements, sealed by a Professional Engineer currently registered to practice in Ontario to Contract Administrator at least two (2) weeks prior to the installation of Pylon I.D Sign.

Construction

Pylon Station Identification Signs/Display Cases/Platform Signs:

- These signs shall be manufactured by an experienced contractor identified on this special provision.
- Contractor to construct bases for all signs and supply power where required.
- Signs as detailed on Drawings.

Transit Information Board:

- These signs shall be manufactured by an experienced contractor identified under the Conditions of this Section.
- Sign board to have 4 mm white vinyl with green GO logo and black text on 6 mm thick tempered safety glass, provide on/off switch and electrical raceways.
- Provide telescoping collapsible gas springs, one per side of top hinged displays.
- Signage to be mounted on rounded corner aluminium tube post secured to concrete footings.

Acceptable products Suppliers:

Age Systems
21 Clark Blvd.
Brampton, Ontario, L6W 1X4
Tel: 905 455 2500

Art-Media
16610 Bayview Avenue, Suite 211
Newmarket, Ontario L3X 1X3
Tel: 905 853 7720

Brooks Signs
10 Prince Charles Rd.
R.R. #8 Brantford, Ontario N3T 5M1
Tel: 519 753 8108

Daytech Mfg. Ltd.
675 Petrolia Road

Toronto, Ontario, M3J 2N6
Tel: 416 675 1195

King Products Inc.
3150 Wharton Way
Mississauga, Ontario L4X 2C1
Tel: 905 625 0688

Meteor Sign
3615 Weston Road, Unit 7
North York, Ontario, M9L 1V8
Tel: 416 746 7498

Neon Products
655 Ellesmere Road
Toronto, Ontario M1R 4E8
Tel: 416 759 1111

Neu-Art Signs Ltd.
2 Thora Road
Scarborough, Ontario M1L 2P8
Tel: 416 694 4349

Saifee Neon
328 North Rivermede Road, Unit 1 & 2
Concord, Ontario L4K 3N5
Tel: 905 669 5221

Signcor
45 Riviera Drive, Suite 5
Markham, Ontario L3R 5J6
Tel: 905 479 6991

Steel Art Signs
37 Esna Park Drive
Markham, Ontario L3R 1C9
Tel: 905 474 1678

Twilight Signs & Neon Inc.
6985 Davand Drive, Unit 3
Mississauga, Ontario L5T 1Y7
Tel: 905 670 1210

WSI Signs Systems
29 McEwan Drive
Bolton, Ontario L7E 1H4
Tel: 905 857 8044

Zip Signs Ltd.
5040 North Service Road
Burlington, Ontario L7L 5R5
Tel: 905 332 8332

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

GO BUS PREFABRICATED PLATFORM SHELTER - Item No. 142

Special Provision

Scope

This special provision covers the requirements for installation of the Prefabricated Platform Shelter including the Concrete Slab, Bicycle Rack as shown on the contract drawings or as specified herein.

Materials

Prefabricated platform shelter is to be supplied by Daytech Manufacturing Ltd., Enseicom Inc., or approved equal.

Daytech Limited
675 Petrolia Road
Toronto, Ontario, M3J 2N6
Contact: Dion McGuire
Email: dmcguire@daytechlimited.com
Tel: 416 675 1195 Ext 240

Enseicom Inc.
Contact: Con Moussis
Email: conmoussis@ensei.com
Tel: 514 486 2626 Ext 16

Construction

General:

- (a) Quality Assurance
 - (i) Installer Qualification: Trained and approved by the respective manufacturer and having minimum five years experience in the installation of the work described in this Section and can show evidence of satisfactory completion of projects of similar size, scope and type.
 - (A) Roofing Installer: Member in good standing of the local roofing trade association affiliated with Canadian Roofing Contractors Association.
 - (ii) If requested, provide letter of certification from manufacturer stating that installers are approved applicators of its products, and are familiar with proper procedures and installation requirements required by the manufacturer.
 - (iii) Pre-Installation Meeting: Prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and

installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Engineer of the date and time of the meeting.

- (iv) **Manufacturer's Site Inspection:** Have the manufacturer's technical representative inspect the Work at suitable intervals during application and at conclusion of the work of this Section, to ensure the Work is correctly installed. When requested, submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.
 - (v) **Maintenance Seminars:** Engage a factory authorized service representative to instruct Engineer's maintenance personnel regarding proper maintenance procedures.
 - (vi) **Source Limitations:** Provide like products from a single manufacturer.
 - (vii) **Welding:**
 - (A) **Steel:** To CSA W59 by fabricators certified by the Canadian Welding Bureau to CSA W47.1.
 - (B) **Aluminium:** To CSA W59.2 by fabricators certified by the Canadian Welding Bureau to CSA W47.2.
 - (viii) **Accessibility Requirements:** Comply with authorities having jurisdiction and building code requirements.
 - (ix) **Glazing:** Perform work in accordance with recommendations of Glazing Association of North America (GANA). Size glass to Code requirements and verify that openings for glazing are correctly sized and within tolerance.
 - (x) **Finishing:** Materials, preparation and quality of work in conformance with requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute, issued by the local MPI Accredited Quality Assurance Association having jurisdiction.
- (b) **Performance Requirements**
- (i) **Design and Construction:** Installed work capable of withstanding the effects of gravity, dead loads, snow, ice, wind effects, seismic and stresses in accordance with minimum requirements of the building code.
 - (A) Design details and connections, where not shown on Drawings, in accordance with CAN/CSA-S16, CSA S136, and CSA S136.1.
 - (B) Comply with CSA S157/A157.1 for strength design in aluminium work.
 - (ii) **Engineering Design:** Retain a Professional Engineer, licensed in the Province of Ontario, with experience in work of comparable complexity and scope, to perform the following services as part of the work of this Section:
 - (A) Design work as required to resist live, dead, lateral, wind, snow, and seismic loads (location specific)

- (B) Structural design.
 - (C) Review, stamp, and sign shop drawings.
 - (D) Conduct shop and on-site inspections.
 - (E) Prepare and submit inspection reports.
- (iii) Thermal Movements: Allow for thermal movements resulting from maximum change in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.
 - (iv) Wind Loads: Uniform wind load pressures for suction, impact and gusting, with a return period probability required by the governing building code.
 - (v) Snow, Rain and Ice Loads: Capable to support uniform loads required by the governing building code.
 - (vi) Water Infiltration: Watertight to the interior under design conditions in combination with movements occurring due to imposed loads.
 - (vii) Use a safety factor of 2.5:1 minimum for glass design.
- (c) Power and Communication Service
- (i) Electrical service for the shelter is fed from the nearby Power Assemble. Distribution voltage shall be 120/208V, 3 phase, 4 wire or 120/240V, 1 phase, 3 wire system depending on the site conditions. Provide equipment in the shelter with nominal voltage complying with the supplying voltage and phase.
 - (A) Terminate power supply and communication wirings in power and communication junction boxes, respectively, complete with tamperproof enclosures and stainless steel removable access covers embossed or engraved "POWER WIRING" on one access cover and "LOW VOLTAGE WIRING" on the other access cover for each shelter. Provide barrier between power and communication compartments.
 - (B) The power and communication wirings shall include but not be limited to, the following components:
 - (I) Power conductors for shelter heaters and controls.
 - (II) Power conductors for shelter heat tracing and controls.
 - (III) Power conductors for shelter lighting and lighting control
 - (IV) Power conductors for shelter automatic door and operator.
 - (V) Power conductors for receptacles.
 - (VI) Power conductors for GO signage.
 - (VII) Power conductors for display case
 - (VIII) Communication cable for PA speaker
 - (IX) Communication cable for pay phone.
 - (X) Power and Communication cables for future ticket vending

- machine.
- (XI) Power and Communication cables for future vending machine.
- (XII) Provision for emergency blue light and communication.

(d) Submittals

(i) Shop Drawings: Bearing the signature and seal of the engineer responsible for the engineering design. Include construction details, plans, elevations, sections, details, and attachments to work of other Sections, material descriptions, dimensions of individual components and profiles.

(A) When requested, submit design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

(ii) Samples: Triplicate 300 mm x 300 mm panel, 300 mm linear, and individual samples fully representing physical properties, and selected finish and colours.

(A) Metal framing and supporting members.

(B) Aluminium panels.

(C) Light fixtures.

(D) Pressure sensitive butyl tape.

(E) Corner of door.

(F) Door hardware.

(G) Bench.

(H) Glass and glazing.

(I) Ventilation louver.

(J) Map display.

(K) Skylight (Polycarbonate glazing).

(L) Ceiling Panels.

(M) Mock up of all key components.

(iii) Maintenance Data: For inclusion in maintenance manuals.

(e) Coordination

(iv) Coordinate installation of anchorages for work of this Section. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete. Deliver items to site in time for installation.

- (f) Electrical Co-ordination
 - (v) Electrical Requirements: Coordinate the electrical and communication requirements with the other trades assembling shelter. Do wiring in strict conformity with requirements of the Electrical Code and Electrical Sections. Do all electrical work to a minimum requirement of the latest Ontario Electrical Safety Code and Canadian Electrical Safety Code. All work to be done by qualified electrical personnel. All work to be inspected and approved by ESA and local authorities having jurisdiction.
 - (A) Work by Electrical Sections: Supply and installation of disconnect switch/junction box and power to the disconnect switch/junction box.
 - (B) Work by This Section: Wiring and connection at and from disconnect switch/junction box to motors, starters, switches, controls, safety devices and other items requiring power.
 - (ii) Employ licensed electrician to wire and interconnect all operational and safety components for the Work. Terminate wiring required for connection to control circuitry and power at NEMA enclosures. Ground all control wiring.
 - (iii) Electrical Components, Devices, and Accessories: CSA Listed and labelled.

Products:

- (a) Materials - Metals
 - (i) Steel
 - (A) Structural Steel Shapes, Plates: CAN/CSA-G40.20/G40.21-M, Grade 350W.
 - (B) Hollow Structural Steel Sections: CAN/CSA-G40.20/G40.21-M, Grade 350W, Class H.
 - (C) Galvanized Sheet Steel: ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating.
 - (ii) Stainless Steel
 - (A) Stainless Steel Shapes: ASTM A484/A484M, Type 304.
 - (B) Stainless Steel Sheet and Plate: ASTM A167, Type 304.
 - (iii) Aluminium
 - (A) Aluminium Plate and Sheet: ASTM B209M, Alloy 6061-T6, anodizing quality.
 - (B) Aluminium Extrusions: ASTM B221M, Alloy 6063-T6, anodizing quality.
 - (C) Welding Rods, Aluminium: 5356 alloy.

- (b) Materials – Wood
 - (i) Wood Members, Exposed to View: No. 1 clean Maple Select or better, seasoned, straight, square and true on all four sides. Comply with minimum size and tolerances of CSA 0141. Grade-mark all wood materials. Kiln dry wood materials for interior use to a moisture content of 4% to 8%.
 - (ii) Softwood Plywood, Douglas Fir: CSA O121-M, Good One Side (G1S).
- (c) Materials – Unit Skylights
 - (i) Unit Skylight: Thermally broken prefinished aluminium frame, double glazed convex dome of 6 mm thick medium bronze tinted Thermoclear (Lexan) polycarbonate panels outer lite and clear inner lite, skylight free of ridge mullions, pre-formed insulated aluminium curb with deck attachment flanges.
 - (ii) Framing: Constructed of extruded Alloy 6063-T6 or 6061-T6 aluminium shapes, continuous gaskets applied above and below the glazing, and integral condensation gutters.
- (d) Materials - Roofing And Sheet Metal
 - (i) Membrane and Membrane Flashing: Single ply roofing membrane, 1.6 mm (0.060”) thick, grey colour, suitable for fully adhered assembly, largest single sheet possible.
 - (ii) Tapered Insulation: CAN/CSA-A247-M, wax impregnated fibreboard, taper cut to provide slopes indicated, on computer controlled machine and sequence packed with detailed installation instruction, minimum 13 mm (1/2”) thick.
 - (iii) Roof Drains: Manufacturer’s standard.
 - (iv) Adhesives, Cements, Bonding Agents, Sealant, Sealer, Primer and Tapes: Manufacturer standard for intended end use.
 - (v) Metal Edging and Membrane Terminations: Manufacturer standard for intended end use.
 - (vi) Flashing and Trim Sheet Metal: Minimum 24 gauge core thickness, zinc coating Z275, ASTM A526M commercial quality sheet, stretcher levelled or temper rolled to stretcher level standard of flatness. Prepainted to Stelcolour 8000 by Stelco Inc., or Dofasco System 8000 by Dofasco Inc. where exposed to view.
- (e) Materials - Aluminium Panels
 - (i) Aluminium Roof Edge, Fascia, Soffit and Ceiling Panels: Prefinished, plate aluminium alloy 3105-H14 or 3003-H14, minimum 3.2 mm nominal thickness, reinforced, corners welded and ground smooth. Prefinish exposed to view aluminium surfaces in high performance fluoropolymer finish.
 - (ii) Ceiling Panels: Interlocking ceiling aluminium soffit 16” 2 Panel- Gentek product with vendor standard “Dover Gray” finish or equivalent.

- (iii) Flashings, Trims and Closures: Prefinish aluminium of core thickness and finish to match panels.
 - (iv) Panel Support Girts, Suspension, Clips and Brackets: Hot dipped galvanized steel, stainless steel, or aluminum of required core thickness to meet design requirements, profile conforming to curvature of panels.
- (f) Materials - Glass and Glazing
- (i) Tempered Safety Glass: CAN/CGSB-12.1 Type 2, Class B, heat treated using the horizontal tong free method, with roll-wave distortion parallel to bottom edge of glass as installed.
 - (ii) Polycarbonate Glazing: Translucent, extruded-polycarbonate sheet with cellular cross section that provides isolated airspaces and coextruded with a UV-protective layer, medium bronze colour, Lexan Thermoclear by GE Polymershapes.
 - (iii) Glazing Gaskets: Neoprene, EPDM, thermoplastic or other approved material, of sufficient thickness to be 25% compressed when installed. Gaskets shall have a 13.8 MPa (2000 psi) tensile strength, Durometer A hardness of 50, plus/minus 5, resistance to permanent set 30% maximum, minimum elongation at break of 300% and resistance to ozone showing no cracks.
 - (iv) Glazing Tape: Pre-shimmed, extruded, ribbon shaped, non-drying, non-skinning, non-oxidizing polyisobutylene tape with continuous synthetic rubber spacer rod, sufficiently wide and thick as to completely cover bite area of glazing unit when unit is pushed into place.
 - (v) Shims, Spacers and Setting Blocks: 45, 50 and 90 Durometer A hardness plus/minus 5 respectively, neoprene rubber. Resistance to sunlight, weathering, oxidation and permanent deformation under load shall be prime essentials of shims, spacers and setting blocks.
- (g) Materials – Door Hardware
- (i) Retain services of an Architectural Hardware Consultant (AHC) for preparation of hardware shop drawings, keying, consultation with the Engineer and for on-site inspections.
 - (ii) Inspect installed hardware by the manufacturer's representative who shall certify in writing to the Owner, that hardware has been supplied and installed in accordance with the specifications and reviewed shop drawings, and are functioning properly.
 - (iii) Include in the work of this Section assistance and supervision when requested, to ensure correct installation.
 - (iv) Safeguard keys out of unauthorized hands. Hand deliver keys to Owner at Substantial Performance.
 - (v) Door Hardware

All doors shall have keyed cylinder locks on exterior side only. Interior side to be blank cover (no thumb latches).

All locking devices without exception shall be subject to established Russwin Grand Master System 5958 WRS Multiplex-6D4 or 6D2 keyways.

Keying shall be as follows:

- (a) All Stainless Steel cylinders subject to Line Grand Master Key.
- (b) All Stainless Steel cylinders subject to Station Master Key; and;
- (c) Shelter doors - keyed alike.

All keys and cylinders shall be full visual key code stamped on key bow and cylinder face.
DO NOT SUPPLY ANY COPIES OF GMK.

Provide S.S blank cover plates for cylinders and turn cylinders over to Owner.
All door hardware shall comply with Barrier Free Design Standard CAN/CSA-B651-M90, Article 4.2.6., Door Hardware.

Hinges: all exterior doors shall be provided with top to bottom continuous hinge. Continuous hinges must be made of 14 gauge, Type 304 stainless steel and be full mortise application. Hinge type Markar FM300.

Door closer: Top line product, heavy duty, single armed, overhead concealed, 180 degree opening, maximum required force for pushing or pulling to be 38N, delay closing feature to meet Barrier Free Design Standard requirements.

Door push bars and pulls: all doors shall be equipped as follows:

- (a) Equipped with a push bar on the push side only. It shall be Alumicor type #220, Stainless Steel for the full width of the door. The shop drawings shall show the push bar, type, size, connections, etc.
- (b) Equipped with a door pull on the pull side of the door. It shall be Alumicor type #221, Stainless Steel , 250 mm high pull. The shop drawings shall show the door pull, type, size, connection details, etc.

Locking devices for all shelter doors: supply to each leaf one maximum security deadlock with lateral bolt swing. There are external cylinders on these deadlocks. Supply blank cover on interior. Lock type AR MS18500A - 24.6 mm BS. Cylinder type - Corbin 525A x Russwin 6D4 or 6D2 Keyway x 29 mm - C26D. Turn over to Owner and provide blank cover plates. Cylinders to be keyed alike.

Door controls: all doors to be fitted with overhead concealed channel type door stay and holder. Size as required. Type: Rixson 1-400 Series. - Stainless Steel

Weatherseal: provide weatherseal to head and jambs of all exterior doors. Door seal to be aluminium with sponge neoprene min. 6 mm thick, width to suit frame stop. Type: Canada threshold W14. Door sweeps shall be brush type: W24S.

Kick plate: provide stainless steel kickplate on the push side of each door. The kick plate shall be 1.63 mm thick, 150 mm high for the full width of the door.

Door hold-open and stop: provide Stainless Steel approved positive locking hold-open device mounted at safety bar and door as shown on drawing. Provide approved door stop, mounted with door hold-open device.

- (vi) Automatic Door Operator: ANSI 156.19, surface mount, full housing, power open and spring close, complete with CSA labelled electro mechanical motor, operating temperature between -34 deg C and 71 deg C, maximum un-assisted opening force of 38 N.
 - (A) Activation Push Buttons: Interior/Exterior mounted on support column. 100x45 mm stainless steel plate, complete with international barrier free logo and standard warning label. Tamper resistant security fasteners.
 - (B) Key Switch: Single pole double throw switch to accept mortise cylinder, to de-activate the operator in hold-open or close position. Mount switch on 3 mm thick aluminium narrow gang plate.

- (h) Materials - Electrical
 - (i) General: Bearing CSA or Electrical Safety Authority inspection approval.
 - (ii) Grounding: Provide a grounding system to the authorities (ESA and GO Transit's) approval.
 - (iii) Wiring: TWH, RW90, THHN, TWU90, TECK 90, RWU, AC90 (X-LINK).
 - (A) Conductors: Copper with 1000 volt insulation, unless noted otherwise.
 - (B) Provide fish wire in all empty conduits.
 - (C) All wire underground to be direct buried rated.
 - (iv) Conduits: Exposed conduits not permitted.
 - (A) Unburied Conduit: Rigid galvanized or rigid PVC as permitted by code unless stated otherwise.
 - (B) Direct Buried Conduit: Rigid PVC conduit with ground, as permitted by code.
 - (C) Concrete Encased Conduit: Rigid PVC conduit with ground, as permitted by code.
 - (D) Rigid hot dipped, galvanized Epox or PVC coated.
 - (E) Expansion Couplings: Purpose built, for conduits cross construction and expansion joints.
 - (F) Lighting And Power Circuit Conduits: Minimum 21 mm diameter unless otherwise stated. Inside shelter. Between handholes 53 mm.
 - (G) Buried Conduit Or Conduit Embedded In Concrete: Minimum 25 mm diameter.

- (v) Conduit, Cable or Equipment Supports: Concealed, corrosion resistant metal or preserved wood. Where cutting of support materials is required, treat cut ends to maintain suitable protection from deterioration.
- (vi) Lighting Fixtures and Lamps: Easily maintained, gasketed water and vandal resistant. Support outlet and junction boxes independently of conduits running to them. Fixtures controlled by photocell and H-O-A select switch in a lockable box.
 - (A) H-O-A Select Switch: Complete with auxiliary contact and mounted adjacent to door to control lighting fixture.
 - (B) Photocell: Rated for operation at 120V, 1200 W capacity, -40 degree C to +40 degree C operating temperature range, SPST normally closed contact. Lockable PVC or Fibreglass box with replaceable hinges and clasps which house the control enclosure, suitable for mounting on 19 mm conduit nipple.
 - (C) Lighting Contactors: Electrically held complete with enclosure and control transformer. Provide complete lighting fixtures and lamps as designed in the fixture schedule. Support light fixtures independently of ceiling suspension systems. Support outlet and junction boxes independently of conduits running to them. Use No.4 Tensco Pattern Coil chain galvanized plated, with a rated strength of 180 lbs. (800 N) as manufactured by Dominion Chain Co. or equivalent. Use No.6 'S' type hook with a rated strength of 180 lbs. (800 N).
 - (D) All lighting contactors to be Square D No. 8903 series electrically held, complete with enclosure and control transformer. Switch shall have contacts to suit. Provide photocell and Hand-off-auto switch to suit installation. Provide a programmable controller timer as made by Siemens or Square D complete with an variable Day light.
- (vii) Outlet Boxes, Pull Boxes, Junction Boxes, Terminal Boxes: CSA approved, listed, labelled and comply with OESC requirements hot dip galvanized steel back box, complete with suitable securing lugs, conduit connectors, knockouts, escutcheons, covers and any other required accessory. All boxes and fitting to maximum finish of conduit system used.
 - (A) Duplex Power Receptacles: 120V GFCI with stainless steel face plate gasketed and rated for outside applications.
 - (B) Surface Mounted Boxes: FS type, solid construction.
 - (C) Boxes With Both Power and Communication Outlets: Barrired.
 - (D) Boxes for Submergence: Bearing submersible rating with all fittings designed and installed to prevent the entry of water.
- (viii) Accessories: Fittings, drains, plugs, cover plates, bushings, clips, rods and accessories as required and appropriate.
- (ix) Electric Radiant Heater: CSA approved, packaged factory assembled components with safety guard, anodized aluminium reflector and built-in adjustable directional

system, suitable for operation with 120V/208V/240V AC, single phase, 60 Hz electrical service. System controls to include following features:

- (A) Remote push-button control, mushroom type heavy duty Allan-Bradley or approved equal.
- (B) Thermostat: remote bulb type.

Use percentage input timer for metal sheath infrared heaters only.
- (C) Shelter heater shall be on a timer that allows 10 minutes of heating at a time. The controls are to be designed in such a way as to prevent operation should the push button be jammed in the position. No 347 V in shelters.
- (D) Radiant heater shall be CSA compliant, and shall have stainless steel or nickel chromium tubular heating element c/w factory installed protective cage. Heater shall be suspended by chains or threaded rods. Recommended installation height is 8'. The radiation angle should be between 60 and 75 degrees. Recommended voltage is 208V or 240V depending on the voltage available on site. Recommended wattage is 3000 watts. Heater shall be controlled by a push button which turns the heater ON for 10minutes (adjustable), as long as the ambient temperature is below 0 degrees. Approved manufacturers: Chromalox, Ouellet and Caloritech or approved equivalent.
- (E) Each heater shall be provide with its own controls complete with a local momentary push to start.
- (F) Ground fault interrupt breakers are required for each heater circuit.
- (x) Heat Tracing Cable and Termination Components: ULC Listed as Deicing and Snow-melting Equipment and CSA Certified as Designation 1B, 2B.
 - (A) Heating Cable: Two nickel-coated-copper bus wires embedded in parallel in a self-regulating polymer core, covered by a crosslinked dielectric jacket and protected by a tinned-copper braid and outer jacket, operating on 208, 240volts without the use of transformers, complete with suitable thermostats, variable power output in response to temperature all along its length, allowing the heating cable to be crossed over itself without overheating, cut to length in the field, and to have no heater-to-cold-lead connections buried in the pavement.
 - (B) Circuit Protection: Ground fault interrupt breaker or receptacle circuit protection as required.
- (xi) P.A. Speaker: Refer to GO Train Engineering Design Manual EN-0402-05 for hardwire and accessory requirements.
- (i) Materials – Paints And Finishes
 - (i) Manufacturers and Products: Listed under the Approved Product List (APL) section of the MPI Painting Manual.

- (ii) Use lead and mercury free products with low VOC content.
- (iii) Use only materials having a minimum MPI Environmentally Friendly E3 rating based on VOC (EPA Method 24) content levels.
- (iv) The Engineer will select colors from a manufacturer's full range of colors.

(j) Installation Materials And Accessories

- (i) Fasteners: Bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts.
 - (A) For Joining Steel Components: Hot dipped galvanized to CSA G164.
 - (B) For Joining Stainless Steel Components: Type 304 stainless steel.
 - (C) For Joining Aluminium Components: Type 304 stainless steel.
 - (D) For Joining Dissimilar Metal Components: Type 304 stainless steel.
- (ii) Primer Paint: CISC/CPMA 2-75.
- (iii) Galvanized Primer Paint: Organic zinc rich primer. For galvanized fabrications where touchup is to remain unpainted in finished work: Inorganic zinc rich primer, Galvafruid by W.R. Meadows of Canada Ltd.
- (iv) Grout: Non-shrink, non-metallic, flowable, 24h, 15 MPa, pull-out strength 7.9 MPa.
- (v) Drilled Anchors: Mega by ITW Construction Products or HSL by Hilti Inc. heavy-duty anchors, sizes to suit.
- (vi) Sealant: Non-yellowing, non-bleeding, non-migrating, capable of supporting its own weight, one component silicone base, intended for specific end use, colour to match colour of substrates.
 - (A) Horizontal Joints: Self levelling.
 - (B) Vertical and Overhead Joints: Non-sag.
- (vii) Isolation Coating: Acid and alkali resistant.
- (viii) Self-Adhering Decals: Pressure-sensitive, non-facing, with clear, colourless, non-yellowing adhesive, in design provided by Owner.
- (ix) Above Door Ventilation Louver: 50% free area, flush mount, prefinished aluminium louver and retention framing, bird screen.

(k) Fabrication – Structural Framing

- (i) Integrated set of mutually dependent components that form a completely assembled shelter, ready for site installation. Include structural framing, roof and wall panels, and accessories.

- (ii) Structural Framework: Fabricated from tubing, channel, angle, or tee extrusions. Connect framework with mechanical fasteners or welding.
- (l) Fabrication - Entrances
- (i) Preparation for Hardware: Drill and cut to template for hardware. Reinforce frames and door stiles to receive hardware in accordance with manufacturer's recommendations.
 - (ii) Arrange fasteners and attachments to conceal from view.
 - (iii) Accurately fit and secure joints and corners. Make joints hairline in appearance.
 - (iv) Prepare components with internal reinforcement for door hardware.
 - (v) Door Frame
 - (A) Fabricate and assemble units with joints only at intersection of aluminium members with uniform hairline joints; rigidly secure, and sealed in accordance with manufacturer's recommendations.
 - (vi) Doors
 - (A) Corner Construction: Mechanical clip fastening, sigma deep penetration plug welds and 30 mm long fillet welds inside and outside of all four corners
 - (B) Glazing Stops: Manufacturer's standard snap-in glazing stops with EPDM glazing gaskets. Factory glaze doors with clear tempered glass.
- (m) Fabrication - Metal Flashing And Trims
- (i) Fabricate metal flashings, coping, rain water leaders and other sheet metal work to details shown. Form pieces in 2400 mm (8') maximum lengths. Make allowance for expansion at joints.
 - (ii) Hem exposed edges on underside 13 mm (1/2"). Miter and seal corners with sealant.
 - (iii) Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
 - (iv) Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- (n) Fabrication - Benches
- (i) Seats: Form continuous slats for benches #1 clean Maple select or better, D4S, straight and free of splits and with eased edges. Each piece to be clean cut each end, true and spare, all pieces the same length +/-2 mm for each specific bench in equal lengths for each bench.
 - (ii) Arm Rests: 38 mm diameter aluminium pipes at 587 mm centres. Securely connect work to resist minimum 1.3 kN force vertically or horizontally.
 - (iii) Benches shall be inspected by Engineer on the premises prior to shipping.

- (o) Fabrication - Sign Boxes
 - (i) Fabricate illuminated sign boxes of prefinished extruded aluminium and display case.
 - (A) Design, construct and reinforce sign boxes and display case to provide strong, rigid, self-supporting, weathertight and light-tight housing to accommodate sign faces and electrical components. Use one piece casing lengths.
 - (ii) Provide access for installation, maintenance, and relamping, through hinged or removable access panel, having concealed latches to prevent unauthorized access.
 - (iii) Provide conceal mounting hardware for installation. Exposed materials to match sign boxes and casing.
 - (iv) Sign Face: Fabricate sign faces of Polymethyl Methacrylate (PMMA) cast acrylic sheet suitable for intended use in sign fabrication, colours as indicated. Apply self-stick vinyl film graphics.
 - (A) Support face along top, leaving sides and bottom floating to permit unrestricted thermal movement.
 - (B) Lift In Panels: 3 mm clear acrylic panels, capable of easy placement and removal yet secure when in place. Smooth on all edges.
 - (v) Sign displays shall be LED illuminated.
- (p) Welding
 - (i) Execute welding to avoid damage or distortion to work. Execute welding in accordance with following standards:
 - (A) CSA W48: For welding materials. If rods are used, only coated rods are allowed.
 - (B) CSA W59 Series: For design of connections and workmanship.
 - (C) CAN/CSA W117.2: For safety.
 - (ii) Thoroughly clean welded joints and expose metals for a sufficient distance to perform welding operations.
 - (iii) Test welds for conformance and remove work not meeting specified standards and replace to Engineer's acceptance.
 - (iv) Continuous weld all joints for the full length of each joint. Finish exposed welds smooth and flush, file or grind as required.
- (q) Hot Dip Galvanizing

- (i) Hot dip galvanized, after fabrication, steel metal fabrication items. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with brush or spray-applied anti-corrosion coating containing 92-95% zinc, in accordance with manufacturer's printed directions.
 - (A) Members exposed to elements when in final location.
 - (B) Members embedded on exterior side of exterior walls.
 - (C) Members imbedded in concrete.
 - (D) Members specified in this Section or indicated on Drawings.

- (ii) Hot-dip galvanize members in accordance with CAN/CSA G164 and requirements of the following ASTM standards, with minimum coating weights or thicknesses as follows:
 - (A) Rolled, Pressed and Forged Steel Shapes, Plates, Bars and Strips: ASTM A123/A123M; average weight of zinc coating of actual surface
 - (I) 4.8 mm and less member thickness: 600 g/sq.m.
 - (II) 6 mm and heavier members: 640 g/sq.m.
 - (B) Iron and Steel Hardware: ASTM A153/A153M; minimum weight of zinc coating, in gram per square meter of surface for the various classes of materials used in the Work.

- (r) Aluminium Finishes
 - (i) Prefinish exposed to view aluminium surfaces. Ensure aluminium finish is free from blemishes or scratches and uniform in colour and sheen. Pretreat aluminium and apply primer and finish coats in accordance with manufacturer's instructions.
 - (ii) Clear Anodic Finish: AA-M12C22A41, as fabricated nonspecular mechanical finish, medium matte etched chemical finish, architectural class I clear anodic coating of minimum 0.018 mm thick complying with AAMA 611.
 - (iii) Colour Anodic Finish: AA-M12C22A42/A44, as fabricated nonspecular mechanical finish, medium matte etched chemical finish, architectural class I, integrally coloured or electrolytically deposited color coating of minimum 0.018 mm thick complying with AAMA 611. Color as selected by Engineer from full range of industry colours and colour densities.
 - (iv) Baked Enamel, Two Coat: AAMA 2605, high performance fluoropolymer, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70% polyvinylidene fluoride resin by weight.
 - (v) Baked Enamel, Three Coat: AAMA 2605, high performance fluoropolymer, thermocured system consisting of specially formulated inhibitive primer,

fluoropolymer color coat, and fluoropolymer clear top coat, colour and top coats containing not less than 70% polyvinylidene fluoride resin by weight.

- (vi) Powder Coat Finish: Components to receive a baked on painted finish “Duranar XL” by PPG or equivalent over full multi-stage chlorine free pretreatment process. Powder coating to be applied with a minimum 12 gun automatic electrostatic spray gun. Finish shall be in exterior quality powder coating applied in accordance with AAMA 2603-02, selection to be available in standard RAL colours, thickness 2+mils, gloss +/- 5 degrees per technical data.

(s) Stainless-Steel Finishes

- (i) Polish Finish: Apply finish after fabrication. Remove tool and die marks and stretch lines or blend into finish. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - (A) Nondirectional Polish: AISI No. 8 mirror like reflective finish.
 - (B) Directional Polish: AISI No. 4 bright satin finish. Grind and polish surfaces to produce uniform, directionally textured, polished finish, free of cross scratches. Run grain with long dimension of each piece.
- (ii) Bright, Cold-Rolled, Unpolished Finish: No. 2B finish.

(t) Shop Finishing

- (i) Prepare surfaces and shop finish work in accordance with paint manufacturer and MPI Premium Grade requirements for intended substrates.
 - (A) Do work by skilled trades persons, to manufacturer's directions. Apply paint only when dust-free conditions prevail. Results shall be even, uniform in sheen, colour and texture; free from brush or roller marks, or other defects.
- (ii) Finishing Systems:
 - (A) Finish surfaces in accordance with MPI Painting Manual requirements.
 - (B) Steel Components: EXT 5.1L, pigmented polyurethane finish over inorganic zinc primer and high build epoxy.
- (iii) Sand, clean, dry, etch, neutralize and test surfaces under adequate illumination, ventilation and temperature requirements.
- (iv) Seal component joints and crevices with paintable sealants prior to finishing.
- (v) Reduce materials only when indicated by paint manufacturer. Reduce only with approved thinner.
- (vi) Tint each coat of finish progressively darker to enable confirmation of number of coats.

- (vii) Work specified is intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations. If the Contractor is of the opinion that the specified materials will not provide uniform coverage, report in writing to the Engineer, before commencing the work. If surfaces finished are not covered satisfactorily to the Engineer's opinion, apply additional coats at no additional cost.

Execution:

- (a) Installation - General
 - (i) Set work plumb, aligned, level and true to plane with full bearing on supports, to manufacturer's instructions.
 - (ii) Fasten shelter to cast-in anchor bolts or to concrete bases with expansion anchors.
 - (iii) Connect electrical power service to power distribution system in accordance with the project electrical requirements.
 - (iv) All electrical materials shall be specification grade, new and carry CSA approval or special ESA inspection approval.
 - (v) Similar devices and items shall be from one manufacturer through the project.
 - (vi) Securely display units, entrance guardrails, benches and ventilation louvres.
- (b) Installation – Unit Skylights
 - (i) Install work level, plumb, square, accurately aligned, correctly located, and without warp or rack.
 - (ii) Do not force units into place, nor superimpose on them loads for which they were not designed.
 - (iii) Anchor work securely in place to supports to resist all loads. Use attachment methods permitting adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.
 - (iv) Provide for thermal movement to take place between units and adjacent construction.
 - (v) Isolate with protective barrier contact areas between aluminium and dissimilar metals.
 - (vi) Install skylights including flashing, fasteners, hardware, sealants, gaskets, and glazing materials required for a complete, weatherproof installation.
 - (A) Seal joints to provide a weathertight assembly, and in accordance with sealant manufacturer's specifications.
- (c) Installation – Roofing and Sheet Metal
 - (i) Mechanically fasten sheathing to roof structure. Stagger end joints.

- (ii) Fasten tapered insulation to form positive drainage to drain.
 - (iii) Position roofing sheets to accommodate contours of the roof structure and shingle splices to avoid bucking water.
 - (iv) Unroll and position sheets without stretching. Allow the membrane to relax for approximately 1/2 hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.
 - (v) Exercise care to position membrane sheets. Locate field splices away from low spots and out of drain sumps. Shingle splices to prevent bucking of water.
 - (vi) Apply bonding adhesive full coverage to both the underside of the membrane and the substrate.
 - (vii) Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
 - (viii) Fold back the unbonded half of the membrane sheet and repeat the bonding procedure.
 - (ix) Install adjoining membrane sheets in the same manner, overlapping edges approximately 100 mm (4"). Do not apply bonding adhesive to the splice area.
 - (x) Membrane Splicing: Apply to roofing manufacturer standard.
 - (xi) Daily Seal: When the completion of work is not achieved by the end of the work day, provide a daily seal to temporarily close the membrane to prevent water infiltration, using manufacturer's sealers or other acceptable membrane seal in accordance with the manufacturer's requirements.
 - (xii) Continue the roof membrane as wall flashing where practicable. Follow manufacturer's typical flashing procedures for all wall, curb, and penetration flashing including metal edging/coping and roof drain applications.
 - (xiii) Roof Drains and Drain Flashing: Set roof drains to a water-tight installation. Carry flashing down into sump to edge of drain fitting. Embed flashing flange in full bed adhesive or pourable sealer. Extend flashing 200 mm (8") beyond drains onto roof membrane.
 - (xiv) Install sheet metal work in accordance with CRCA specifications, using concealed fastenings except where approved before installation.
 - (A) Counterflash membrane flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock forming tight fit over hook strips.
 - (B) Lock end joints and caulk with sealant.
- (d) Installation – Aluminium Panels
- (i) Install work plumb, level with intersecting parts joined together to provide tight,

accurately fitted joints with adjoining surfaces in true planes. Attach components in manner not restricting thermal movement.

- (ii) Fasten panels cladding to supports with concealed fasteners where possible and at spacings to suit loading requirements. Sealed side and lap joints.
 - (iii) Align panels end-to-end to provide accurate fit with corresponding sections parallel and straight. Locate joints directly over supports.
 - (iv) Cut and flash openings. Provide necessary closures, flashings, drips and trims, sealed to stop direct weather penetration.
 - (v) Seal junctions with adjoining work with sealant. Apply and cure sealant in accordance with manufacturer's instructions.
- (e) Installation -Signage
- (i) Erect and secure signs plumb and level using non-staining, non-ferrous fasteners.
- (f) Installation – Glass And Glazing
- (i) Handle and install glass in accordance with manufacturer's directions. Prevent nicks, abrasions and other damage likely to develop stress on edges.
 - (ii) Accurately size glass to fit openings allowing clearances recommended by Glass Association of North America. Cut glass clean and free of nicks and damaged edges. Grind smooth and polish exposed glass edges. Do not cut or abrade tempered, heat treated, or coated glass.
 - (iii) Without limitations, cracked or scratched glass, shrinking, cracking, staining, hardening, sagging of glazing materials; loosening or rattling of glass; leaking of glazed joints will be rejected.
 - (iv) Use setting blocks and spacers as required to properly support glass, centred in place in the glazing space independent of the materials and to uniformly distribute its load, with uniform bite and face and edge clearance, free from twist, warp or other distortion likely to develop stress.
 - (A) Use a minimum of 2 setting blocks, located at the quarter points.
 - (B) Locate spacers at jamb edges of glass, uniformly spaced at 600 mm o.c. maximum, and 300 mm maximum from top and bottom.
 - (v) Assess coloured glass units for colour uniformity and arrange to avoid abrupt variation in appearance.
 - (vi) Leave labels on glass until it has been set and inspected and approved. Leave glass whole and without cracks, scratches or other defects and with setting in perfect condition at completion, to the approval of the Engineer.
 - (vii) Remove rejected, broken or damaged glass due to defective materials or improper setting and replace with perfect materials. Units producing distorted vision will be rejected and replaced at the reasonable discretion of the Engineer.

- (viii) Seal glass-to-glass joints with sealant.
 - (ix) Apply decals to all wall glazing panels, and doors free of wrinkles, air bubbles and other defects.
- (g) Installation - Electrical
- (i) Install, program, set-up and adjust all equipment as indicated and/or required and complete all commissioning.
 - (ii) Door Entry Wiring: Provide concealed in complete metal conduit raceway system.
 - (iii) Conduits: Conceal conduits, support conduits from the shelter structure. Nails or tie wires are not acceptable.
 - (A) Maximum armoured cable (BX) length of 3 m is acceptable in the ceiling space, use rigid galvanized epox coated conduit otherwise.
 - (iv) Seal tight conduits used to connect motors and other vibrating equipment, minimize runs.
 - (v) Electric Radiant Heater: Securely mount heaters at locations indicated.
 - (vi) Heat Tracing: Make heating cable power connection and end seal terminations in junction box. Place heat trace thermostat bulb in 25 mm PVC conduit, cap at end, install 900 mm in concrete, place between cables.
 - (vii) Equipment Mounting Heights: Mounting height of equipment is from finished floor to centreline of equipment unless indicated otherwise. Verify unspecified heights, dimensioned locations and ensure indicated heights in accordance with current barrier free access requirements before installation.
- (h) Installation - Sealants
- (i) Clean joints and spaces which are to be sealed. Ensure joints are dry and free of dust, loose mortar, oil, grease, oxidation, coatings, form release agents, sealers and other foreign material.
 - (ii) Clean porous surfaces, and metal surfaces, except pre-coated metals, of rust, mill scale and foreign materials by wire brushing, grinding or sanding.
 - (iii) Clean glass surfaces with cellulose sponges or clean rags soaked with ethyl alcohol, ketone solvent, xylol or toluol and wipe dry with clean cloth.
 - (iv) Clean pre-coated metals with solutions or compounds which will not injure finish and which are compatible with joint primer and sealant.
 - (v) Install joint backing material to achieve correct and uniform joint profile.
 - (vi) On horizontal traffic surfaces, support joint filler against vertical movement which might result from traffic loads, including foot traffic.
 - (vii) Where surfaces adjacent to joints are likely to become coated with sealant during

application, mask surfaces prior to priming and sealing.

- (viii) Do not exceed shelf life and pot life of materials, and installation times, as stated by manufacturers.
 - (ix) Use materials as received from manufacturer, without additions, deletions and adulterations of materials.
 - (x) Seal joints in surfaces to be painted before surfaces are painted. Where surfaces to be sealed are prime painted in shop before sealing check to make sure prime paint is compatible with primer and sealant. If they are incompatible, inform Consultant and change primer and sealant to compatible types approved by Consultant.
 - (xi) Prime joints as required by sealant manufacturer. Prime sides of joints for type of surface being sealed prior to application of joint backing, bond breaker or sealant.
 - (xii) Apply sealant using hand operated guns or pressure equipment fitted with suitable nozzle size and equipment approved by sealant manufacturer. Apply in accordance with manufacturer's directions and recommendations.
 - (xiii) Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill all voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead shall not be acceptable.
 - (xiv) Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.
 - (xv) Compound may be tooled, provided that such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.
 - (xvi) Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.
 - (xvii) Joint surfaces shall be straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf life products.
- (i) Adjusting And Cleaning
 - (i) After completing installation, inspect exposed finishes and repair damaged finishes.

Reinforced Concrete Slab:

As the shelter concrete pad dimensions may vary with the manufacturer requirements, the Contractor shall coordinate with the manufacturer of shelter for the actual size of the shelter concrete pad and allow 10-15% increase in the dimensions of the concrete pad.

The number of lighting fixtures has been changed to eight in total. Also, lighting for the shelter is to be "RUUD Canopy Lighting" or approved equal - CSA approved.

RUUD Canada Lighting
6889 Rexwood Road, Unit 3
Mississauga, ON L4V 1R2
<http://www.ruud.ca/>
Tel: 800-473-1234
Fax: 800-890-7507
Email: info@ruud.ca

The size of shelter heaters to be 3 kW from the existing 950 W, each complete with factory installed wire cage.

Control of the shelter heater to be of one mushroom type button with one timer, with manufacturer to be Allen - Bradley or approved equal.

Allen-Bradley
<http://www.rockwellautomation.com>

Bicycle Rack:

Bicycle Rack is to be supplied by CORA or approved equal.

CORA bike rack Inc.
Email: info@cora.com
Tel: 1 800 354 8624 or 3606587103
Fax: 1 800 354 8640

Model: EXPO 7510
Quantity: 1
Capacity: 10
Finish: Galvanized steel
Colour: Hunter Green

This series has a two bolt fastening system with 1/2 inch clearance holes.
Galvanized bolts > 5 inch are recommended.

Standard hardware for installing on concrete is included in the shipping package and in most cases a hand-held drill and a wrench are all that is required to secure the units in place.

Capacity is rated for double-sided access. Single-sided access reduces capacity by one-third.

Allow two feet from the footing pin to a curb or wall when installing for single-sided use.

Parallel layouts allow twelve feet between main-frame. In-line layouts allow three feet between mainframe. Allow 1 meter between the shoulder and any obstruction.

Measurement for Payment

There will be no measurements for this Lump Sum tender item. No additional payment will be made for the construction of Reinforced Concrete Slab, supply and installation of the Prefabricated Bus Platform Shelter on top of the reinforced concrete slab, and the supply and installation of the Bicycle Rack.

Basis of Payment

Payment at the tender unit price bid for the above items shall be full compensation for all equipment, labour and materials to do the work.

DISTRIBUTION ASSEMBLIES - Item No. 149

SUPPLY CONTROL CABINET ASSEMBLIES - Item No. 165

Special Provision No. 614F01

January 2009

Amendment to OPSS 614, November 2008

614.05 MATERIALS

Subsection 614.05.01 of OPSS 615 is deleted in its entirety and replaced with the following:

614.05.01 Distribution Assemblies

Distribution assemblies shall be according to OPSS 2414, November 2008, and the requirements as described in Table 1.

**TABLE 1
Description of Distribution Assemblies**

Description
<p>Supply 'D' – GO Bus Shelter and Platform Lighting</p> <p>Distribution Assembly, Pad Mounted, 37.5 kVA, 120/240 Volt, 1 Phase, complete with:</p> <ul style="list-style-type: none">• 200 Amp. Main fused Disconnect 240 Volt, 2 pole, 150 Amp Fuse• 1-Programmable Logic Controller, 120 Volt, LOGO Series, type Siemens 6ED1-052-1FB00-0BA6• 3 – 30 Amp Lighting Contactor, 4-pole, 120 Volt coil• 1-Panelboard 120/240 Volt, 100A, 1 Phase, complete with:<ul style="list-style-type: none">- 1 - 100 Amp. Main Circuit Breaker, 240 Volt, 2-pole- 13 - 15 Amp, 1-pole Circuit Breakers- 5 – 30 Amp, 1-pole Circuit Breakers- 2 – 30 Amp, 2-pole Circuit Breakers- 2 – 30 Amp, 2-pole GFI Circuit Breakers (for Heat Tracing)• 200 Amp meter socket per Hydro One standards

Subsection 614.05.02 of OPSS 615 is deleted in its entirety and replaced with the following:

614.05.02 Supply Control Cabinet Assemblies

Supply control cabinet assemblies shall be according to OPSS 2414, November 2008, and the requirements as described in Table 2.

TABLE 2
Description of Supply Control Cabinet Assemblies

Description
<p>SUPPLY ‘A’ – Ramp S-N/S Lighting and Flashing Beacon</p> <p>Supply Control Cabinet Assembly, Type 1, 120/240 Volt,</p> <ul style="list-style-type: none"> • 100 Amp. , 1 Phase, complete with: • 100 Amp. Main Circuit Breaker • 1 - 30 Amp. Traffic Signal Circuit Breaker (for Flashing Beacon) • 6 - 30 Amp. Circuit Breakers. • 200 Amp. meter socket as per Hydro One standards.
<p>SUPPLY ‘B’ – Traffic Signals and Lighting at Ramp Terminals</p> <p>Supply Control Cabinet Assembly, Type 1, 120/240 Volt,</p> <ul style="list-style-type: none"> • 100 Amp. , 1 Phase, complete with: • 100 Amp. Main Circuit Breaker • 60 Amp. Traffic Signal Circuit Breaker. • 6 - 30 Amp. Circuit Breakers. • 200 Amp. meter socket as per Hydro One standards.
<p>SUPPLY ‘C’ – Commuter Parking Lot Illumination</p> <p>Supply Control Cabinet Assembly, Type 1 modified as indicated elsewhere, 120/240 Volt, 100 Amp. , 1 Phase, complete with:</p> <ul style="list-style-type: none"> • 1-Programmable Logic Controller, 120 Volt, LOGO Series, type Siemens 6ED1-052-1FB00-0BA6 • 2 - 30 Amp. Lighting contactor, 4-pole, 120 Volt coil • 2 -15 Amp 1-pole Circuit Breaker • 4 – 30 Amp 1-pole Circuit Breaker • 200 Amp. meter socket as per Hydro One standards.

OPSS 614 is amended by the addition of the following section:

614.05.8 Programmable Logic Controllers

The programmable logic controllers shall be of type Siemens 6ED1-052-1FB00-0BA6 for 120 Volt operation, with enhanced temperature range from -40°C to +70°C and shall include 4 relay outputs for mounting on the 35mm DIN rail. The PLC package shall contain all protection for all inputs and outputs, power supply and logic modules, text display, manual, memory card, software and necessary set up and testing equipment.

The PLC logic shall perform functions described on layout drawings.

No substitute manufacturers are allowed on this project.

Section 614.07.07 of OPSS 614 is amended by the addition of the following subsection:

614-07.07.03 Training

The Contractor shall arrange training for the MTO and GO Transit maintenance personnel (three sessions for MTO and three sessions for GO Transit) in the operation and programming of the PLC. For the purpose of reprogramming all necessary equipment, laptops shall be provided to the MTO and GO Transit maintenance in quality, one for each company.

The Contractor shall contact:

MTO: Rick McDougall – Tel. 416-314-1898 x342 or cell 416-564-5983

GO: Robert Swackhamer – Tel. 416+896+3600 x5461 or cell 416-433-2094

STEEL POLES, BASE MOUNTED - Item No. 150

Special Provision	May 2010
-------------------	----------

Amendment to OPSS 615, September 1993

Subsection 615.05.03 is amended by the addition of the following:

6.0m steel poles for base mounting at the GO Transit Bus Shelter/Platform shall be square, hot dipped galvanized poles as shown in the detail drawings and as manufactured by Spina or Dynapole.

Poles shall be complete with wiring access plate and shall be finished platinum powder coat paint.

ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES - Item No. 153, 173

Special Provision No. 617F01	January 2009
------------------------------	--------------

Amendment to OPSS 617, November 2008

617.05 MATERIALS

617.05.01 Luminaires

Clause 617.05.01.01 of OPSS 617 is deleted in its entirety and replaced with the following:

617.05.01.01 Roadway Lighting Type

Roadway lighting luminaires shall be according to OPSS 2432 and the requirements as described in Table 2.

**TABLE 2
Description of Roadway Lighting Luminaires**

Description
<p>Ramp and Roadway Lighting - MTO</p> <p>Roadway lighting luminaire(s) - 400-Watt high-pressure sodium, 250-Watt Integral type ballast, IES type II-M-FC distribution, for 120/240 -Volt operation. Manufacturer's Name & Photometric curve(s): General Electric GE451001 or Cooper Lighting 766653. The luminaire(s) shall be complete with 250- Watt high pressure sodium lamp ANSI designation S50VA-250.</p>
<p>Commuter Parking Lot Lighting - MTO</p> <p>Roadway lighting luminaire(s) - 400-Watt high-pressure sodium, 400-Watt Integral type ballast, IES type II-M-FC distribution, for 120/240-Volt operation. Manufacturer's Name & Photometric curve(s): General Electric GE451001 or Cooper Lighting 766653. The luminaire(s) shall be complete with 400 - Watt high pressure sodium lamp ANSI designation S50VA-400.</p>
<p>Bus Platform Lighting – GO Transit</p> <p>Roadway lighting luminaire(s) - 1500-Watt high-pressure sodium, 150 Watt housing, flat glass, 150-Watt auto-transformer type ballast, IES type II-M-C distribution, for 120-Volt operation. Manufacturer's Name & Photometric curve(s): KIM Lighting #SAR3-150. The luminaire(s) shall be complete with 150 - Watt clear high pressure sodium lamp ANSI designation S55-150, and 125mm long extruded aluminum arm for pole mounting. Finish shall be platinum silver powder coat paint.</p>

TRAFFIC SIGNAL CONTROLLERS - Item No. 181

Special Provision No. 622F01

January 2008

Amendments to OPSS 622.

622.05 MATERIAL

Section 622.05 of OPSS 622 is amended by the addition of the following subsections:

622.05.09 Uninterruptible Power Supply (UPS) System

The Uninterruptible Power Supply system shall be according to the MATERIAL SPECIFICATION FOR UNINTERRUPTIBLE POWER SUPPLY SYSTEMS FOR “LED” TRAFFIC SIGNALS and shall be suitable for use with the NEMA traffic signal controller supplied by the Region of York for installation at the intersection of Woodbine Avenue and the S-N/S exit ramp terminal/Parking Lot Entrance.

622.05.10 Forced Flash Relay

The forced flash relay shall be 10 Amp, 60 Hz, Double Pole Double Throw (DP DT) relay.

622.05.11 Heater/Fan breaker

The heater/fan breaker shall be 15 Amp breaker mounted on the service panel.

622.07 CONSTRUCTION

622.07.01 Signal Controller Cabinet Supplied by the Contractor

Subsection 622.07.01 of OPSS 622 is deleted in its entirety and replaced with the following:

The Contractor shall install an eight-phase solid state microprocessor-based controller with a 12 position back panel set up to operate on phases 1, 2, 3, 4, 6, 7 and 8 and in a semi-actuated mode. Phase 5 will not be used for the initial installation. The controller shall provide for pedestrian timing on 4 phases and vehicle timing on 8 phases. The controller shall be programmable to start up in Phase 2 and 6 amber and Phase 4 and 8 red intervals.

The controller shall be mounted on the concrete pad in accordance with the detail drawing shown elsewhere in the contract package.

The Region has pre-ordered and paid for the traffic signal controller complete with the above equipment. The Contractor shall pick up the controller at the Region's Operations Centre at 90 Bales Drive East, East Gwillimbury. The controller and accessory equipment shall be set up and tested by the Region. The Contractor shall provide a warranty for the controller and its equipment between the time of pick up and the time the controller is activated and inspected by Regional staff.

The title of subsection 622.07.04 of OPSS 622 is amended as follows.

622.07.04 Signal Controller Cabinet and UPS Cabinet

622.07.04.02 Pad Mounted Controller Cabinet

Clause 622.07.04.02 of OPSS 622 is amended by deleting the second paragraph.

Subsection 622.07.04 of OPSS 622 is amended by the addition of the following clause:

622.07.04.06 Pad Mounted UPS Cabinet

The pad mounted UPS cabinet shall be installed on a pedestal manufactured of the same material as the cabinet. The pedestal shall be anchored to the pad and secured in place at the location specified according to the Contract Documents. The UPS control unit and the UPS automatic switch shall be installed in the signal controller cabinet according to the Contract Documents. A 10 Amp Double Pole Double Throw (DPDT) 60 Hz relay shall be installed in the traffic signal controller cabinet to allow flash operation when initiated by the UPS control unit. All wiring shall be according to the Contract Documents.

622.07.04.08 UPS Automatic Switch, Forced Flash Relay and Heater/Fan breaker

The UPS automatic switch, forced flash relay, heater/fan breaker and terminal block shall be installed in the signal controller cabinet according to the Contract Documents.

622.07.06 Quality Control

622.07.06.01.01 General

Clause 622.07.06.01.01 of OPSS 622 is amended in that the second sentence is replaced by the following:

The Contractor shall inspect the traffic signal controllers, UPS systems, and other components prior to installation to ensure that they are according to the Contract Documents.

622.07.06.02.01 General

Clause 622.07.06.02.01 of OPSS 622 is amended by the addition of the following:

The Contractor shall notify the Contract Administrator and ministry electrical staff of the time and location of all testing 3 Working Days prior to the start of each test.

The Contractor shall inspect and test the work to ensure that it is according to the requirements of the contract, 3 Working Days prior to the actual "switch on" of the signals. In particular, and without limiting the foregoing, the Contractor shall ensure that all components are installed, tested and proven as indicated in the Contract Documents; that all cables are energized and in working order and that the signal timing is consistent and complete, without activating the traffic signals for public display.

Subsection 622.07.06 of OPSS 622 is amended by the addition of the following clause:

622.07.06.03 Testing of UPS System

The Contractor shall activate the UPS system according to the manufacturer's recommendations. The Contractor is responsible for all testing and documentation required to establish acceptance of the installation and operation of material supplied.

The following identifies the specific quality control requirements:

622.07.06.03.01 Pre-installation Testing and Inspection

Prior to the installation of the UPS system, the UPS system shall be tested and inspected to verify that it performs according to the manufacturer's specifications and the Contract Documents. In particular, and without limiting the foregoing, the UPS system shall be operated and tested to verify the following:

- Transfer time in case of power failure is less than 60 milliseconds.
- Voltage regulation at 120 VAC is +/- 3 percent.
- Frequency regulation at 60 Hz is +/- 3 Hz.
- Thermostat controlled battery heating mats operate according to the manufacturer's specifications.
- When powered by the batteries alone, the UPS system provides full signal operation at full load for a minimum of 4 hours, and then switches over to flashing operation and provides flashing operation for a further 6 hours.

622.07.06.03.02 Proof of Performance Testing and Inspection

The UPS system shall be tested and inspected to verify that it performs according to the manufacturer's specifications and the Contract Documents. The Proof of Performance testing and inspection shall include all testing and inspection identified under Pre-installation Testing and Inspection. In particular, and without limiting the foregoing, the Contractor shall ensure that all components are installed, tested and proven as indicated in the Contract Documents. In addition, the Contractor shall perform visual inspection on the installed UPS system and perform all tests on grounding of equipment according to OPSS 609.

The inspection, testing and test results shall be witnessed by the Quality Verification Engineer. The Quality Verification Engineer shall issue a Certificate of Conformance that the work has been inspected and tested, and that the material and installation are in General Conformance with the requirements of the contract.

622.07.06.03.03 Testing for New UPS System “Switch On”

A new UPS system, at a location not previously equipped with a UPS system, or a new UPS system to replace an existing UPS system, shall be initially switched on for operation according to the following requirements:

- The Contractor shall give the Contract Administrator a minimum of 3 Working Days notice of when the UPS system will be installed or switched over, and shall reconfirm that the work will be done as scheduled 24 hours prior to doing the work.
- The Contractor shall complete all repairs or replacement of defective components prior to activation.
- UPS “Switch On” for operation will not be permitted on Fridays, Saturdays, Sundays, Mondays, or statutory holidays.
- Traffic shall be under police supervision during this operation.

622.07.08 Traffic Signal Control Programming and Timing

Subsection 622.07.08 of OPSS 622 is deleted and replaced with the following:

The Contractor is responsible for ensuring that all controller and conflict monitor programming is installed, and is responsible for the setting of all timing controls, switches and programming controls.

The Contract Administrator will provide the traffic signal interval timing to the Contractor. The Contractor is responsible for verifying to his own satisfaction that the signal timing is consistent and complete. The Contractor is responsible for installing the traffic signal timing into the traffic signal controller.

OPSS 622 is amended by the addition of the following section:

622.08 QUALITY ASSURANCE

The Contract Administrator and the Ministry’s electrical coordinator may witness the testing of the traffic signal controller and UPS system performed by the Contractor. The Contract Administrator will advise the Contractor if remote monitoring is to be connected to the traffic signal controller. The Contract Administrator will also be in attendance during the “Switch On” of the traffic signals.

622.10.02 Individual Item Method

Clause 622.10.02.01 of OPSS 622 is deleted and replaced with the following:

622.10.02.01 Traffic Signal Controllers - Item

Payment at the Contract price for the above items shall be full compensation for all labour, Equipment and Materials to do the work.

-----oo0oo-----

MATERIAL SPECIFICATION FOR UNINTERRUPTIBLE POWER SUPPLY SYSTEMS FOR “LED” TRAFFIC SIGNALS

- 1.0 SCOPE**
- 2.0 REFERENCES**
- 3.0 DEFINITIONS**
- 4.0 SUBMISSION & DESIGN REQUIREMENTS – Not used**
- 5.0 MATERIALS**
- 6.0 EQUIPMENT – Not Used**
- 7.0 PRODUCTION**
- 8.0 QUALITY ASSURANCE**
- 9.0 OWNER PURCHASE OF MATERIAL – Not Used**

1.0 SCOPE

This special provision covers the requirements for Uninterruptible Power Supply (UPS) system for Traffic Signals utilizing “LED” Modules.

2.0 REFERENCES

This special provision refers to the following standards, specifications, or publications:

Ontario Provincial Standards Specifications, Construction

OPSS 601 Electrical Work – General
OPSS 609 Construction Specification for Grounding
OPSS 622 Construction Specification for the Installation of Traffic Signal Controllers

Canadian Standards Association

C22.1-06 Canadian Electrical Code
C22.2 No. 94-M91 (R2001) Special Purpose Enclosures

Electrical Safety Authority

Ontario Electrical Safety Code, 23rd Edition 2002

3.0 DEFINITIONS

CSA Enclosure Type 3: means an enclosure for either indoor or outdoor use, constructed so as to provide a degree of protection against rain, snow, and windblown dust, undamaged by the external formation of ice on the enclosure.

UPS: means Uninterruptible Power Supply.

AGM VRLA Battery: means sealed battery using Absorbed Glass Mat & Valve Regulated Lead Acid technology

Gel Cell Battery: means sealed battery contains acid in a gel form so it does not leak.

5.0 MATERIALS

5.1 General

The UPS system shall provide uninterruptible power and conditioning of the utility power required for the operation of all electronic equipment used to operate the traffic control signals in the event of main utility power supply failure or voltage or frequency fluctuations.

The UPS system shall be supplied complete with UPS automatic switch.

The UPS control unit shall be a line interactive or double conversion type with automatic voltage regulation for 120V, 60Hz, single phase.

The UPS system shall include all wiring necessary to interconnect the UPS control unit to the power source and to the traffic signal control components.

The UPS control unit must latch from line to battery and from battery to line (transfer time) in less than 60 milliseconds.

When installed at a traffic signal using LED signal lamps, the UPS system shall be capable of maintaining full signal display operation for a minimum of 4 hours after which it shall be capable of maintaining a flashing signal display for a further 6 hours minimum.

Switching from full operation to a flashing operation may be determined by a timer circuit or based on battery capacity.

If the UPS control unit or the batteries fail, the system shall automatically switch back to utility line power.

The UPS cabinet shall be supplied complete with pedestal or pole mounting hardware as indicated in the Contract Documents.

The battery installation and wiring to the batteries shall be according to Ontario Electrical Safety Code.

The UPS system components shall operate properly for the time periods specified above under the following conditions:

- Ambient temperature -37°C to $+74^{\circ}\text{C}$
- Humidity: 5 percent to 95 percent
- The UPS system components shall withstand shock and vibration according to NEMA TS 2-2003

5.2 UPS Cabinet

The UPS cabinet shall be a CSA-Type 3 cabinet constructed of aluminium and shall be painted grey. The cabinet shall be fabricated using sheet aluminium 3.17 mm thick and adequately reinforced by welded aluminium members.

The dimensions and details of the UPS cabinet shall be according to the Contract Documents.

The cabinet shall have one door hinged on one side with a continuous stainless steel piano hinge.

The door shall use a latch and lock mechanism. The door handle shall be zinc coated and painted the same colour as the cabinet.

The opening in the UPS cabinet shall allow full access to UPS components housed in the cabinet.

The cabinet shall be vented according to the Ontario Electrical Code.

The cabinet shall be approved by the Electrical Safety Authority or by a certification organization accredited by the Standards Council of Canada.

The circuit providing power to the battery heating mats shall be thermostat controlled and the thermostat shall be located in the UPS cabinet.

5.3 Batteries:

Batteries shall be AGM VRLA or Gel Cell technology.

Battery leads to UPS control unit shall be of suitable length and not less than 2.5 metres.

Each battery shall be placed on its own heater mat with all heater mats being supplied with AC power by the UPS control unit.

Battery mats shall become inoperable with loss of line voltage.

The batteries shall be protected by a circuit breaker or a fuse.

Each battery shall be labelled with the date of manufacture. The label shall be at a visible location on the top of the battery.

In addition to any other warranty, the Contractor shall provide a 3 year warranty on the batteries. The warranty period for each battery shall be 3 years, commencing from the date of "switch on" for operation of the UPS system in which the batteries are used. Any defective battery shall be replaced within 30 days. The warranty shall include all labour, equipment, and materials required to replace the batteries, including traffic control and all removal and disposal work. The Contractor shall be responsible for the removal and disposal of any defective batteries replaced under warranty. The Owner shall be the sole judge in determining if a battery is defective.

5.4 UPS Control Unit

The UPS control unit shall be rack mountable with the following maximum dimensions: Width of 483 mm (19-inch), depth of 254 mm (10 inches), and height of 153 mm (6 inches).

The front face of the control unit shall have indicators capable of displaying the following:

- Number of times the system was on battery supply
- Total time on battery supply
- Battery charge status to indicate the battery capacity

Each of the battery supply indicators listed above shall have a manual reset switch.

The UPS control unit shall have a minimum of one standard 120V grounded socket located on either the back or the front panel.

The UPS control unit shall contain over-current protection located on the front panel to switch power On/Off from the batteries and to switch AC input and output power On/Off.

The UPS control unit shall have a self-test feature to test the UPS Automatic Switch and the control circuitry.

The UPS control unit shall have an open collector output or an AC or DC contact closure to indicate when the traffic signal is operating on battery supply.

The UPS control unit shall have an open collector output or an AC or DC contact closure to indicate low battery alarm.

The UPS control unit shall have a minimum of 1 switched AC output that will switch on when the traffic signal has been on battery supply continuously for 4 hours.

A 9 pin male serial port shall be located on the front panel to allow for communication to a laptop computer for changing software settings.

A set of battery voltage test points, or a readout indicating battery voltage condition shall be located on the front panel.

5.5 UPS Automatic Switch

The UPS automatic switch shall allow the UPS control unit to be removed for replacement or maintenance without turning off the traffic signal system.

The utility line power shall be connected to the input of the automatic switch. Under normal operating conditions the automatic switch shall connect the utility line power to the UPS control unit. In the event that the UPS control unit is not present or does not function, the automatic switch shall automatically connect the utility line power directly to the traffic signal system, bypassing the UPS control unit.

5.6 Power Conditioning and the Use of Batteries by the UPS

Under normal operating conditions the utility line power shall flow through the UPS control unit to the traffic signal system and any other connected loads.

When the utility line power is within the operating parameters specified by the UPS manufacturer and the Contract Documents the UPS control unit shall condition and deliver the power to the loads without drawing power from the batteries.

When the utility line power is not within the operating parameters specified by the UPS manufacturer and the Contract Documents the UPS control unit shall condition and deliver the power to the loads by drawing power from the batteries as required.

5.7 Electrical

The UPS system shall accept an AC voltage input range of 85 to 135 VAC, single phase, 2 wire plus ground without drawing on battery power.

The UPS system shall provide voltage regulation at 120 VAC \pm 3 percent under any line, load or battery conditions other than “low battery”, and a frequency regulation of 60 Hz \pm 3 Hz synchronized to the utility line power.

Power rating shall be a minimum of 1000 VA (700W). The UPS system shall provide pure sine wave output, computer grade power compatible with all equipment loads, with power factor correction.

The UPS system shall include full time protection from sudden voltage increase with inrush protection and AC line filtering.

The UPS system shall provide complete isolation from the line operating as a separately derived power source in accordance with section 10-Grounding and bonding, CSA C22.1.

7.0 PRODUCTION

All wires and leads shall be tied and secured within the UPS cabinet prior to delivery.

PREFABRICATED LOOPS - Item No. 183 **TRAFFIC COUNTING STATION - Item No. 184**

Special Provision No. 623S02M

May 2010

Amendment to OPSS 623 dated January 1990

623.02 REFERENCES

Section 623.02 of OPSS 623 is amended by the addition of the following:

CSA C22.2 No. 227.1 - 1988 - Electrical Non-metallic Tubing

623.05.03 Ducts and Fittings

Subsection 623.05.03 of OPSS 623 is amended by the addition of the following:

Electrical Non-metallic Tubing and fittings shall conform to CSA C22.2 No. 227.1.

623.05 MATERIALS

Section 623.05 of OPSS 623 is amended by the addition of the following subsections:

623.05.11 Prefabricated Loops

Prefabricated loops shall be either prefabricated PVC detector loops or prefabricated heavy-duty rubber detector loop, as indicated in the Contract Documents.

Prefabricated PVC detector loops shall be constructed with rigid PVC conduit, filled with a flexible urethane. The corner of the loops shall be rounded to a radius of 100mm with the same continued conduit without any

visible malformation. A "T" type access conduit fitting shall complete the loops geometric form and allow for the junction lead-in conduit. The number of turns of the wires shall be as indicated in the Contract Documents.

The wires in the prefabricated loop conduit shall come out of the "T" type fitting and be of adequate length to reach the traffic counting station or the splice point without splices. After wiring, the end of the prefabricated PVC loop conduit shall be injected with malleable urethane. The number of turns per loop shall be as specified in the Contract Documents.

Prefabricated Heavy Duty Rubber loop shall be constructed with 9 mm I.D. (17mm O.D) reinforced rubber hose with a 1.72 MPa internal pressure rating. The hose for the loops shall be of one continuous piece. Hose tee connections constructed of high temperature rubber shall complete the loops geometric form and allow for the junction lead in conduit. The tee sizes shall be of proper size to attach directly to the hose. The number of turns in the loop shall be as specified in the Contract Documents document.

The wires used shall be No.16 THWN stranded copper. The wires shall come out of the "T" type fitting and be of adequate length to reach the traffic counting station without any splice. The wires shall be twisted a minimum of three turns per foot. After the completion the loop and lead in shall be filled and sealed with a flexible sealant.

623.05.14 Flex Posts

The Contractor shall supply flex posts with components as shown in the Contract Drawing TPISS-001 and meet the following specifications:

Posts	<p>Made of 57mm diameter extruded tubing of high impact strength copolymer polypropylene resin. The post shall not crack, peel, discolour, rot or corrode.</p> <p>Post material shall have the following properties:</p> <table border="1" data-bbox="443 1155 1487 1396"> <thead> <tr> <th><u>Property</u></th> <th><u>Unit of Measure</u></th> <th><u>Value</u></th> <th><u>Test Method</u></th> </tr> </thead> <tbody> <tr> <td>Melt Index</td> <td>Dg/m</td> <td>1.6 - 8</td> <td>ASTM D1238</td> </tr> <tr> <td>Density</td> <td>g/cc</td> <td>0.900+/-0.01</td> <td>ASTM D792</td> </tr> <tr> <td>Tensile Strength, yield</td> <td>psi</td> <td>3000+/-250</td> <td>ASTM D638</td> </tr> <tr> <td>Elongation, yield</td> <td>%</td> <td>8 – 50</td> <td>ASTM D638</td> </tr> <tr> <td>Izod Impact Strength</td> <td>ft-lb/in</td> <td>8 mins</td> <td>ASTM D256</td> </tr> </tbody> </table>	<u>Property</u>	<u>Unit of Measure</u>	<u>Value</u>	<u>Test Method</u>	Melt Index	Dg/m	1.6 - 8	ASTM D1238	Density	g/cc	0.900+/-0.01	ASTM D792	Tensile Strength, yield	psi	3000+/-250	ASTM D638	Elongation, yield	%	8 – 50	ASTM D638	Izod Impact Strength	ft-lb/in	8 mins	ASTM D256
<u>Property</u>	<u>Unit of Measure</u>	<u>Value</u>	<u>Test Method</u>																						
Melt Index	Dg/m	1.6 - 8	ASTM D1238																						
Density	g/cc	0.900+/-0.01	ASTM D792																						
Tensile Strength, yield	psi	3000+/-250	ASTM D638																						
Elongation, yield	%	8 – 50	ASTM D638																						
Izod Impact Strength	ft-lb/in	8 mins	ASTM D256																						
Reflective Sheeting	Reflective, high intensity flexible, amber 75mm strips																								
Bases	Surface mounted, high impact styrene – pin lock																								

Flex posts manufactured to the above specifications can be obtained from the following suppliers:

Safe-Hit Corporation
 23785 Cabot Blvd., #322
 Hayward, CA 94545
 Tel. 510-783-6550
 Fax. 510-783-1929
 Toll Free. 1-800-537-8958

Lecol Co. Ltd.
 689 Warden Ave., Units #15 & #16
 Scarborough, ON MIL 4R6
 Tel. 416-694-4420
 Fax. 416-694-4523
 Toll Free. 1-877-532-6526

The Ministry may accept equivalent flex posts from other manufacturers providing that the flex posts are approved by the Ministry, in writing, prior to the tender closing date.

During tendering, a sample MTO recommended flex post may be viewed during office hours at:

Ministry of Transportation
Traffic Office, TPISS
6th Floor, Building D
1201 Wilson Ave.,
Downsview, ON M3M 1J8

For viewing instruction, contact Mr. Roger Silva at 416-235-3484

623.07 CONSTRUCTION

Section 623.07 of OPSS 623 is amended by the addition of the following subsections:

623.07.01.08 Installation of Traffic Counting Station Flex Post

For the purpose of coordinating the traffic counting station locations, the Contractor shall contact the Ministry of Transportation Traffic Planning and Information Services Section to establish on-site the exact location of the station. The contact person is Mr. Bob Ewles, Traffic Field Group Leader, Tel. 416-325-5233 or cell 416-540-5694.

The flex posts shall be installed in conformance with the following contract drawings:

MTOD 2117.02
OPSD 2112.02
OPSD 2123.02
TPISS-001
TPISS-002

The flex post installation shall be performed in accordance with the following sequence and procedures:

- a. Anchor a 1.0 m chain to the electric handhole, at min 200 mm from its top (according to Dwg. No. TPISS - 002), before the handhole is installed in the ground.
- b. Drill a 25.4 mm (1") or larger hole (whatever size is necessary to accommodate the required number of cables) in the centre of steel cover of the electric handhole for loop cable access, making sure cover is properly aligned and secured.
- c. Drill into the handhole cover 2 (two) holes, centre them to the predrilled holes in flex post base, and attach base of post to handhole cover using 8 mm bolts.
- d. Place base of flex post on handhole cover and centre it over hole for cables with pins at 45 degrees from traffic flow direction (according to Dwg. No. TPISS-001, Detail A).
- e. Make sure the length of the loop cables is long enough to provide continuous (not soldered) connection from the end of the loop to the terminal electric box of the flex post (according to Dwg. No. TPISS-002, Detail A). Pull the loop cables through the flex post polypropylene tube (according to

Dwg. No. TPISS-001, Part No. 1) up to the terminal electric box (according to Dwg. No. TPISS-002, Detail A).

- f. Attach flex post tube to flex post base and hammer pins into place (according to Dwg. No. TPISS-001, Part No. 7).
- g. Attach connectors to end of cables (according to Dwg. No. TPISS-002, Detail A).
- h. Glue terminal electric box to post when cables are in place. Make sure that round cap is facing away from traffic (according to Dwg. No. TPISS-002, Plan). Do not glue round cap.

623.07.05 Prefabricated Loops

The work for prefabricated loops shall include the installation of the prefabricated loops regardless of size.

623.07.05.01 Installation

For Concrete Pavement

Prefabricated loops shall be installed in granular base as indicated in the Contract Documents and as described below:

The extra length of wiring of the prefabricated loop shall be coiled in the handhole.

The Contractor shall accurately lay out the appropriate prefabricated loop on the granular base to be covered by paving materials the dimensions indicated in the Contract Documents. If the loop is placed on rebar, the loop shall be offset from the rebar grid and mounted at least 50 mm above the rebar as indicated in the Contract Documents.

For Asphalt Pavement

The Contractor shall accurately lay out the appropriate prefabricated loop in the upper binder asphalt course at the locations shown in the Contract Documents.

The extra length of wiring of the prefabricated loop shall be coiled in the handhole.

623.07.05.02 Flexible Duct Installation

All work for flexible duct installation, including earth excavation, backfill, removal and restoration, shall conform to OPSS 603.

623.07.06 Traffic Counting Station

The work for traffic counting station shall include the installation of traffic counting station regardless of type.

623.07.06.01 Installation

The traffic counting station and all associated equipment shall be installed as indicated in the Contract Documents.

623.07.07 Quality Control

623.07.07.01 Pre-installation Testing and Inspection

For pre-fabricated loops, the contractor shall perform a visual inspection of all the pre-fabricated loops prior to their installation. The Contractor shall inspect all of the components to ensure that they meet the requirements of the contract.

Prior to the overlaying of asphalt, loop wiring shall be tested for continuity, for leakage to ground and for inductance. Resistance to ground shall be 10 Meg ohm or greater. Inductance shall be within 25% of the value indicated in the Contract Documents using a 100 kHz signal at 5V. Any prefabricated loop not passing the forgoing tests shall be replaced.

For traffic counting stations, the contractor shall perform a visual inspection of all materials for traffic counting station type 1 and/or the traffic counting station assembly type 2 prior to their installation. The contractor shall inspect its components to ensure that they meet the requirements of the contract.

623.07.07.02 Proof of Performance Testing and Inspection

The contractor shall carry out the following tests:

Prefabricated Loops

After covering the prefabricated loops by paving materials, the loop wiring shall be tested for continuity, for leakage to ground and for inductance. Resistance to ground shall be 10 Megohm or greater. Inductance shall be within 25% of the value indicated in the Contract Documents.

Upon completion of splices, installation of extra low voltage cable, sealing of slots and backfilling of trenches, the foregoing tests shall be repeated at the controller cabinet or the traffic counting station.

Traffic Counting Station

Upon completion of the installation of the traffic counting station and the connection to the loops, the system shall be tested for its wiring continuity, leakage to ground and inductance, as described in the testing of prefabricated loops.

Test Results

The Contractor shall submit the test results to the Contract Administrator.

623.08 QUALITY ASSURANCE

Section 623.08 of OPSS 623 is deleted and replaced by the following:

The Contract Administrator may witness any test and may make random inspections of the work.

623.09.01 Actual Measurement

623.09.01.01

Clause 623.09.01.01 of OPSS 623 is amended by the addition of the following:

**Prefabricated Loops
Traffic Counting Station**

623.09.02 Plan Quantity Measurement

623.09.02.01

Clause 623.09.02.01 of OPSS 623 is amended by the addition of the following:

**Prefabricated Loops
Traffic Counting Station**

623.10 BASIS OF PAYMENT

623.10.01

Sub-section 623.10.01 of OPSS 623 is amended by the addition of the following:

**Prefabricated Loops - Item
Traffic Counting Station - Item**

-----oo0oo-----

MATERIAL SPECIFICATION FOR TRAFFIC COUNTING STATION TYPE 1

1.0 SCOPE

This specification covers the requirements for traffic counting station type 1 for use with portable traffic counter.

2.0 MATERIALS

2.01 Pole

Wooden post shall be pressure treated with dimension as indicated in the Contract Documents.

2.02 Terminal Box

The terminal box for the traffic counting station type 1 shall be constructed using grey durable non corrosive material, and the size as specified in the Contract Documents. The box shall consist of mounting panel, 4-position terminal block, conduit openings, a cover with piano hinge and hasp to padlock or a cover of similar material with the use of four non-corrosive screws.

3.0 PRODUCTION

3.01 Traffic Counting Station Assembly Type 1

The traffic counting station shall be completely assembled and installed as indicated in the Contract Documents.

-----oo0oo-----

MATERIAL SPECIFICATION FOR TRAFFIC COUNTING STATION TYPE 2

1.0 SCOPE

This specification covers the requirements for traffic counting station type 2 for use with portable traffic counter.

2.0 MATERIALS

2.01 Base

The base of the traffic counting station type 2 shall be constructed using durable, non-corrosive material. The dimension shall be smaller than the diameter of the electrical handhole cover where it will be installed. The base shall be constructed so that it can easily: (a) be attached to the electrical handhole with the use of non-corrosive replaceable fastener; (b) accommodate the installation of the pole described below.

2.02 Pole

The pole of the traffic counting station type 2 shall be constructed using a bright yellow, durable, flexible, non-corrosive material strong enough to hold a box on one end. The pole shall have two 75mm wide strips of reflective orange traffic tape approximately 300mm apart, located on its upper end. The pole shall be of 1060mm in length and shall be able to accommodate a maximum of 4 - 12mm diameter cables. The lower end of the pole shall be constructed in such a way that it can easily be mounted on the base described above.

2.03 Terminal Box

The terminal box of the traffic counting station type 2 shall be constructed using grey, durable, non-corrosive material, such as, a non-metallic LB fitting. The box shall contain two terminal strips with minimum of 12 terminals per strip and with current capacity equal to the ampacity of number 14 AWG stranded copper wire. The box shall have a lid of similar material that is fastened to the box with the use of four non-corrosive screws. The back of the box shall have a minimum 25mm hole with a plug. The bottom of the box shall be constructed so that it can be mounted on the upper end of the pole described above.

3.0 PRODUCTION

3.01 Traffic Counting Station Assembly

The traffic counting station type 2 shall be completely assembled together with the following parts:

- a) Base - complete with necessary fastening devices to install it on the electrical handhole cover and to hold the pole.
- b) Pole - complete with accessory that will enable it to be attached to the base.
- c) Box

EMERGENCY VEHICLE PRE-EMPTION EQUIPMENT - Item No. 186

Amendment to OPSS 623 dated January 1990

623.05 MATERIALS

Section 623.05 of OPSS 623 is amended by the addition of the following subsections:

623.05.15 Emergency Vehicle Pre-emption Equipment

The Contractor shall supply, install and activate a 3M Company Model 722 Optical Pre-emption Detector, complete with all required mounting hardware.

This item shall also include the supply and installation of a 3M Opticom 752N with 757C harness, two channel phase selector in the controller cabinet.

623.07 CONSTRUCTION

Section 623.07 of OPSS 623 is amended by the addition of the following:

623.07.06 Emergency Vehicle Pre-emption Equipment

623.07.06.01 Installation

The emergency vehicle pre-emption detector shall be installed in the location shown on the Contract Drawings.

York Region shall test the optical pre-emption equipment for the desired range, using a pre-emption emitter. The Contractor shall make any adjustments necessary, as specified by York Region. The testing and adjustments to the desired range shall be completed on the day of the traffic signal turn-on.

623.10 BASIS OF PAYMENT

623.10.01

Sub-section 623.10.01 of OPSS 623 is amended by the addition of the following:

623.10.02 Emergency Vehicle Pre-emption Equipment

Payment at the contract price for the above tender item shall be full compensation for all labour, material, equipment, testing, and adjustment required to complete the work as specified.

ELECTRICAL HANDHOLES - Item No. 188

Non-Standard Special Provision

Construct 450 mm Diameter Concrete Handwell

The Contractor shall construct a 450 mm diameter concrete handwell in the location shown on the Contract Drawings or as directed by the Contract Administrator.

The handwell shall be constructed in accordance with Standard Drawing No. E-1.03. The handwell is not to be constructed until after the proposed curb and gutter has been placed.

The Contractor shall remove all sono-tube and debris from the inside of the handwell prior to final inspection by the Region.

The handwell cover shall be a (USI) Utility Structures Incorporated or an approved equal. The handwell cover shall be securely bolted down when the Work at the handwell has been completed and the Contractor is leaving the Place of the Work.

An anti-seize compound shall be applied to all bolts for fastening the handwell cover to the handwell frame.

All grassed areas shall be reinstated with a minimum of 100 mm of good quality imported top soil and sodded or seeded as required by the Region.

This item is to include the restoration of all asphalt boulevards and median islands using 50 mm of HL3 asphalt. Cold patch may be used for minor restorations with the prior approval of the Region.

Supply and Install 675 mm Diameter Precast Concrete Handwell

The Contractor shall supply and install a 675 mm diameter precast concrete handwell in the location shown on the Contract Drawings.

The handwell shall be installed in accordance with Standard Drawing No. E-1.04. The handwell is not to be installed until after the proposed curb and gutter has been placed.

All grassed areas shall be reinstated with a minimum of 100 mm of good quality imported top soil and sodded or seeded as required by the Region.

This item shall include the restoration of all asphalt boulevards and median islands using 50 mm of HL3 asphalt. Cold patch asphalt may be used for minor restorations with the prior approval of the Region.

Payment

Payment shall be made at the Contract unit price for each 450mm dia. concrete handwell constructed and for each 675mm dia. Concrete handwell supplied and installed. Payment at the contract unit price shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

RIGID DUCTS, DIRECT BURIED - Item No. 189

RIGID DUCTS, DIRECT BURIED (TEMPORARY) - Item No. 190

Non-Standard Special Provision

The Contractor shall supply and install 50 mm, 75 mm and 100 mm diameter rigid PVC conduit, IPEX Incorporated, Royal Pipe Systems® or Vanplas Inc., with a wall thickness of 3.4 mm (.133 inches) for the 25 mm conduit, 3.55 mm (.140 inches) for the 32 mm conduit, 3.7 mm (.145 inches) for the 38 mm conduit, 3.9 mm (.154 inches) for the 50 mm conduit, 5.5 mm (.216 inches) for the 75 mm conduit and 6.0 mm (.237 inches) for the 100 mm conduit. The conduit shall be installed in the locations shown on the Contract Drawings and as directed by the Commissioner. The rigid PVC conduit shall conform to Canadian Standard Associations Standard C22.2, No. 211.2. The 25 mm conduit shall also be installed in accordance with Standard Drawing No. E-3.25.

The Work under these items shall include all trench excavation, supply and installation of rigid PVC conduit in the trench, backfilling and compacting of backfill in the trench.

The conduit shall be installed 600 mm below the final grade. The Contractor shall adjust the depth of the conduit where the proposed conduit conflicts with the sub drain. The excavation and conduit shall be kept free of water at all times.

The material removed from tunnelling under the existing concrete sidewalks, asphalt spillways and curb and gutter shall be replaced by tamping intermittently to ensure proper compaction to 100% maximum dry density with no cavities.

Backfill shall conform to the requirements of OPSS Form 1010 for Granular 'A' and Granular 'B' Type 1 and shall be compacted to 100% maximum dry density. Granular 'B' Type 1 backfill shall be used up to the elevation where Granular 'A' is shown on typical sections. Earth backfill shall be compacted to 95% maximum dry density.

Unshrinkable fill shall be used as backfill in place of granular material. When a trencher equipped with a Rock Wheel is used, the crossing must be backfilled with unshrinkable fill. The unshrinkable fill shall be 0.70 MPa (K-crete) to at least 1.0 metre beyond the existing edge of pavement and/or curb.

All grassed areas shall be reinstated with a minimum of 100 mm of good quality imported top soil and sodded or seeded as required by the Region.

This item shall include the restoration of all asphalt boulevards and median islands using 50 mm of HL-3 asphalt. Cold patch asphalt may be used for minor restorations with the prior approval of the Region.

Couplings, as manufactured by the manufacturer of the conduit supplied, shall be used to join the sections of rigid conduit and shall be installed to provide a tight fit in accordance with the manufacturer's recommended practice for joining conduit. Care shall be taken to ensure that couplings are not split or damaged in any way which would allow the seepage of water and/or foreign material into the conduit.

All connections between pole bases and adjacent concrete handwells shall be made with 75 mm diameter rigid PVC conduit unless otherwise noted on the Contract Drawings.

The conduit entering the handwells shall be connected to the equivalent size conduit sleeve in the handwell. Under no circumstances shall the Contractor install a smaller diameter conduit through the inside of a larger diameter conduit sleeve.

If the Contractor is required to break into a handwell, it shall be responsible for any damage done to the handwell and shall be required to grout around the conduit sleeve to the satisfaction of the Region.

For all conduit, both when it is left empty for future use or has wiring installed in it, the Contractor shall install a 400 N test nylon fish line in the conduits and shall leave 1.5 m of line coiled in the bottom of the handwells at the end of each conduit run.

The Contractor shall install a 150 mm wide, red plastic “CAUTION” tape, buried 300 mm above the conduit, for the full length of the conduit.

The extension of any existing under pavement crossings as indicated on the Contract Drawings shall be done at the applicable Contract unit price for the size of conduit used.

Upon completion of the conduit crossing, the Contractor shall notify the Electrical Construction Coordinator, Transportation Services Department, Traffic Management & Intelligent Transportation Systems Branch, for Regional approval. In the presence of the Region’s representative, the conduit shall be proven to be free of stones, dirt, water or other debris, by pulling a test mandrel, 300 mm in length by 6.4 mm smaller in diameter than the nominal conduit size, through the conduit crossing.

Measurement for payment shall be per metre along the centerline of conduit placed, measured from centre to centre of handwells and/or pole bases.

Payment

Payment shall be made at the applicable Contract unit price per metre for each size of underground conduit installed, including excavation and backfill, and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

RIGID DUCTS BY SUBSURFACE INSTALLATION - Item No. 191

Non-Standard Special Provision

All directional drilling within the Regional right of way shall conform to the requirements of OPSS 450 and NASTT Horizontal Directional Drilling Good Practices Guidelines 2008 (3rd Edition).

The Contractor shall supply and install 100 mm diameter coilable high density polyethylene conduit, GP Polyduct by Gravenhurst Plastics Limited, by directional bore in the locations shown on the Contract Drawings and as directed by the Commissioner. The coilable high density polyethylene conduit shall be RED with a configuration of smooth/smooth and a wall thickness of 8.46 mm (.333 inches). The composition shall be Grade P34, Type III, Class B or C, Category 5, ASTM 1248(89)2513. The coilable high-density polyethylene duct shall conform to the Canadian Standard Association's Standard C-22.2, No. 211.2.

The road crossings shall be carried out by a directional bore machine where the material is removed to make room for the conduit. The Region will not allow the use of a machine that displaces the material rather than removing it.

The Contractor shall be responsible for performing its own site investigation, making the results available to the Region upon request and completing drill log sheets and providing copies to the Region upon request.

The conduit shall be installed 1.0m below the final grade.

The polyethylene conduit shall be continuous with no joints.

The bore pits shall be backfilled to the requirements of OPSS Form 1010 for Granular 'A' and Granular 'B' Type 1 and shall be compacted to 100% maximum dry density. Granular 'B' Type 1 backfill shall be used up to the elevation where Granular 'A' is shown on the typical sections. From the elevation where Granular 'A' is shown on the typical sections, Granular 'A' shall be used as trench backfill. Earth backfill shall be compacted to 95% Maximum Dry Density.

If the diameter of the bore is greater than the diameter of the duct, any resulting void is to be grouted. All false bore tunnels shall be grouted.

All grassed areas shall be reinstated with a minimum of 100 mm of good quality imported top soil and sodded or seeded as required by the Region.

For all conduit, both when it is left empty for future use or has wiring installed in it, the Contractor shall install a 400 N test nylon fish line in the conduits and shall leave 1.5 m of line coiled in the bottom of the handwells at the end of each conduit run.

Payment

Measurement for payment shall be per metre of conduit placed and the Contract unit price shall be full compensation for the cost of supplying all labour, materials and equipment required to complete the Work as specified in the Contract Documents. The cost of excavating and backfilling the bore pits shall also be included in the Contract unit price.

LOW VOLTAGE CABLES, IN DUCTS - Item No. 192

LOW VOLTAGE CABLES, IN DUCTS (TEMPORARY) - Item No. 193

Non-Standard Special Provision

Luminaire Wire

The Contractor shall supply and install all of the necessary wire, including all accessories, required to complete the wiring of the proposed luminaire to the service pole.

The luminaire wire shall be installed in the proposed underground conduit, in the location shown on the Contract Drawings.

The luminaire wire shall be single conductor, stranded copper, low voltage cable, rated 600 volts. Low voltage wire shall meet the requirements of OPSS 604, or type RWU 90 – cross-link meeting the requirements of CSA Standard C22.2, No. 38.

The luminaire wire shall be sized so as to satisfy the voltage drop requirements of the electrical equipment and shall not exceed 5%.

Each wire aperture drilled in a steel pole shall be deburred and painted with grey zinc rich paint. A rubber grommet shall be installed after the paint is dry.

All joints in the luminaire wire shall be made above ground in the pole handhole, unless otherwise specified in the Contract Documents. The Contractor shall ensure that all equipment is adequately grounded. The ground wire for the luminaire pole shall be installed under another Contract item and paid for under that item.

The cost of the riser wire inside the pole and in the mast arm, shall be included in this item and shall be connected to the external wiring circuit in the underground conduit by means of one single pole waterproof fuseholder Bussman "Tron" Catalogue No. HEB-AA or an approved equal, with one 10 amp midget ferrule fuse, Bussman type "KTK" or an approved equal. A fuse holder shall be installed inside the pole and shall be secured to the connector clip supplied in the pole.

The luminaire wire shall be brought back and connected to the circuit breaker supplied and installed at the service pole under another Contract item.

Wire for Power Supply

The Contractor shall supply and install power supply cable from the service to the traffic signal controller.

The supply cable shall be single conductor, stranded copper, low voltage cable, rated 600 volts. Low voltage cables shall meet the requirements of OPSS 604, or type RWU 90-cross link meeting the requirements of CSA Standard C22.2, No. 38.

The cable shall be sized so as to satisfy the voltage drop requirements of the electrical/electronic equipment and shall not exceed 5%.

Payment

Payment shall be made at the Contract unit price per metre, based on plan quantity payment and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Note

Plan quantity payment is not a true quantity measurement (riser cables are not included) but is a horizontal measurement from the plan between handwells, poles, transformers and controller cabinet.

EXTRA LOW VOLTAGE CABLES, IN DUCTS - Item No. 194

Non-Standard Special Provision

Home Run Cable for Wire Inductive Loop

The Contractor shall supply and install buried home run cable, Belden #8720 Series stranded, #14 gauge, twisted pair cable with shielding (Beldfoil) and polyethylene insulation or an approved equal.

Each home run cable in the controller cabinet shall be identified with a PVC sleeve marker showing the phase number, direction and movement.

The buried home run cable shall be installed in the underground conduit system in the location shown on the Contract Drawings.

Each loop shall have its own home run cable. The buried home run cable shall be installed from the splice point of each loop, as indicated in the chart on the Contract Drawings, to the controller.

Extra Low Voltage Cable For Pedestrian Pushbutton

The Contractor shall supply and install sufficient four (4) conductor, #18 AWG, extra low voltage cable, in shielded cover, from the pedestrian pushbutton to the controller, through the underground conduit system.

The cable shall be Belden, polyethylene insulated, polyethylene belted, polyvinyl chloride jacketed, communication cable with 100% electrical shielding or approved equal.

The cable shall meet the requirements of OPSS 2410 and shall be installed in accordance with Standard Drawing Nos. E-4.02 and E-4.03.

All joints shall be made above ground level and inside the handhole of the steel pole.

Each wiring aperture drilled into a steel pole shall be deburred and painted with grey zinc rich paint. Rubber grommets shall be installed after the paint is dry.

The Contractor shall label all groups of ELV pedestrian pushbutton cables in the controller cabinet indicating the phase number and leg of intersection.

Payment

Payment shall be made at the Contract unit price per metre, based on plan quantity payment and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

TRAFFIC SIGNAL CABLES, IN DUCTS - Item No. 195

TRAFFIC SIGNAL CABLES, IN DUCTS (TEMPORARY) - Item No. 196

Non-Standard Special Provision

The Contractor shall supply and install sufficient fourteen (14) gauge colour coded traffic signal runner and riser cable, to accommodate all equipment and installation operations specified in this Contract.

The buried traffic signal cable shall meet the requirements of OPSS 2409.

All traffic signal cable shall be installed in the underground conduit system in the location shown on the Contract Drawings.

The Contractor shall supply and install a 7 conductor, 14 gauge colour coded traffic signal cable for the audible pedestrian signal.

Each riser cable inside the pole, for the traffic signal head and pedestrian head, shall be seven (7) conductor and five (5) conductor respectively.

The Contractor shall supply and install three (3) spare traffic signal conductors from the controller to each median pole, for the future installation of a four section traffic signal head.

The traffic signal heads on all four legs of the intersection shall be wired separately in order to allow for the addition of advance greens or split phases, without additional wiring being required.

The traffic signal cable for each pedestrian phase (i.e., north-south on east leg, north-south on west leg, east-west on north leg and east-west on south leg) shall be brought back to the controller separately, in order to accommodate separate “walk” and “don't walk” movements for each phase.

The Contractor shall label all groups of traffic signal conductors in the controller cabinet, indicating the phase number, direction and movement.

All joints shall be made above ground level and inside the handhole of the steel pole.

Each wiring aperture drilled into a steel pole shall be deburred and painted with grey zinc rich paint. A rubber grommet shall be installed after the paint is dry.

The Contractor shall seal the 20 mm and 75 mm conduit ducts in the controller pad with duct seal, once all of the cables have been pulled into the controller cabinet.

Payment

Payment shall be made at the Contract unit price per metre, based on plan quantity payment and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Note

Plan quantity payment is not a true quantity measurement (riser cables are not included) but is a horizontal measurement from the plan between handwells, poles, transformers and controller cabinet.

STEEL MESSENGER CABLES, AERIAL (TEMPORARY) - Item No. 198

Non-Standard Special Provision

The Contractor shall supply and install 10 mm Grade 160 stranded galvanized steel suspension and stabilizing cable in the location shown on the Contract Drawings and in accordance with Standard Drawing Nos. E-3.01 and E-3.02.

When it is necessary for the Contractor to work within 3 metres of the primary hydro lines, the Contractor shall arrange to have the Local Hydro Authority present to assist in overseeing the Work.

Payment

Payment shall be made at the Contract unit price per metre of suspension and stabilizing cable installed, measured from centre to centre of poles, and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

ACSR CABLES, AERIAL (TEMPORARY) - Item No. 199

Non-Standard Special Provision

Supply and Install Aerial Luminaire Wire

The Contractor shall supply and install all the necessary wire, including all accessories, required to complete the wiring of the proposed temporary luminaires to the service pole, in the location shown on the Contract Drawings.

The aerial wire shall be a duplex NSF-2, 600V cable that is to consist of one polyethylene insulated conductor cabled around a bare messenger.

The aerial wire shall be sized so as to satisfy the voltage drop requirements of the electrical equipment and shall not exceed 5%.

Each joint in the aerial wire shall be made above ground in a junction box, unless otherwise specified in the Contract Documents. The Contractor shall ensure that all equipment is adequately grounded. The ground wire for the temporary luminaires shall be installed under another Contract item and paid for under that item.

The cost of the riser wire in conduit attached to a pole and in a mast arm, shall be included in this item and shall be connected to the external wiring circuit by means of one single pole waterproof fuseholder Bussman "Tron" Catalogue No. HEB-AA or an approved equal with one 10 amp midget ferrule fuse, Bussman type "KTK" or an approved equal. A fuse holder shall be installed in a junction box on the pole.

The aerial wire shall be brought back and connected to the circuit breaker supplied and installed at the service pole under another Contract item.

Payment

Payment shall be made at the Contract unit price per metre, based on plan quantity payment and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Note

Plan quantity payment is not a true quantity measurement (riser cables are not included) but is a horizontal measurement from the plan between handwells, poles, transformers and controller cabinet.

GROUND WIRES - Item No. 200

GROUND WIRES (TEMPORARY) - Item No. 201

Non-Standard Special Provision

Supply and Install Buried Ground Wire

The Contractor shall supply and install a continuous #6 AWG TWU green, stranded copper ground wire through the entire main conduit system, including connection to the service. The ground wire shall be connected to all steel poles, the junction boxes on wood poles, the ground lug attached to the cover and frame in the handwells and the proposed ground rods in the handwells, in the location shown on the Contract Drawings. The ground wire is not required outside the main conduit system where there are no low voltage cables in the ducts. All ground wire splices shall be made with Thermit Weld connections or copper compression ground tap figure "C" connectors.

There shall be a separate continuous #6 AWG TWU green stranded copper ground wire from the controller to the service.

The controller shall not be connected to the system ground.

A continuous #6 AWG TWU green, stranded copper ground wire shall be installed from the ground lug in the pole to the ground rod located adjacent to this pole.

A continuous 2/0 bare, stranded copper ground wire which shall be installed from the service enclosure to the four ground rods located adjacent to this pole. (See Standard Drawing No. E-5.04).

The green/yellow conductor in the traffic signal head and pedestrian signal head riser cable shall be connected to the system ground in a pole handhole and/or a junction box. A green conductor used as ground shall be tagged "ground" in the pole handhole and/or junction box.

A continuous #12 AWG TWU green, stranded copper ground wire shall be installed from the proposed luminaire fixture to the ground lug in the luminaire pole.

Connection to the ground rods shall be made with Thermit Weld connectors.

The Contractor shall ensure that all equipment is adequately grounded.

Supply and Install Aerial Ground Wire

The Contractor shall supply and install a #6 AWG bare, stranded copper ground wire in accordance with Standard Drawing No. E-3.01.

A continuous #6 AWG TWU green, stranded copper ground wire shall be installed from the span wire on the pole to the ground rod located adjacent to this pole.

Connection of the ground wire to the span wire shall be made with a compression or impact connector.

The green/yellow conductor in the traffic signal head and pedestrian signal head riser cable shall be connected to the system ground in a junction box. A green conductor used as ground shall be tagged "ground" in the junction box.

The luminaire fixture shall be bonded to the ground system by means of a #12 AWG TWU green, stranded copper ground wire.

A continuous #6 AWG TWU green, stranded copper ground wire shall be installed from the lower stabilizing cable on a temporary pole to the junction box on this pole, for connection to the green traffic signal conductor for the pedestrian head.

Connection to each ground rod shall be made with a Thermit Weld connector.

The Contractor shall ensure that all equipment is adequately grounded.

Payment

Payment shall be made at the Contract unit price per metre, based on plan quantity payment and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Note

Plan quantity payment is not a true quantity measurement (riser cables are not included) but is a horizontal measurement from the plan between handwells, poles, transformers and controller cabinet.

GROUND ELECTRODES - Item No. 202

GROUND ELECTRODES (TEMPORARY) - Item No. 203

Non-Standard Special Provision

The Contractor shall supply and install a 20 mm x 3.0 m copper clad ground rod in the locations shown on the Contract Drawings. The ground rod shall be driven into the bottom of the concrete handwell and into the ground adjacent to the service pole. The ground rod driven into the ground shall be buried so that the top of the ground rod is 300 mm below the finished grade and it shall be left uncovered until it has been inspected by the Region.

The ground rods for the service enclosure shall be installed in accordance with the appropriate Standard Drawings.

Connection to the ground rod shall be made with a Thermit Weld connector.

Payment

Payment shall be made at the Contract unit price for each ground rod installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

REMOVAL OF ELECTRICAL EQUIPMENT - Item No. 204

Equipment for Salvage and Reinstallation or Return

The Contractor shall be required to carefully remove and salvage select existing and temporary traffic control signal and illumination equipment as shown on the on the Contract Drawings and as detailed below. This equipment shall be removed immediately upon completion and switch over to the new signal installation and under no circumstances shall the existing signals be removed before the new traffic signals and illumination are put into operation. A paid duty police officer and a member of the Region’s Traffic Management & Intelligent Transportation Systems Branch, Traffic Engineering & Integrated Intelligent Transportation Systems Section are required at the Place of the Work during the switch over to the new traffic control signal installation.

Equipment To Be Salvaged	Remarks
Existing Bell Mobility 1X Equipment on Existing Traffic Signal Controller	Reinstall on New Traffic Signal Controller
Existing Traffic Signal Controller	Return to Region
Existing Mast Arm Street/Road Name Signs	Reinstall on Span Wire of Temporary Traffic Control Signals Reinstall on Proposed Mast Arms of New Traffic Control Signals

Equipment Being Salvaged and Returned to the Region

The Contractor shall contact an Operations Technologist-Electrical, of the Traffic Management & Intelligent Transportation Systems Branch, Traffic Engineering & Integrated Intelligent Transportation Systems Section, at 905-830-4444, to make arrangements for the delivery of the salvaged equipment, a minimum of 2 Working Days prior to returning the equipment.

The Contractor shall make a detailed list of all salvaged equipment and have it confirmed and signed by a member of the Region’s Traffic Engineering & Integrated Intelligent Transportation Systems Section.

The salvaged equipment shall be returned to the Region at its Operations Centre at 90 Bales Drive East, East Gwillimbury

All salvaged equipment being reinstalled or returned to the Region, shall be free of damage. The Contractor shall report any damaged equipment, prior to its removal, to the Region. The Contractor shall be charged replacement costs for any materials or equipment damaged during removal or delivery to the Region.

Equipment Being Removed and Disposed of

The Contractor shall completely remove and dispose of the existing and temporary traffic control signal and illumination equipment not designated for salvage, return or reinstallation in the location shown on the Contract Drawings.

Each hole left from the removal of a pole base and/or a handwell shall be backfilled with Granular 'A' compacted to 100% maximum dry density.

All materials removed under this item shall be disposed of at a disposal site approved by the Region, outside the limits of the Contract.

Payment

Payment at the Contract unit price for the tender item "Removal of Electrical Equipment" shall be full compensation for all labour, equipment and materials required to do all the work specified herein including earth excavation, backfill and compaction, the demolition of structures, disposal of materials and equipment, and salvage, packaging, storage, transportation and handling of all equipment so designated. Such payment shall include compensation for the removal and restoration work where such work is not included in other tender items.

SUPPLY CONTROL CABINET ASSEMBLIES - Item No. 205

Non-Standard Special Provision

The Contractor shall supply and install equipment for the power supplies on the service poles in accordance with the appropriate Standard Drawing in the location shown on the Contract Drawings.

The load centres shall be Square D Model CQ018M100RB or an approved equal complete with top entry hub.

The Contractor shall supply circuit breakers at the supply location as follows:

SUPPLY 'E'

1 - 2 pole - common trip circuit breaker
Square D Catalogue No. Q0M 100 VHL (100 amp)
This shall be used as the main circuit breaker

6 - 40 amp breaker for illumination

1 - 40 amp breaker for the traffic signals

SUPPLY 'F'

1 - 2 pole - common trip circuit breaker
Square D Catalogue No. Q0M 100 VHL (100 amp)
This shall be used as the main circuit breaker

4 - 40 amp breaker for illumination

SUPPLY 'G'

1 - 2 pole - common trip circuit breaker
Square D Catalogue No. Q0M 100 VHL (100 amp)

This shall be used as the main circuit breaker

2 - 40 amp breaker spare

1 - 40 amp breaker for the traffic counting station

The ground wire and ground rods for the power supply shall be installed and paid for under other Contract items.

The Contractor shall contact the Hydro One three weeks before the power to the service is required and request a "Service Layout". The Contractor shall meet the service representative at the Place of the Work and explain what is required to complete the services. A copy of the "Service Layout" shall be forwarded to the Region's Manager, Electrical and Traffic Design through the Contract Administrator.

It shall also be the Contractor's responsibility to obtain an "Inspection Clearance" from the Electrical Safety Authority. The "Inspection Clearance" must be obtained well in advance of the power turn on to ensure the Hydro Authority will receive it prior to turn on.

The installation of the power supply equipment and the power connection must be completed very early in the Contract to ensure there is no delay to the traffic signal and illumination turn on. Therefore, the Contractor must have early communication with the Hydro Authority to ensure that their requirements (i.e., permits and inspections) have been satisfied. The Contractor shall be required to notify the Hydro Authority and arrange for the earliest possible power connection.

Payment

Payment shall be made at the Contract unit price for each power supply installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

WOOD POLES, DIRECT BURIED IN EARTH (TEMPORARY) - Item No. 206

Non-Standard Special Provision

The Contractor shall supply and install a wood traffic signal pole in accordance with Standard Drawing No. E-3.01. The pole location, pole length and setting depth is shown on the Contract Drawings.

The pole shall be Western Red Cedar, Class 3, with preservative butt treatment, conforming to CSA Standards 015.2-1969 and 080-1974 or equivalent pressure treated pine. A used pole, in good condition, is acceptable, subject to the prior approval of the Contract Administrator.

Payment

Payment shall be made at the Contract unit price for each pole supplied and installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

SECTIONAL STEEL POLES, BASE MOUNTED - Item No. 207

Non-Standard Special Provision

The Contractor shall supply and install a Polefab No. SS23B pedestrian signal pole or an approved equal, in the location shown on the Contract Drawings. The pole shall be sectional hot dipped galvanized steel and shall be supplied complete with a pole cap and base plate.

The Contractor shall supply and install a Polefab No. SS36R712B pole or an approved equal, in the location shown on the Contract Drawings. The pole shall be sectional hot dipped galvanized steel and shall be supplied complete with a pole cap and base plate.

The Contractor shall supply and install a Polefab No. TB26R712B pole or an approved equal, in the location shown on the Contract Drawings. The pole shall be sectional hot dipped galvanized steel and shall be supplied complete with a pole cap and base plate.

The Contractor shall verify the bolt circle requirements with the pole manufacturer prior to constructing the concrete pole base.

The Contractor shall install three (3) self-tapping screws or impact inserted pins, equally spaced in the overlap of all sections of the pole.

The pole shall be installed directly on top of the concrete pole base and levelled with galvanized steel shims. Double nutting of a pole will not be allowed.

Payment

Payment shall be made at the Contract unit price for each pole installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

GUY ANCHORS (TEMPORARY) - Item No. 208

Non-Standard Special Provision

The Contractor shall supply and install a pole guy in the location shown on the Contract Drawings and in accordance with Standard Drawing No. E-3.23.

Payment

Payment shall be made at the Contract unit price for each pole guy installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

CONCRETE FOOTINGS IN EARTH - Item No. 209

Non-Standard Special Provision

Construct 600mm and 762mm Diameter Concrete Pole Bases

The Contractor shall construct a concrete pole base in the location shown on the Contract Drawings.

The pole base is not to be constructed until after the proposed curb and gutter has been placed.

The pole base shall be either augered or hand dug as may be required by the location of underground utilities as determined by utility stakeouts.

The Contractor shall be required to install a 20 mm diameter sleeve in the concrete pole base for the installation of a ground wire.

Where a proposed pole base is constructed in an existing cut-out, the Contractor shall remove the cut-out form and restore the unfinished area with cold mix asphalt, properly compacted.

The Contractor shall verify the bolt spacing with the pole manufacturer prior to construction of the base.

Payment

Payment shall be made at the Contract unit price for each concrete pole base installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

CONCRETE PADS - Item No. 210

Non-Standard Special Provision

The concrete pad, on which the traffic signal controller is mounted, shall be constructed in the location shown on the Contract Drawings and in accordance with Standard Drawing No. E-3.09.

The joint between the controller pad and the base extension, and the base extension and the controller cabinet shall be sealed with a good quality weatherproof caulking compound.

Payment

Payment shall be made at the Contract unit price for each concrete pad constructed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES - Item No. 211
ROADWAY LIGHTING LUMINAIRES AND BRACKET ASSEMBLIES (TEMPORARY) - Item No. 212

Non-Standard Special Provision

Supply and Install Aluminum Luminaire Mast Arm

The Contractor shall supply and install a 3.7 metre long elliptical aluminum luminaire mast arm. It shall be Utility Supply Specialists TER-12-MA, with a minimum wall thickness of 0.188 inches or a Sentinel RE-12-4188. The mast arm shall be mounted on the pole in the location shown on the Contract Drawings.

The Contractor shall supply and install a Utility Supply Specialists TEU-12-MA, 3.7 metre long elliptical aluminum luminaire mast arm. The mast arm shall be mounted on the pole in the location shown on the Contract Drawings.

The Contractor must obtain the necessary number of pole I.D. tags from an Operations Technologist-Electrical, Traffic Management & Intelligent Transportation Systems Branch, Traffic Engineering & Integrated Intelligent Transportation Systems Section, at 905-830-4444 and attach one on each pole installed with a Regional luminaire. The tags shall be installed with the number facing the road, at a height of 2.7 m from grade, using a self-tapping screw in each corner of the tag. These tags must be attached prior to the final acceptance of the project by the Region.

Supply and Install 250 Watt High Pressure Sodium Luminaire

The Contractor shall supply and install a 250 watt integral ballast high pressure sodium luminaire complete with lamp, individual photo control and receptacle, General Electric M-400A Series Luminaire, Catalogue No. MDRL25S1P21RMC31 (IES Distribution No. GE-1010.IES) or American Electric Lighting 12525SCTDT1R3DGCS or an approved equal.

The luminaire shall be wired for 120 volt operation.

The luminaire shall be installed in the location shown on the Contract Drawings with a clearance of 9.6 m to the finished pavement.

Payment

Payment shall be made at the Contract unit price for each aluminum luminaire mast arm and luminaire installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

SINGLE MEMBER ARMS AND SIGNAL HANGERS - Item No. 213

Non-Standard Special Provision

Supply and Install Aluminum Traffic Signal Mast Arm

The Contractor shall supply and install an Emergi-Lite/Powerlite Inc. Catalogue No. TR SMA-81 aluminum single member arm (or an approved equal) complete with all attachments and fittings for mounting on a metal or concrete pole. The mast arm shall be mounted as shown on the Contract Drawings and in accordance with Standard Drawing Nos. E-3.06 and E-3.12.

The mast arm length is shown on the Contract Drawings.

Supply and Install Adjustable Plumbizer

The Contractor shall supply and install a Sentinel Catalogue No. AP42830 adjustable plumbizer or an approved equal.

The plumbizer shall be used to mount the traffic signal head in the locations shown on the Contract Drawings and shall be installed in accordance with Standard Drawing No. E-3.15.

Payment

Payment shall be made at the Contract unit price for each mast arm and adjustable plumbizer installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

DOUBLE ARM BRACKETS - Item No. 214

Non-Standard Special Provision

The Contractor shall supply and install aluminum one way vertical brackets, with 500 mm aluminum extensions or an approved equal.

These brackets shall be used to mount a traffic signal head and/or a pedestrian head in the location shown on the Contract Drawings.

Payment

Payment shall be made at the Contract unit price for each set of vertical brackets installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

HIGHWAY TYPE SIGNAL HEADS - Item No. 215

HIGHWAY TYPE SIGNAL HEADS (TEMPORARY) - Item No. 216

Non-Standard Special Provision

The Contractor shall supply and install a yellow/grey backed, polycarbonate, highway type, LED traffic signal head with a backboard, cowl visors, a 300 mm diameter red LED signal lamp and 200 mm diameter amber and green LED signal lamps. The LED signal displays shall be a Pre-qualified Product by the California Department of Transportation (Caltrans), (http://www.dot.ca.gov/hq/esc/approved_products_list/APL.pdf). All modules shall be labelled "ITE Compliant". The top entry hub shall be plugged with the device made for this purpose complete with a gasket. The bottom entry hub shall be plugged with the device made for this purpose but omitting the gasket.

The traffic signal head shall be Federal Standard 595a, colour chip 13538 yellow and ASA-70 grey.

A traffic signal head with single point mounting (i.e., cushion hanger or plumbizer) must have stainless steel reinforcement plates. Cushion hanger mounting reinforcement shall be on the inside and outside of the red section. Plumbizer mounting reinforcement shall be in accordance with the manufacturer's specifications (i.e., inside and outside of the amber section or outside of the red and amber sections). The Contractor shall contact the Region's inspector to inspect the plates prior to installation of the head. A spacer shall be provided to hide the plumbizer, preventing background lighting.

The Contractor shall use the appropriate backboard when the traffic signal head is mounted using a plumbizer.

A temporary traffic signal head shall be mounted using traffic signal head suspension clamps. The Contractor shall supply and install suspension clamps for mounting a traffic signal head to the suspension and stabilizing cables. The clamps shall be installed in accordance with Standard Drawing No. E-3.14.

The traffic signal head shall be installed in the location shown on the Contract Drawings.

An exposed traffic signal head mounted with a plumbizer, which is not operational, shall be rotated so that the head is parallel to the pavement with the front of the signal head facing down. An exposed traffic signal head on a median pole mounted with vertical brackets, which is not operational, shall be securely covered and turned to the left of approaching traffic. An exposed pedestrian head mounted with vertical brackets, which is not operational, shall be securely covered and turned to face the pole on which it is mounted.

All heads that are not operational shall be covered with "Traffic Jackets" as distributed by Sentinel Pole & Traffic Equipment Ltd. or an approved equal, complete with mounting hardware.

Payment

Payment shall be made at the Contract unit price for each traffic signal head installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Payment shall be made at the Contract unit price for each temporary traffic signal head complete with suspension clamps installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

SPECIAL TYPE SIGNAL HEADS - Item No. 217

SPECIAL TYPE SIGNAL HEADS (TEMPORARY) - Item No. 218

Non-Standard Special Provision

The Contractor shall supply and install a yellow/grey backed, polycarbonate, Special Type No. 9 LED traffic signal head with a backboard, cowl visors and LED signal lamps. The head shall be a four section Special Type No. 9 LED head and shall be comprised of a 300 mm diameter red LED signal lamp, 200 mm diameter amber and green LED signal lamps and a 300 mm diameter green/amber LED left turn signal arrow. With the exception of the green/amber LED left turn signal arrow, the LED signal displays shall be a Pre-qualified Product by the California Department of Transportation (Caltrans), (http://www.dot.ca.gov/hq/esc/approved_products_list/APL.pdf). All modules shall be labelled "ITE compliant". The top entry hub shall be plugged with the device made for this purpose complete with a gasket. The bottom entry hub shall be plugged with the device made for this purpose but omitting the gasket.

The traffic signal head shall be Federal Standard 595a, colour chip 13538 yellow and ASA-70 grey.

A traffic signal head with single point mounting (i.e., cushion hanger or plumbizer) must have stainless steel reinforcement plates. Cushion hanger mounting reinforcement shall be on the inside and outside of the red section. Plumbizer mounting reinforcement shall be in accordance with the manufacturer's specifications (i.e., inside and outside of the amber section or outside of the red and amber sections). The Contractor shall contact the Region's inspector to inspect the plates prior to installation of the head. A spacer shall be provided to hide the plumbizer, preventing background lighting.

The Contractor shall use the appropriate backboard when the traffic signal head is mounted using a plumbizer.

A temporary traffic signal head shall be mounted using traffic signal head suspension clamps. The Contractor shall supply and install suspension clamps for mounting a traffic signal head to the suspension and stabilizing cables. The clamps shall be installed in accordance with Standard Drawing No. E-3.14.

The traffic signal head shall be installed in the location shown on the Contract Drawings.

An exposed traffic signal head mounted with a plumbizer, which is not operational, shall be rotated so that the head is parallel to the pavement with the front of the signal head facing down. An exposed traffic signal head on a median pole mounted with vertical brackets, which is not operational, shall be securely covered and turned to the left of approaching traffic. An exposed pedestrian head mounted with vertical brackets, which is not operational, shall be securely covered and turned to face the pole on which it is mounted.

All heads that are not operational shall be covered with "Traffic Shirts" as distributed by Sentinel Pole & Traffic Equipment Ltd. or an approved equal, complete with mounting hardware.

Payment

Payment shall be made at the Contract unit price for each traffic signal head installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

Payment shall be made at the Contract unit price for each temporary traffic signal head complete with suspension clamps installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

PEDESTRIAN TYPE SIGNAL HEADS - Item No. 219

Non-Standard Special Provision

The Contractor shall supply and install a yellow one section polycarbonate Automatic Signal/Eagle Signal pedestrian signal head with a 300 mm square lens complete with a cutaway visor, or an approved equal.

The lamp shall be a symbol type (i.e., hand outline and walking pedestrian) GELcore square, bimodal LED pedestrian signal, Model Number D12PAC MS:4 or an approved equal.

The pedestrian signal head shall be installed in the location shown on the Contract Drawings.

The pedestrian signal head shall be securely covered and turned to face the pole on which it is mounted until such time as the signal installation is completed and working.

All heads that are not operational shall be covered with "Traffic Jackets" as distributed by Sentinel Pole & Traffic Equipment Ltd. or an approved equal, complete with mounting hardware.

Payment

Payment shall be made at the Contract unit price for each pedestrian signal head installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

TRAFFIC SIGNAL CONTROLLERS - Item No. 220

Non-Standard Special Provision

Install Traffic Signal Controller Complete with Accessory Equipment - 8-Phase Base Mount

The Contractor shall install an eight-phase solid state microprocessor-based controller with a 12 position back panel set up to operate on phases 1, 2, 3, 4, 5, 6, and 8 in a semi-actuated mode. Phase 7 will not be used for the initial installation. The controller shall provide for pedestrian timing on 4 phases and vehicle timing on 8 phases (see the attached diagram for phasing). The controller shall be programmable to start up in Phase 2 and 6 amber and Phase 4 and 8 red intervals.

The controller shall be mounted on the concrete pad in accordance with Standard Drawing No. E-3.09.

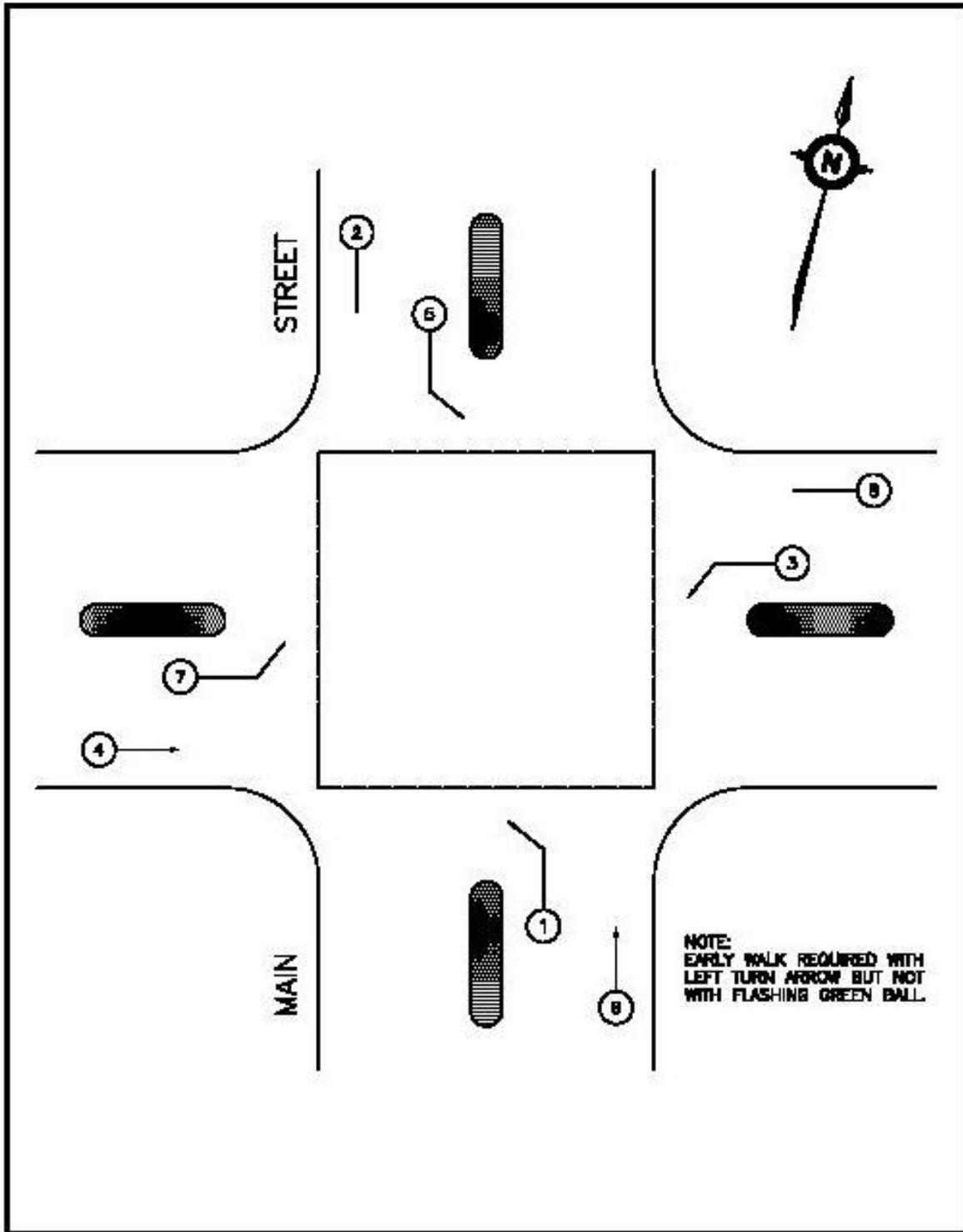
The Contractor shall install the salvaged Bell Mobility 1X Equipment on the new controller.

The new traffic signal controller installation and accessory equipment shall be guaranteed by the Contractor against defects in materials and workmanship for a period of twenty-four (24) months from the date of Total Performance of the Work. The Contractor shall NOT be required to provide on-call emergency repair support. ALL maintenance during the warranty period shall be performed by the Region's Electrical Maintenance Contractor. The Region shall determine whether any maintenance work required during the warranty period can be attributed to the Contractor's original Work, and if such responsibility is assigned, the Region will bill the Contractor for the appropriate charges.

The Region has pre-ordered and paid for the traffic signal controller complete with the above equipment. The Contractor shall pick up the controller at the Region's Operations Centre at 90 Bales Drive East, East Gwillimbury. The controller and accessory equipment shall be set up and tested by the Region. The Contractor shall provide a warranty for the controller and its equipment between the time of pick up and the time the controller is activated and inspected by Regional staff.

Payment

Payment shall be made at the Contract unit price for each traffic signal controller installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents, but shall NOT include the cost of the controller unit.



TYPICAL 8 PHASE INTERSECTION

LOOP DETECTORS - Item No. 221

Supply and Install Wire Inductive Loop Including Lead-In

The Contractor shall supply and install the wire inductive loop in the location shown on the Contract Drawings.

The loop wire shall be #14 AWG Type RWU 90 (X-link) stranded copper conductor or an approved equal.

Foam backer rods shall be used for the installation of the loop detector. They shall be installed on top of the loop wire, spaced every 600 mm.

When grinding and repaving, all loop wire must be installed in the base course of asphalt.

Each loop wire installation shall be sealed to the satisfaction of the Region, in order to prevent the entry of moisture and mechanical damage.

The loop lead-in wire from the edge of the loop to its respective pole and/or handwell shall be twisted together to form a consistent lay of 10 turns per metre.

All connections of the loop lead-in wire to their respective home run cable shall be made in the approved locations shown on the Contract Drawings. All connections between the lead-in wire and home run cable are to be soldered. Any connections made in a handwell shall be made with an approved splicing kit.

The Contractor shall supply and install a cable splicing kit (3M Scotchcast joint or an approved equal) for the connection of the loop wire to the home run cable in a handwell and/or pole base, in the location shown on the Contract Drawings. The installation of each splicing kit shall be in accordance with the manufacturer's requirements.

Payment

Payment shall be made at the Contract unit price per loop and shall include the cable splicing kit required to connect each loop to its respective home run cable. This payment shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

TRAFFIC COUNTING STATION - Item No. 222

NEED SPECIFICATION FROM REGION OF YORK

PEDESTRIAN PUSHBUTTONS - Item No. 223

Non-Standard Special Provision

The Contractor shall supply and install either a Polara Bulldog type BDLM2 pedestrian pushbutton, distributed by Tacel Ltd. or a Campbell Company 4 EVR 120 pedestrian pushbutton, distributed by Innovative Traffic Solutions Inc. (ITS) or an approved equal. The pushbutton shall be traffic yellow in colour and the actuator button shall be stainless steel.

The appropriate pedestrian instruction sign shall be supplied by the Region.

The Contractor shall install the pushbutton and pedestrian instruction sign in the location shown on the Contract Drawings.

Silicone grease shall be applied to the field wire terminals.

The Contractor shall install the manufacturer's back plate to suit the pole mounting requirements.

An anti-seize compound shall be applied to all screws for mounting the face of the pushbutton to the pushbutton housing.

The wiring aperture in the pole shall be filled with duct seal.

Payment

Payment shall be made at the Contract unit price for each pushbutton and sign installed and shall be full compensation for all labour, materials and equipment required to complete the Work as specified in the Contract Documents.

EARTH EXCAVATION FOR STRUCTURE - Item No. 224, 239

Special Provision

The requirements of OPSS 902, November 2009 shall govern this specification with the following additions:

902.07.05.02 Excavation for Foundations

Boag Road Overpass at Hwy. 404 NBL – Site No. 37-1538/1

The approximately 1.9m to 4.0m thick sand and silt till deposit encountered at about 1.0m to 2.7m below ground surface and extending between about elevation 236m and elevation 241m contains cobbles and boulders as indicated in the Record of Borehole sheets. Consideration of the presence of these obstructions shall be made in the selection of appropriate equipment and procedures for sub-excavation for spread footings.

Boag Road Overpass at Hwy. 404 SBL – Site No. 37-1538/2

The approximately 3.2m to 5.6m thick sand and silt till deposit encountered at about 0.3m to 1.5m below ground surface and extending between about elevation 235m and elevation 243m contains cobbles and boulders as indicated in the Record of Borehole sheets. Consideration of the presence of these obstructions shall be made in the selection of appropriate equipment and procedures for sub-excavation for spread footings.

902.10.01 Basis of Payment

Payment at the Contract price for the above tender item shall include full compensation for all labour, equipment, and materials required to do the work. If obstructions are encountered there will be no additional cost to the Contract.

DEWATERING STRUCTURE EXCAVATIONS - Item No. 225, 240

Special Provision

The requirements of OPSS 902, November 2009 shall govern this specification with the following amendments:

902.07 CONSTRUCTION
902.07.04 Dewatering Structure Excavation

Subsection 902.07.04 of OPSS 902, November 2009, is amended by addition of the following paragraphs:

Boag Road Overpass at Hwy 404 NBL – Site No. 37-1538/1

The contractor shall be alerted that artesian groundwater conditions (up to 4 m below existing ground surface) are present at the proposed Highway 404 –NBL Bridge site over Boag Road and along the proposed new Boag Road profile grade. It is estimated that the base of temporary excavations for the foundations will be up to 2 m below the groundwater level as measured in the piezometer in Borehole BR-9 on May 20, 2009. The subsoil conditions consist of sand and silt tills and cohesionless soils containing confined groundwater. Construction of shallow foundations / pile caps must be carried out in the dry. Dewatering within the foundation excavations will be required and the excavation shall be kept stable during the work. It is considered that a combination of adequately sized pumped pressure relief wells and perimeter ditches / trenches or sheetpile box configuration is required to lower the groundwater. If sheetpiles are used, installation procedures need to consider the presence of dense / hard till deposits containing cobbles and boulders encountered between about Elevations 241 m and 236 m, as indicated in the Record of Borehole sheets.

Boag Road Overpass at Hwy 404 SBL – Site No. 37-1538/2

The contractor shall be alerted that artesian groundwater conditions (up to 1.3 m below existing ground surface) are present at the proposed Highway 404 –SBL Bridge site over Boag Road and along the proposed new Boag Road profile grade. It is estimated that the base of temporary excavations for the foundations will be up to 5 m below the groundwater level as measured in the piezometer installed in Borehole BR-3 on May 20, 2009. The subsoil conditions consist of sand and silt tills and clayey silt tills containing confined water-bearing silty sand to sand layers. Construction

of shallow foundations / pile caps must be carried out in the dry. Dewatering within the foundation excavations will be required and the excavation shall be kept stable during the work. It is considered that a combination of adequately sized pumped pressure relief wells and perimeter ditches / trenches or sheetpile box configuration is required to lower the groundwater. If sheetpiles are used, installation procedures need to consider the presence of dense / hard till deposits containing cobbles and boulders encountered between about Elevations 235 m and 243 m, as indicated in the Record of Borehole sheets.

902.10 BASIS FOR PAYMENT

Section 902.10 of SP 902S01, June 2006, is amended by addition of the following subsection:

902.10.02 Unwatering Structure Excavation(s) - Item

Subsection 902.10.02 of OPSS 902, December 1983, is amended by addition of the following paragraph:

Payment at the contract price for the tender Item(s) "Unwatering Structure Excavation(s)" shall also include full compensation for all labour, equipment and material to do the work as specified under subsection 902.07.04 as amended.

MASS CONCRETE - Item No. 226, 241, 256

Special Provision

The requirements of OPSS 904, April 2007 shall govern this specification with the following amendments:

904.01 Scope

The scope of work for the above noted tender item includes supply and installation of the mass concrete (i.e. mud mat) to prevent erosion and/or disturbance to the foundation soils.

If the concrete for the footings on the native or engineered fill soil cannot be poured immediately after excavation and inspection, a working mat of mass concrete should be placed in the excavation to protect the integrity of the bearing stratum.

904.10 Basis of Payment

Payment at the contract price for the above tender item shall include full compensation for all labour, equipment, and materials required to do the work.

CONCRETE IN SUBSTRUCTURE - Item No. 228, 243

CONCRETE IN SUBSTRUCTURE AND RETAINING WALLS - Item No. 229, 244

CONCRETE IN DECK - Item No. 230, 245

CONCRETE IN BARRIER WALLS - Item No. 231, 246

Special Provision

The work under each tender item shall include design, supply and installation of the form liner to produce aesthetically enhanced concrete surface pattern as shown on the contract drawings and as directed by the Contract Administrator.

SUBMISSION AND CONSTRUCTION REQUIREMENTS

The Contractor shall submit to the Contract Administrator six (6) copies of working drawings, photos, rendering or relevant documents which show and define the pattern of the form liner in detail at least four (4) weeks prior to the production of the form liner.

Under each tender item, the Contractor shall produce a full scale mock-up sample representing at least one artificial stone block for each pattern for review and approval by the Contract Administrator. Also under each tender item, The Contractor shall incorporate the Contract Administrator's comments on the sample into the final form liner production.

The pattern shall be continuous through the cold or construction joints except expansion joints.

BASIS OF PAYMENT

Payment at the contract price for the above tender item shall include all necessary labour, materials and equipment required to do the work.

CONCRETE IN SUBSTRUCTURE - Item No. 228, 243

Special Provision

The requirements of OPSS 904, April 2007 shall govern this specification with the following amendments:

904.02 Scope

The above tender item shall include the installation of two (2) site numbers each at Boag Road Overpass at Highway 404 NBL (Site No. 37-1538/1) and Boag Road Overpass at Highway 404 SBL (Site No. 37-1538/2). The Contractor shall form site number inscriptions at the locations directed by the Contract Administrator and as indicated elsewhere in the Contract. The plastic figures can be purchased from the following:

Romac Products Limited
35 Carson Street
Etobicoke, ON M8W 3R7
Tel.: (416) 255-2900
Fax.: (416) 255-1900

904.10 Basis of Payment

Payment at the contract price for the above tender item shall include full compensation for all labour, equipment, and materials required to do the work.

CONCRETE IN APPROACH SLABS - Item No. 232, 247

Special Provision

The requirements of OPSS 904, April 2007 shall govern this specification with the following amendments:

904.03 Scope

The above tender item shall also include the following:

- Asphalt saw cutting for all rubberized joints
- Supply and placement of hot poured rubberized joint sealing compound at joints between approach slab and on-grade asphalt
- Supply and placement of 20mm asphalt impregnated fibre boards at the joints between the approach slabs and on-grade asphalt
- Supply and placement of 13mm type A bituminous joint filler between approach slab and top of wingwalls
- Supply and placement of 5mm approach slab seat elastomer
- Supply and placement of 40mm expanded polystyrene for wingwall cleat

All as shown on the Contract Drawings.

904.10 Basis of Payment

Payment at the Contract price for the above tender item shall include full compensation for all labour, equipment, and materials required to do the work.

EMBEDDED WORK IN STRUCTURE (UTILITY) - Item No. 235, 250

Special Provision

The requirements of OPSS 913, November 2006 shall govern this specification with the following amendments:

913.01 Scope

Work under this tender item shall include the following:

Boag Road Overpass at Hwy 404 NBL – Site No. 37-1538/1

- Supply and installation of 1-75mm diameter PVC electrical duct and 1-50mm diameter PVC electrical duct each embedded in east barrier wall and west barrier wall
- Supply and installation of expansion and deflection fittings
- Supply and installation of wobble joints

Boag Road Overpass at Hwy 404 SBL – Site No. 37-1538/2

- Supply and installation of 1-75mm diameter PVC electrical duct and 1-50mm diameter PVC electrical duct each embedded in east barrier wall and west barrier wall
- Supply and installation of expansion and deflection fittings
- Supply and installation of wobble joints

Fish line installation in rigid PVC embedded duct shall be nylon or polypropylene materials with a minimum strength of 400 N as per OPSS 913.

913.10 Basis of Payment

Payment at the Contract price for the above tender item shall be full compensation for all labour, equipment, and materials required to do the work.

PRECAST CONCRETE ARCH CULVERT - REINFORCED - Item No. 260

Special Provision

Under this item, the Contractor shall fabricate and install the precast concrete culvert structure including the precast headwalls and all the hardware required for the installation of the culvert as shown on the Contract drawings and as per this specification.

The above tender item shall include the installation of two (2) site numbers on the culvert. The Contractor shall form site number inscriptions at the locations directed by the Contract Administrator and as indicated elsewhere in the Contract. The site number 37-1538/3. The plastic figures can be purchased from the following:

Romac Products Limited

35 Carson Street
 Etobicoke, ON M8W 3R7
 Tel: 416-255-2900
 Fax: 416-255-1900

Precast concrete culvert shall be fabricated and installed according to the requirements of OPSS 904, April 2007 and as amended as follows:

904.01 SCOPE

Clause 904.01 of OPSS 904 is deleted and replaced with the following:

This specification covers the requirements for the design, fabrication, delivery, and installation of precast reinforced concrete culverts.

904.03 DEFINITIONS

Section 904.03 of OPSS 904 is amended by the addition of the following:

Working Drawings means drawings that include design, fabrication and assembly details designed in accordance with this special provision and the Contract documents.

Design Engineer means the Engineer who produces the working drawings; the Design Engineer shall be certified by the Manufacturer as having the appropriate experience and expertise to provide design services for the Manufacturer's precast concrete culvert.

Design Check Engineer means the Engineer who checks the original design; the Design Check Engineer shall be certified by the Manufacturer as having the appropriate experience and expertise to provide design services for the Manufacturer's precast concrete culvert.

Manufacturer means the party who supplies and/or specifies the design, materials and components for the precast concrete culvert conforming to this specification and the contract drawings.

Quality Verification Engineer (QVE) means an Engineer recognized by the Manufacturer as having demonstrated experience and expertise to provide quality verification services for the Manufacturer's precast concrete culvert. The Quality Verification Engineer shall be retained by the Contractor to certify that the work is in general conformance with the contract documents and to issue Certificates of Conformance.

Stamped means working drawings that have been reviewed and stamped "Conforms with Contract Documents". The stamp shall include the date and signature of the Quality Verification Engineer

904.04 DESIGN AND SUBMISSION REQUIREMENTS

Section 904.04 of OPSS 904 is deleted and replaced with the following:

904.04.01 Submissions Requirements

904.04.01.01 Working Drawings

All submissions shall bear the seal and signature of the Design Engineer and the Design Check Engineer.

The Contractor shall submit working drawings for the design, fabrication and construction of the precast concrete culvert to the QVE for review and stamping.

The Contractor shall have a copy of the stamped working drawings on site at all times.

At least three (3) weeks prior to commencement of construction of the precast concrete culvert, the Contractor shall submit to the Contract Administrator, for information purposes only, three (3) sets of the stamped working drawings.

904.04.01.02 Certificate of Conformance

904.04.01.02.01 Interim Inspection after Fabrication of Units

Upon completion of fabrication of precast units in the structure and prior to shipment from the fabrication facility, the Quality Verification Engineer shall conduct an Interim Inspection of the work to certify that the fabrication has been carried out in general conformance with the sealed and signed working drawings and the Contract documents.

904.04.01.02.02 Certificate of Conformance Upon Completion of the Work

Upon completion of delivery and installation of all the units in the structure, the Contractor shall submit to the Contract Administrator a Certificate of Conformance sealed and signed by the Quality Verification Engineer. The Certificate shall state that the work has been carried out in general conformance with the stamped working drawings and the Contract documents.

904.04.01.02.03 Warranty

The Contractor shall submit an unconditional warranty to the Owner, to implement all repair and maintenance requirements to the precast concrete culvert related to design, materials and workmanship for a period of three (3) years from the date of certification of completion of the Contract.

904.09 MEASUREMENT FOR PAYMENT

The contents of Clause 904.09 of OPSS 904 is deleted and replaced with the following:

Measurement of the precast concrete culvert including the headwalls shall be on a lump sum basis successfully fabricated and installed as per this specification and the Contract drawings.

904.10 BASIS OF PAYMENT

The contents of Clause 904.10 of OPSS 904 is deleted and replaced with the following:

Payment at the Contract price for the above tender items shall be full compensation for all labour, equipment and materials required to do the work.

TEMPORARY FLOW PASSAGE SYSTEM - Item No. 261

Special Provision

1.0 SCOPE

This Special Provision covers the requirements for the provision of a Temporary Flow Passage System and includes the design, fabrication, supply, installation, operation, maintenance and removal of the system to isolate the work area for the construction of the structure and complete the work in the dry condition while maintaining watercourse flows, as shown on the Contract drawings.

The work under this item shall include but not limited to the following:

- Preparation and submission of the working drawings
- Supply, installation, maintenance and removal of all sumps, bypass pumps and associated appurtenances (generators, hoses and fittings, etc.)
- Supply, installation and removal of screened intake, temporary pea-gravel dam, splash pad and pump discharge, temporary rock flow check

The Contractor shall also design and provide any temporary support of the hose required during the excavation and construction of the culvert.

2.0 SUBMISSION AND DESIGN REQUIREMENTS

At least twenty-one (21) calendar days before the intended date of commencing temporary flow passage operations, the Contractor shall prepare and submit to the Contract Administrator, for information purposes only, six (6) copies of written procedures and working drawings that include the following:

- The design flow return period and design flood elevation upon which the design of the temporary

- flow passage system(s) is based;
- The number and type of pumps to be used and their respective capacities;
 - Detailed working drawings for the temporary flow passage system(s) scheme showing the extent, location and elevation of all cofferdams, CSP's, pumps, settling basins, etc.; and
 - A detailed written procedure indicating the timing and sequence of all operations necessary to complete the work.

The design and working drawings submitted by the Contractor shall bear the seal and signature of a Professional Engineer who is licensed by the Association of Professional Engineers of Ontario.

Flows and corresponding water surface elevations at the sites are provided in Table 'A', for information purposes only. The water elevations shown correspond to normal headwater (upstream end) elevations, unobstructed by flume pipes. The actual headwater elevations could be significantly higher in the presence of flow constrictions such as flume pipes and should be confirmed by the Contractor. The elevations of the tops of temporary cofferdams should be at least 0.30 m higher than the headwater corresponding to the return period being considered (taking into account the affect of any flumes).

The Contractor is alerted that there is a risk that the capacity of the flow passage system may be exceeded during construction in the event that there is a storm event with flows that exceed the flows upon which the design of the temporary flow passage system is based, and that this will result in flooding of the work zone and may result in damages, additional work and delays. Any damages, additional work and delays due to the flooding shall be repaired, completed and catch-up by the Contractor at no cost to the Owner.

Table 'A'										
Site	Culvert Invert Elevations		Return Period							
			2 Year		5 Year		25 Year		100 Year	
	U/S	D/S	Flow (m ³ /s)	Elevation At U/S (m)	Flow (m ³ /s)	Elevation At U/S (m)	Flow (m ³ /s)	Elevation At U/S (m)	Flow (m ³ /s)	Elevation At U/S (m)
Sta. 34+022	251.00	248.40	0.285	251.30	0.521		0.963		1.388	251.50

3.0 CONSTRUCTION

Pumps

Pump intake hoses shall be placed within a bed of clean river stone to ensure that channel sediments are not ingested into the pump intake.

Operation

A continuously operating temporary flow passage system shall be provided to keep the work areas free of water at all times during the construction work. All components of the temporary flow passage system shall be maintained in an effective, functioning and stable condition at all times during the work.

Notwithstanding the above, the work shall be completed in accordance with the environmental and operational constraints specified elsewhere in the Contract.

Restoration

All equipment and materials placed shall be removed from the right-of-way upon completion of the work and all areas disturbed as part of this work shall be restored to their preconstruction conditions, unless specified otherwise.

4.0 BASIS OF PAYMENT

Payment at the Contract price for the above tender item shall be full compensation for all labour, equipment and materials required to do the work. Progress payments will be made on the following basis:

- a) 60 % for initial installation; and
- b) 40 % for operation and maintenance (prorated over the duration of the Contract)

STEEL COLUMN BREAKAWAY SIGN SUPPORT STRUCTURES - Item No. 264

Special Provision

Scope

This special provision covers the requirements for the ordering, pickup, storage and installation of the sign boards onto the steel column breakaway sign support structures.

Sign Board

MTO will supply the sign boards and the sign boards to be picked up by the Contractor.

Pick-up Information:

Sign boards will be ordered by the Contract Administrator a minimum of 8 weeks prior to being picked up by the contractor. The Contract Administrator will confirm with the Provincial Sign Shop a minimum of 2 weeks prior to the overlay panels being picked up by the contractor.

Sign boards shall be picked up from:

Location: Provincial Sign Shop, 1927 Kipling Avenue, Rexdale, Ontario, M9W 4J4

Time: 8:00 am to 2:00 pm, Monday to Friday (except Holidays)

Contact and phone number: Tracey Johnston, 416-314-1898 ext 305

After pick-up, Contractor shall temporary store these sign boards as required, and install the sign boards onto the steel post breakaway sign support structures where shown on the contract drawings.

Basis of Payment

Payment at the contract price of the above items shall include all necessary labour, materials and equipments required to do the work.

SCHEDULE OF MATERIALS TO BE SUPPLIED BY THE OWNER

Pursuant to Subsection GC5.01, Supply of Material, of the MTO General Conditions of Contract, April 2005, this special provision lists all the materials to be supplied by the Owner:

- (A) The Owner supplies the following materials F.O.B. haulage vehicles at a point within the Working Area. Deliveries to the Working Area shall be as requested by the Contractor but subject to the approval of the Contract Administrator:

NIL

The Contractor shall complete Form PH-CC-765 "Contract Material Delivery Schedule", detailing the Contractor's required delivery date for each item of material to be supplied by the Owner.

The form shall be completed in triplicate and returned to the Head, Contracts Section within the time limit specified by the Owner in a letter to the Contractor.

At any time following the required delivery date which the Contractor enters in Form PH-CC-765 for each item of material, the Contractor shall either accept delivery of that material when required by the supplier or shall make alternative arrangements satisfactory to the supplier which do not result in any additional cost to the Owner.

- (B) **The Owner supplies the following materials as indicated below:**

<u>Material</u>	<u>Quantity</u>	Supply Point
Ground Mounted Signs	162 each	MTO Provincial Sign Shop 1927 Kipling Ave. Rexdale, ON
Major Contract Identification Signs (MCIS)	2 each	MTO Sign Shop 1927 Kipling Ave. Rexdale, ON
Date and Site Figures	6 each	1201 Wilson Ave. Building D Downsview, ON

This special provision shall take precedence over all other special provisions with respect to the supply of the above materials.

THE CONTRACTOR SUPPLIES **ALL** OTHER MATERIALS FOR THIS CONTRACT.

SECTION C

SPECIAL PROVISIONS

LIQUIDATED DAMAGES

Working Days and Charges

1. Time

Time shall be the essence of this Contract.

2. Progress of the Work and Time for Completion

The charging of Working Days shall commence on May 16, 2011 and the Contractor shall diligently carry out the Work on this Contract to completion on or before the expiration of 288 Working Days from the date of commencement.

If the time limit above specified is not sufficient to permit completion of the Work by the Contractor working a normal number of hours each day or week on a single daylight shift basis, it is expected that additional and/or augmented daylight shifts will be required throughout the life of the Contract to the extent deemed necessary by the Contractor to ensure that the Work will be completed within the time limit specified. Any additional costs occasioned by compliance with these provisions will be considered to be included in the prices bid for the various items of work and no additional compensation will be allowed therefore.

Working time shall be charged until the date of acceptance of the Work by the Owner at which time all Work required in the Contract, including all final clean-up and trimming shall be completed.

3. Working Day

The definition of "Working Day" in subsection GC1.07, Definitions, of the MTO General Conditions of Contract, April 2005 is amended by the addition of the following:

- (d) except any day between * December 1, 2011 to May 15, 2011 and December 1, 2012 to May 15, 2012 inclusive, even though the Contractor may elect to carry out any approved work as called for under this Contract during this period.

The Contract Administrator will furnish to the Contractor for the Contractor's signature a weekly "Statement of Record of Working Days". The Contractor will be allowed two weeks in which to file a written protest setting forth in what respects the said weekly statement is incorrect, otherwise, the statement shall be deemed to have been accepted by the Contractor as correct.

OPTION **

- (e) except when hot mix paving is the controlling operation in the Fall and it is expected to remain the controlling operation until winter shutdown, the Contractor may request permission to shut down the paving operation prior to December 1, 2011 and December 1, 2012. The Contract Administrator will consider the circumstances at the time the request is made, including but not limited to the need to provide a safe roadway for the Winter or to cover a granular grade. If permission is granted, the Contract Administrator will cease charging working days on the date when the Contractor shuts down the paving operation for the Winter.

4. Liquidated Damages

It is agreed by the parties to the Contract that in case all the Work called for under the Contract is not finished or completed within the number of Working Days as set forth in the special provisions or as extended in accordance with subsection GC3.07, Extension of Contract Time, of MTO General Conditions of Contract, a loss or damage will be sustained by the Owner. Since it is and will be impracticable and extremely difficult to ascertain and determine the actual loss or damage which the Owner will suffer in the event of and by reason of such delay, the parties hereto agree that the Contractor will pay to the Owner the sum of \$10,000 as liquidated damages for each and every calendar day's delay in finishing the Work in excess of the number of Working Days prescribed. It is agreed that this amount is an estimate of the actual loss or damage to the Owner which will accrue during the period in excess of the prescribed number of Working Days.

ASSISTANT DEPUTY MINISTER,
PROVINCIAL HIGHWAYS MANAGEMENT DIVISION
MINISTRY OF TRANSPORTATION, ONTARIO